POSITIVE PSYCHOLOGY AND LEARNING A SECOND OR THIRD LANGUAGE

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POSITIVE PSYCHOLOGY AND LEARNING A SECOND OR THIRD LANGUAGE

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EDITORIAL
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Editorial: Positive Psychology and Learning a Second or Third Language

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Editorial on the Research Topic

Positive Psychology and Learning a Second or Third Language

Positive Psychology (PosPsy) has slowly gained traction in the study and practice of psychology since it was first introduced by (Seligman and Csikszentmihalyi, 2000). Unlike traditional psychology, which focuses on problematic behaviors, PosPsy examines topics such as happiness, well-being, flourishing, and resilience. Interest in PosPsy has moved into other fields of study including second language acquisition (SLA) research. In the past SLA researchers have spent considerable time studying impediments such as stress and anxiety to explain difficulties in learning a second language. Today a quickly growing trend among SLA researchers' is to see the value of PosPsy constructs. With this increased recognition has come a reorientation among SLA researchers in how best to re-imagine second or even a third language acquisition. Given the flattening of our world brought about by the Internet, bi/multilingualism has become commonplace and even a necessity for students in many countries around the world.

Many language researchers who see the value of studying second/foreign language acquisition from a more open, appreciative and positive perspective welcome this exciting new orientation in SLA research. Researchers and educators with a PosPsy orientation are more prone to explore how learning a new language can bring joy, interest, and excitement to learners because of the new worlds it opens up for the burgeoning bi/multilingual. This is not to say that there are not difficulties associated with language study. However, when a learner overcomes personal challenges and begins to use a new language there are moments of exhilaration and accomplishment.

Earlier research in SLA largely discussed the negative elements in SLA, such as learner anxiety. Today a growing number of researchers have recognized the important impact of promoting learner positive traits and strengths in SLA. For example, researchers have highlighted the importance of alternative methods to facilitate positive language learning experiences that ideally minimize second language learners' anxiety and optimize language acquisition. Instead of focusing on negative emotions (e.g., anxiety, stress, failure) during language learning, PosPsy seeks to develop positive emotions, greater engagement, and meaningful language learning experiences for second language learners.

SLA researchers who employ a PosPsy orientation are beginning to make significant contributions to both SLA theory and application to facilitate second and third language learning. Theoretically, applying PosPsy constructs and methods to SLA help language researchers better understand the field of SLA through a new and positive lens. Some of this work offers guidelines for ways to think about the role of motivation in learning a new language. From a pedagogical perspective, PosPsy SLA research offers language educators insights and strategies for improving learners' positive emotional preparation for learning. With meaningful teaching and learning interactions the potential for improved second language proficiency is present. Notably, PosPsy studies of SLA are providing evidence-based strategies for teachers regarding the creation of

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positive L2 learning environments that heighten learners' motivation, perseverance, resilience, and positive emotions for a long-term meaningful language learning experience.

The overarching goal for organizing this eBook was to offer groundbreaking work in second and third language research from an international group of researchers who use a PosPsy orientation to guide their work. This eBook includes three exciting directions in PosPsy SLA research. First, theoretical reviews that range from young children to secondary school and university students who require a second language to advance academically, as well as mature adults offered the opportunity to learn a second language for the purpose of enjoyment, but also memory improvement. Second, empirically grounded studies that link PosPsy with SLA. These studies offer objective evidence-based research on ways that constructs taken from PosPsy (e.g., mindsets, self-efficacy) can be used in controlled studies to examine learning a second or third language. Third, practical classroom oriented studies that offer data on how to enable learners to channel negative emotions (e.g., anxiety) about learning and performing in a second/third language so they can experience positive flow in learning.

A secondary goal was to advance the literature by stressing the interdisciplinary link between PosPsy and SLA through presenting the work of researchers representing a wide range of cultural and linguistic contexts. We hope this collection encourages future efforts to bridge the gap between second and third language learning/teaching and PosPsy by providing an interdisciplinary and international forum for the science and application of SLA research.

AUTHOR CONTRIBUTIONS

AP, XC, and JL contributed equally to this special topic. All authors contributed to the article and approved the submitted version.

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ORIGINAL RESEARCH
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Understanding the Relationship Between Grit and Foreign Language Performance Among Middle School Students: The Roles of Foreign Language Enjoyment and Classroom Environment

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Objective: This study aims to examine the effect of grit on foreign language performance (FLP) among middle school students. A mediated moderation model was constructed to assess the mediating role of foreign language enjoyment (FLE) and the moderating role of classroom environment (CE) in the relationship between grit and FLP.

Methods: The study adopted the Grit Scale-Short Version, the Chinese Version of the FLE Scale, and the English CE Inventory to investigate 832 middle school students, and recorded the students' FLP in their final exam after 1 month. Correlation and regression analyses were used to evaluate the relationships between grit, FLE, CE, and FLP.

Results: The results indicated that grit positively affected FLP. In addition, FLE mediated the relationship between grit and FLP, and CE moderated the relationship between grit and FLE, and between grit and FLP.

Conclusion: Grit not only directly promotes the FLP of middle school students but also indirectly improves FLP by promoting FLE. In addition, the impact of grit on FLE and FLP increases in a positive CE.

Keywords: grit, foreign language enjoyment, classroom environment, foreign language performance, positive psychology, second language learning

INTRODUCTION

With the development of Positive Psychology (PosPsy), researchers have gradually realized the important role of PosPsy in the study of second language acquisition (SLA). Seligman and Csikszentmihalyi (2014) identified the goals of PosPsy and outlined the three pillars in PosPsy research: positive individual traits, positive experiences, and positive institutions. In *Positive Psychology Perspectives on Foreign Language Learning and Teaching*, Gabryś-Barker (2016) emphasized that learners' personality traits, positive emotions, and learning environments are three important aspects that influence foreign language learners' academic performance.

Today, China has more than 176.7 million people learning foreign languages (usually English), which constitutes the largest foreign language learner group in the world (You and Dörnyei, 2016). Foreign language is a compulsory course for every Chinese middle school student, and foreign language performance (FLP) is an important index used to assess whether middle school students can enter a good university. Therefore, it is necessary to study the influencing factors of middle school students' FLP from the PosPsy research perspective.

Grit Affects FLP

Grit is a self-regulation and non-cognitive personality trait composed of two underlying factors: persistence and long-term consistency of interests (Duckworth et al., 2007). Duckworth et al. (2007) believe that grit is the ability to motivate individuals to work hard and stick to long-term goals and that it is a kind of persistence in overcoming challenges and achieving large goals.

Grit has been found to enhance academic performance in school-aged adolescents from diverse cultural contexts (e.g., see a meta-analysis by Credé et al., 2017). Grittier students achieve higher grade point averages, higher levels of educational attainment, and greater success in scholastic competitions (Duckworth et al., 2007; Duckworth and Quinn, 2009; Cross, 2014). Moreover, individuals with a high level of grit can control the time and way of learning and reported more learning engagement, making them more likely to achieve excellent academic performance (Wolters and Hussain, 2015; Aparicio et al., 2017). In the field of foreign language learning, some studies have found that grit can promote academic performance. Additionally, previous studies have found that consistent practice of language skills leads to procedural knowledge and automatization (DeKeyser, 2007). Lake (2015) found that grit has a strong relationship to the measure of persistent effort for learning a second language. MacIntyre (2016) believe that grit is one of the most important positive personality traits that affect second language learning.

While extensive studies have documented that grit can improve academic performance, the predictive mechanisms for grit in relation to academic performance remain unclear. According to Caspi et al. (2005), the relationship between personality traits like grit and academic achievement might emerge as consequences of both indirect and direct effects of personality on achievement. Foreign language enjoyment (FLE) and classroom environment (CE) may play mediating and moderating roles, respectively.

The Mediating Role of FLE

The role of emotion in SLA has received extensive attention. As a personality trait, grit may affect many academic emotions, such as depression and anxiety (Datu et al., 2018). In addition, some studies have found that grit is positively associated with positive emotions, such as happiness, the pursuit of goals, and subjective well-being (Singh and Jha, 2008; Duckworth et al., 2009; Duckworth and Gross, 2014). Given the designation of grit as a personality trait (Duckworth et al., 2007), gritty individuals are more likely to have positive academic emotions, such as FLE. As a typical and common positive emotion experienced by foreign language learners, FLE has attracted increasing scholarly attention (Dewaele and MacIntyre, 2014; Pavelescu and Petric, 2018).

According to Bandura's social cognitive theory of self-regulation, self-regulatory systems consist of three principal subfunctions: self-monitoring, self-judgment, and self-reactive. In the stage of self-reactive, individuals will evaluate their own behaviors and then generate emotional experiences, such as self-satisfaction, pride, and self-criticism (Bandura, 1991). Individuals with high grit are able to perform better in academic behaviors, so they are more likely to have good self-reactions and positive emotions, such as FLE. In addition, previous studies have found that individuals with high grit levels tend to make positive attributions, have a more optimistic growth mindset, and have more positive emotions (Duckworth et al., 2009; Hill et al., 2016), which means that high-grit individuals may have more FLE.

Foreign language enjoyment is a concept that resonates with the emerging field of PosPsy and, more specifically, the broaden-and-build theory (Fredrickson, 2001). The broaden-and-build theory emphasizes that positive emotion, such as enjoyment, can broaden individuals' thought-action repertoires and build their psychological resiliency and personal resources (Fredrickson, 2001; Oxford, 2015). Positive emotions are also conducive to individual exploration, allowing individuals to acquire new experiences and learn effectively (Dewaele and MacIntyre, 2014). Furthermore, according to the control-value theory, enjoyment is a positive and emotion-centered activity, one that positively impacts learners' academic performance(Pekrun et al., 2007). FLE boosts foreign language learning as it encourages learners to be creative and explore an unfamiliar language (Dewaele and MacIntyre, 2016). Many previous studies have also found that enjoyment is typically linked with less anxiety and higher scholastic attainment (Brantmeier, 2005; Dewaele and MacIntyre, 2014; Dewaele and Dewaele, 2017). Dewaele and Alfawzan (2018) investigated the effect of FLE and foreign language classroom anxiety (FLCA) on FLP and found that the positive effect of FLE on performance was stronger than the negative effect of FLCA. From the above, the present study hypothesized that FLE may play a mediating role in how grit impacts FLP.

The Moderating Role of CE

Although many previous studies found that grit scores are relatively strongly related to success, as suggested by the initial findings by Duckworth and colleagues (e.g., Duckworth et al., 2007; Duckworth and Gross, 2014; Strayhorn, 2014), but many others (e.g., Macnamara et al., 2014; Paunesku et al., 2015; Steinmayr et al., 2018) have failed to find strong relationships between grit scores and indicators of success. One possible reason is that moderating variables affect how grit impacts academic performance, making the relationship different in different states.

According to Lewin (1936)'s field theory, an individual's behavior (B) is a function of the person (P) and the person's environment (E). Most of the foreign language learning of middle school students takes place in class, making CE an important factor affecting their foreign language learning (Fraser, 2007). CE, also called class climate or class atmosphere, generally refers to the sum of various physical, social, and psychological factors

that influence the development of teaching activities, quality, and effect (Fan and Dong, 2005).

Many previous studies have found that a positive CE can promote students' FLP (Baek and Choi, 2002; Patrick et al., 2007). However, few studies have examined how CE interacts with individual personality traits and emotions to predict students' FLP. In fact, in the view of PosPsy, a positive environment is conducive to fully realizing the advantages of individual positive personality traits (Seligman and Csikszentmihalyi, 2014). Highly gritty students are more likely to be fully engaged in learning and to achieve better academic performance in a foreign language in a positive CE versus a negative one. In a negative CE, even if students are willing to persist in learning, the interference of the outside environment may make students fail to reach the expected goal, despite their efforts. Therefore, CE may play a moderating role in the influence of grit on FLP. Similarly, academic enjoyment is a positive emotion acquired by students in foreign language learning. In a negative CE, students struggle to experience FLE, even if they make great efforts to study, which means that even high levels of grit may not promote academic enjoyment.

Present Study

In recent years, many linguists have recognized the importance of improving learners' grit and positive emotions to improve their language learning. In addition, increasingly more teachers have recognized the vital role played by positive classrooms (MacIntyre and Mercer, 2014). However, there is still a lack of existing research that examines how these three factors interact with each other and influence the mechanism of foreign language learning. This study examined the impact of grit on FLP from the perspective of PosPsy, and investigated the mediating effect of FLE and the moderating effect of CE.

MATERIALS AND METHODS

Participants and Procedures

Participants in this study were 832 middle school students aged 11–16 years (M = 13.27; SD = 1.01); 463 were female, and 369 were male. In addition, the majority of participants (91.4%) belonged to the Han ethnic group, which is the majority ethnic group in China.

Prior to data collection, ethical approval for the study was obtained by Shihezi University. The experimenter contacted three middle schools located in Xinjiang and Anhui Province, China. After obtaining permission from school principals, informed consent forms were given to emerging adults who attended the classes. Given that all participants in the current study were juveniles under age 18, written informed consent was obtained from the parents of all participants prior to the survey. During school hours, a trained experimenter provided standardized instructions, and students were asked to complete the questionnaires during a 20-min period in the classroom. All the participants were asked to complete the measures that assessed the grit scale, FLE scale, and CE scale. One month later, the students took the final exam, and the foreign language scores of the final exam were obtained as indicators to measure FLP.

Measures

Grit Scale

Grit was measured using the eight-item Grit Scale-Short Version (Grit-S; Duckworth and Quinn, 2009), which was validated for Chinese populations by a previous study and showed adequate construct and criterion validity (Li J. et al., 2018). Sample items included: "Setbacks do not discourage me" or "I finish whatever I begin." Participants were asked to rate each item from 1 (not like me at all) to 5 (very much like me) on a Likert-type scale. The average score of eight items (including 4 reverse-scored items) was calculated to yield the value of grit, with a higher value indicating greater grit. In the current study, Cronbach's alpha was 0.83.

Chinese Version of the Foreign Language Enjoyment Scale

Foreign language enjoyment was measured using the Chinese Version of the Foreign Language Enjoyment Scale (Li C. et al., 2018). The original FLE Scale was developed by Dewaele and MacIntyre (2016). The revised Chinese Version of the FLE Scale included 11 items (e.g., "In class, I feel proud of my accomplishments"). Participants were asked to rate each item on a Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). In the present study, this scale had good internal consistency ($\alpha = 0.81$).

English Classroom Environment Inventory

The English Classroom Environment Inventory developed by Liu and Liu (2010) was used to assess CE. The inventory is a 25-item instrument that assesses the English CE of middle school students (e.g., "Our English teacher likes students to ask questions at any time"). The items are rated on a 5-point Likert scale ranging from 1 (Almost never) to 5 (Almost always). In the present study, this scale had good internal consistency ($\alpha = 0.82$).

Foreign Language Performance

One month later, the students who participated in the previous survey completed a final exam organized by the school uniformly. From this standardized exam, we obtained their foreign language scores. The exam materials were jointly established by a team of middle school English teachers. Students from three grades were involved in this study, and thus three different exam materials were adopted. The full score of each test was 150, and each test contained six sessions: listening, single choice, reading comprehension, cloze test, translation, and writing. The total score of translation and writing was 30, and the scores of these two parts were obtained from the average score of two raters. The rest of the scores were choice questions with only one correct answer. In order to evaluate the applicability of the test materials, we analyzed each test, and examined four indicators including difficulty value, discrimination, reliability, and validity. The results showed that the indicators of each test were acceptable. The difficulty value of each test ranged from 0.61 to 0.64; the discrimination was 0.37 to 0.45; the scorers' reliability

was 0.88 to 0.93; the criterion validity based on the linkage with students' test scores 3 months ago was 0.86 to 0.88. Overall, all of these indicators showed that these test materials can effectively measure students' FLP.

Data Analysis Strategies

Correlation and regression analyses were used to evaluate the relationship between grit, FLE, CE, and FLP. All analyses were conducted using SPSS 22.0. Before statistical analyses, we analyzed the missing data in variables and found that the missing data across all items totaled less than 2.6% of possible responses. Little's missing completely at random test was used to assess the pattern of missing data (Schafer and Graham, 2002). The results revealed that data were missing completely at random. Thus, full-information maximum likelihood estimates were employed to impute missing data for this variable.

Considering that gender and age may impact students' FLP, these factors were controlled in the model for examining how grit, FLE, and CE affect FLP.

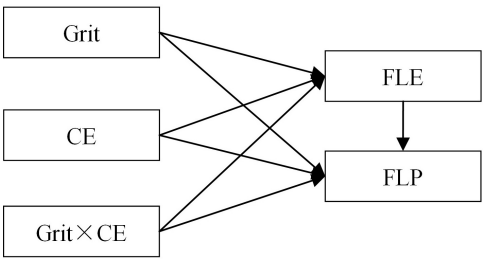

FIGURE 1 | Hypothesized model. FLE, foreign language enjoyment; CE, classroom environment; FLP, foreign language performance.

RESULTS

Descriptive Statistics and Correlations

Table 1 shows that there were no significant correlations between age and all other variables; that gender was related significantly to grit, GLE, CE, and FLP; and that the overall correlation between grit, GLE, CE, and FLP was positive.

Moderated Mediation Analysis

We controlled for gender and age in the moderated mediation analysis. All independent variables were centered on their respective means to reduce multicollinearity between the main effects and interaction terms, and to increase the interpretability of the interaction term coefficients. Then, we followed the procedures of moderated mediation analysis of Hayes (2013) Statistical Model 15 (**Figure 1**), via the following steps: (a) examined the moderating effect of CE on the relationship between grit and FLP; (b) examined the moderating effect of CE on the relationship between grit and FLE; and (c) controlled the interaction item of CE and FLE, and examined the mediating role of FLE in the association between grit and PLP. Next, we conducted bias-corrected bootstrap tests with a 95% confidence interval to test the significance of the indirect effect of grit on FLP via FLE. Finally, we used the test of simple slopes to further examine the significance of the interaction effects.

The specification of these models can be seen in **Table 2**. Equation 1 examined the main effect of Grit and CE on FLP and the moderating effect of CE in the relationship between Grit and FLP. Equation 2 investigated the main effect of Grit and CE on FLE and the moderating effect of CE in the relationship between Grit and FLE. Equation 3 ascertained the main effect of FLE on FLP after controlling the interaction terms of CE and Grit. In each equation, students' gender and age were included as a control variable. Grit has a significant positive predictive effect on FLP and FLE ($\beta = 0.21/0.20$, $p < 0.001$; $\beta = 0.49$, $p < 0.001$), and CE can also significantly and positively predict FLP and FLE ($\beta = 0.32$, $p < 0.001$; $\beta = 0.20$, $p < 0.001$). Thus, the interaction terms between CE and grit have significant positive predictive effects on both FLP and FLE. In addition, after controlling the interaction term between CE and grit, FLE still has a significant positive predictive effect on FLP. These results indicate that CE regulates the direct predictive path of grit to FLE and FLP, and can promote FLP through the mediation of FLE.

In order to further test whether the mediating effect of FLE in grit on FLP is valid, the bootstrap test was carried out using 5,000 bootstrap samples from original data ($N = 832$) using the repeated random sampling method. The results showed that the 95% confidence interval of indirect effect of grit from FLE to FLP was between 0.12 and 0.26, which indicates that the indirect effect of grit through FLE to FLP is valid.

Finally, in order to clarify the significance of the moderating effect of CE in the relationship between grit, FLE, and FLP, CE was divided into high and low groups by adding and subtracting

TABLE 1 | Descriptive statistics and correlations for key variables.

Variables	M	SD	1	2	3	4	5	6
(1) Gender	1.56	0.50	1.00					
(2) Age	13.27	1.01	−0.01	1.00				
(3) Grit	27.47	6.55	0.19***	−0.05	1.00			
(4) FLE	32.68	7.21	0.17***	0.01	0.53***	1.00		
(5) CE	87.52	23.67	0.12*	0.04	0.14***	0.30***	1.00	
(6) FLP	93.57	25.81	0.15***	0.01	0.26***	0.42***	0.34***	1.00

*FLE, foreign language enjoyment; CE, classroom environment; FLP, foreign language performance. Age and gender were considered as control variables.*** $p < 0.001$; * $p < 0.05$.*

TABLE 2 | Regression analysis results: Testing FLE as a mediator and CE as a moderator in the relationship between grit and FLP.

	Equation 1		Equation 2		Equation 3	
	Variable (FLP)		Variable(FLE)		Variable (FLP)	
	β	t	β	t	β	t
Gender	0.15	3.01**	0.17	3.51**	0.15	3.01**
Age	0.01	0.16	0.01	0.26	0.01	0.16
Grit	0.21	4.46***	0.49	11.74***	0.20	4.32***
CE	0.31	6.60***	0.22	5.35***	0.28	6.18***
Grit × CE	0.34	2.36*	0.65	5.14***	0.32	2.15*
FLE					0.31	5.48***
R^2	0.17		0.37		0.23	
F	17.77***		48.40***		20.90***	

*FLE, foreign language enjoyment; CE, classroom environment; FLP, foreign language performance.*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.*

a standard deviation from the average. Then, the simple slope test syntax of Schubert and Jacoby (2004) was adopted for the simple slope test. The results showed that the grit of the high CE level group had a positive predictive effect on FLE (simple slope = 0.62, $t = 13.34$, $P < 0.001$), which was higher than that of the low CE level group (simple slope = 0.29, $t = 5.43$, $P > 0.05$) (**Figure 2**). In addition, the positive predictive effect of grit on FLP in the high CE level group (simple slope = 0.28, $t = 5.31$, $P < 0.001$) was higher than that in the low CE level group (simple slope = 0.11, $t = 1.72$, $P < 0.01$) (**Figure 3**). This result shows that the positive predictive effect of grit on FLE and FLP increases with the increase of CE level. According to these results, then, it can be concluded that there is a mediating regulatory effect in the relationship between grit and FLP.

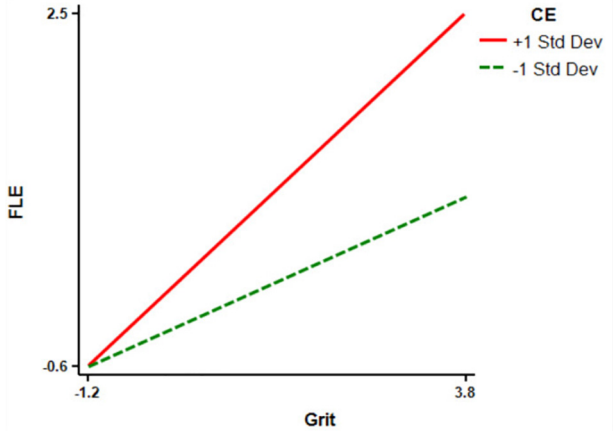

FIGURE 2 | Relationship between grit and FLE at different levels of CE. FLE, foreign language enjoyment; CE, classroom environment.

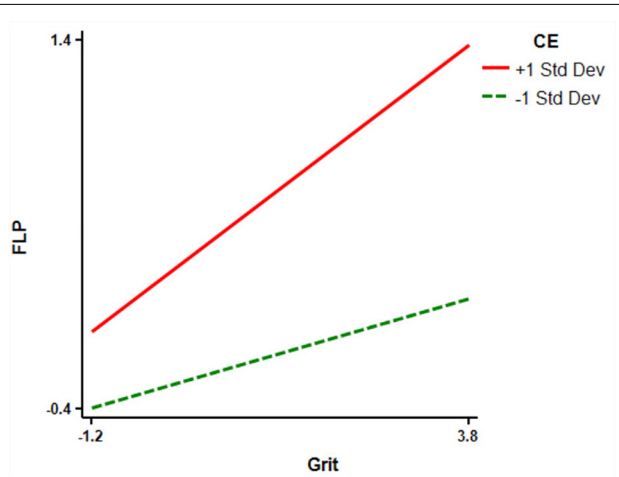

FIGURE 3 | Relationship between grit and FLP at different levels of CE. CE, classroom environment; FLP, foreign language performance.

DISCUSSION

This study examined the effect of grit on FLP through FLE and CE from the perspective of PosPsy. After controlling for gender and age, this study found that grit had a direct positive effect on FLE and FLP, which was consistent with previous studies (Perkins-Gough, 2013; Macnamara et al., 2014). Grit is an important positive psychological trait. Indeed, individuals with a high level of grit are thought to be able to maximize their abilities because they have higher concentration and are less discouraged by failures and setbacks (Credé et al., 2017). In the process of foreign language learning, individuals struggle to avoid various setbacks. This is especially true for middle school students, whose foreign language ability is still in the lower levels. Given that, many students' foreign language academic self-efficacy is low (Huang, 2012), while their foreign language anxiety level is high (Pappamihiel, 2002). In turn, this can make students put less effort into foreign language learning, therefore making it difficult for them to succeed in a foreign language at school. However, students with a high level of grit will persist in overcoming difficulties in foreign language learning and eventually achieve good academic performance (Aparicio et al., 2017; Lan and Moscardino, 2019).

This study also found that grit had a positive effect on FLP through FLE, consistent with our hypothesis. Previous studies had found that Chinese students have lower positive emotions in foreign language learning and higher levels of foreign language anxiety than American students (Dewaele and MacIntyre, 2014). One possible reason may be that most middle school students in China lack interest in learning foreign languages. Rather than being intrinsically motivated, most Chinese students learn foreign language mainly to pass exams and enter higher education (You and Dörnyei, 2016). Chinese students also face great pressure from their parents and social environment. In Chinese culture, education and filial piety are strongly emphasized (Essau et al., 2008). Children should try their best to meet their parents' requirements – especially with respect to a high academic performance. Therefore, for Chinese middle school students, grit plays an important role in their FLP by improving their FLE. Middle school students with high grit

are able to overcome difficulties and devote themselves to foreign language learning even under great external pressure.

According to the social cognitive theory of self-regulation (Bandura, 1991), students will evaluate their own behaviors, thus triggering positive or negative emotional reactions. When they make enough effort in foreign language learning, they tend to positively evaluate their own behaviors, thus producing positive emotional reactions, such as FLE. Enjoyment is a positive emotional feeling that stems from breaking through homeostatic limits and stretching beyond oneself to accomplish something difficult (Dewaele and MacIntyre, 2016). Both the broaden-and-build theory and the control-value theory emphasize the positive predictive effect of positive emotions on academic performance (Fredrickson, 2001; Pekrun et al., 2007). FLE can expand individual cognitive resources and make students' learning more efficient. In addition, FLE can also help learners gain positive power, relieve the pressure on foreign language learners, and promote their interest in foreign language learning (Piniel and Albert, 2018).

This study also found that CE has a significant positive predictive effect on FLP, consistent with previous studies (Baek and Choi, 2002; Patrick et al., 2007). In a positive CE, students can participate in classroom activities more actively, and teachers pay more attention to students (Anderson et al., 2004). Conversely, in a negative CE, teachers spend more time maintaining classroom order, and students are more easily distracted by the external environment. Dewaele and MacIntyre (2014) found that positive classroom activities could boost FL learners' levels of FLE.

Another interesting finding of the present study is that CE moderated the relationship between grit and FLE, and between grit and FLP. The results of the simple slope test showed that, in a good CE, students' FLE and FLP increase significantly with the increase of grit. However, in a poor CE, students' FLE and FLP did not increase significantly with grit. This result indicates that, although grit is a positive personality trait that can improve academic performance, in a negative CE, the influence of grit on academic performance will be reduced. Previous studies had found that grit does not always play a significant positive role in the prediction of academic performance (Macnamara et al., 2014; Paunesku et al., 2015; Steinmayr et al., 2018). One possible reason is the influence of environmental factors. In line with that, this study clarified that a good CE is an important factor in how positive personality traits, like grit, relate to academic performance. Additionally, in the present study, in a negative CE, the impact of grit on FLE was not significant. Previous studies have found that students' academic emotion is largely influenced by the CE; for instance, in a negative CE, even students with a high level of grit cannot enjoy their studies (De Smet et al., 2018).

In addition, gender and age as control variables also impacted the results. This study found that there was no significant correlation between age and our study variables. One possible explanation is ascribed to the homogeneity of participants. Although the age range of participants in this study was relatively wide, most students were between 12 and 14 years old in middle school. Moreover, this study found that gender was significantly positively correlated with Grit, FLE, CE, and FLP, namely females reported higher scores in those scales. Regression analysis also showed that gender had significant predictive effect on both FLP and FLE. The results indicated that we should pay more attention to the FLP of males, which can promote FLP by enhancing their Grit, FLE and CE.

The present study has some limitations. First, the study controlled for only two variables, gender and age. Other factors may also affect students' academic performance. Second, all measures except FLP were based on adolescents' self-report. The self-report of grit is not always reliable especially with such a young sample. Future research should consider gathering data through multiple methods. Third, during middle school, it is a transitional period from pre-adolescence to adolescence. As physical and psychological features dramatically develop, there is a possibility that FLP impacts the mechanism, which is contingent on developmental stage of adolescence. Future research can further differentiate the similarities and differences of FLP influencing mechanism between pre-adolescents and adolescents.

Despite the limitations, the findings still have important implications for foreign language learning for middle school students in China. The study results indicate that grit not only directly promotes the FLP of middle school students but also indirectly improves FLP by promoting FLE. Additionally, in the context of positive CE, the impact of grit on FLE and FLP increases, but in the context of negative CE, grit does not have any effect on academic performance at all. Teachers should pay attention to the cultivation of students' positive personality traits (such as grit) in order to stimulate students' positive academic emotions (such as FLE) and, at the same time, create a good learning environment (such as CE). In this way, students' academic performance can be improved.

DATA AVAILABILITY

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

This study was carried out in accordance with the recommendations of The Ethics Committee of Shihezi University with written informed consent from all subjects. All subjects gave written informed consent in accordance with the Declaration of Helsinki. The protocol was approved by The Ethics Committee of Shihezi University.

AUTHOR CONTRIBUTIONS

HW conceived the study, drafted the manuscript and revised the manuscript critically for important intellectual content. KG participated in and supervised data acquisition, drafted, and modified the manuscript. WW developed the study design, participated in and supervised data collection, performed the statistical analysis, and drafted the manuscript. All authors gave their final approval of the current version of the manuscript.

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REVIEW
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The Flowering of Positive Psychology in Foreign Language Teaching and Acquisition Research

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The present contribution offers an overview of a new area of research in the field of foreign language acquisition, which was triggered by the introduction of Positive Psychology (PP) (MacIntyre and Gregersen, 2012). For many years, a cognitive perspective had dominated research in applied linguistics. Around the turn of the millennium researchers became increasingly interested in the role of emotions in foreign language learning and teaching, beyond established concepts like foreign language anxiety and constructs like motivation and attitudes toward the foreign language. As a result, a more nuanced understanding of the role of positive and negative learner and teacher emotions emerged, underpinned by solid empirical research using a wide range of epistemological and methodological approaches. PP interventions have been carried out in schools and universities to strengthen learners and teachers' experiences of flow, hope, courage, well-being, optimism, creativity, happiness, grit, resilience, strengths, and laughter with the aim of enhancing learners' linguistic progress. This paper distinguishes the early period in the field that started with MacIntyre and Gregersen (2012), like a snowdrop after winter, and that was followed by a number of early studies in relatively peripheral journals. We argue that 2016 is the starting point of the current period, characterized by gradual recognition in applied linguistics, growing popularity of PP, and an exponential increase in publications in more mainstream journals. This second period could be compared to a luxuriant English garden in full bloom.

Keywords: emotion, positive psychology, foreign language acquisition, language learners, language teachers

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INTRODUCTION

Emotions are the heart of language learning and teaching, and yet they have largely remained in the shadows in the past decades of applied linguistic research. Swain (2013) argued, "emotions are the elephants in the room – poorly studied, poorly understood, seen as inferior to rational thought" (p. 195). Applied linguists may have underestimated the relevance of emotions in the past decades because of the dominance of cognitive perspectives (Sharwood Smith, 2017) and the false belief that the study of emotion is somehow unscientific. The situation is changing rapidly. Mackenzie and Alba Juez (2019) note that "across social sciences, scholars are recognizing the essential role of emotional phenomena" (p. 3) and they label this emerging interdisciplinary field as "emotionology" (back cover). This view concurs with the one in Prior's (2019) position paper on emotion in *The Modern Language Journal*. He argues that scholarly interest in the emotional dimensions of language learning, teaching, and use is booming and that it is about

time to acknowledge the presence of the elephant in the room. The time has come to study it in new ways in order to "open up this confined and crowded room and explore other spaces of language and emotional life" (p. 525). In their commentary on Prior's (2019) position paper, Lantolf and Swain (2019) observe that interest in emotion theory and research is spreading across disciplinary boundaries. Research on learner and teacher emotions is also reaching into the political sphere by focusing on hegemonic power relations (Benesch, 2017, 2018). In his own commentary of Prior's (2019) position paper, Dewaele (2019a) combined the elephant in the room metaphor with the adynaton "when pigs fly" (i.e., something that will never happen) to describe the current interest in emotion as the time of the flying elephants. It is important to point out that affect and emotion have figured more centrally in more teacher-oriented research since the turn of the century (Arnold, 1999; Avila-López, 2015).

Describing developments in a field in full expansion, while respecting a strict word limit, is a daunting exercise. We will start with a brief description of Positive Psychology (PP)[1] before adopting a broad chronological approach to describe the emergence of PP in applied linguistics. We distinguish two periods in which PP moved from the periphery to a more central position in the field. We decided to adopt a moderate level of granularity, including not just the most influential contributions but also those whose influence may only be felt in the future. Rather than appraising contributions critically on an individual basis, we opted for broad critical considerations at the end of the period, concluding with suggestions for further research. We will set the general academic context for the two periods, before distinguishing theoretical contributions (research agendas, theoretical considerations, overviews, assessment practices), empirical studies on learners and teachers, and PP intervention studies.

POSITIVE PSYCHOLOGY

The growing popularity of Positive Psychology (PP) in the last two decades has caused a powerful shift away from an exclusive focus on problems in general psychology. PP originated with a call in the second part of the twentieth century to pay more serious attention to the positive side of life (Lopez and Snyder, 2009, p. 4), though "In one sense, positive psychology is thousands of years old, dating back to the thoughts of ancient philosophers and religious leaders who discussed character, virtues, happiness and the good society" (Diener, 2009, p. 7). PP is the empirical study of how "normal" people live with the goal of helping them to thrive and flourish (Seligman and Csikszentmihalyi, 2000; Peterson, 2006; Csikszentmihalyi and Nakamura, 2011).

PP researchers do not deny the existence of problems, but complement them with "positive" topics such as flow, hope, courage, well-being, optimism, creativity, happiness, flourishing, grit, resilience, positive emotions, life longings, emotional creativity, strengths, wisdom, health, laughter (Lopez and Snyder, 2009). Seligman and Csikszentmihalyi (2000, p. 5) pointed out that PP research is founded on three main pillars: "positive subjective experience, positive individual traits, and positive institutions."

PP has had a unifying effect in the field as old agendas were put aside and psychologists from different backgrounds with common interests came together to focus on things that matter to "normal" people (Lopez and Gallagher, 2009, p. 4). Interdisciplinary perspectives are key to this research as well as science-practice integration: "practitioners are always either implementing empirically supported protocols, or helping generate the empirical basis for new programs. In this way, we could ensure that PP interventions remain firmly in the realm of science rather than pseudoscience" (p. 6).

Seligman et al. (2009) carried out an 18-month-long PP intervention after randomly assigning 347 year 9 students to Language Arts classes that contained a PP curriculum and a control group that did not have the PP curriculum.

PP exercises included instructing students "to write down three good things that happened each day for a week" and "helping students identify character strengths in themselves and others, using strengths to overcome challenges, and applying strengths in new ways" (p. 301). Compared to the control group, the group who had the PP intervention reported more enjoyment and engagement in school "(curiosity, love of learning, creativity)," and mothers and teachers reported, "improved social skills (e.g., empathy, cooperation, assertiveness, self-control)" (p. 301). The researchers then instructed 100 staff members of a school in Australia on the principles and skills of PP with the aim of raising the well-being of all students. They report, "the programme was enormously successful" (p. 304).

Seligman (2018) hypothesized that [positive emotion (P), engagement with activities that use one's character strengths (E), developing positive interpersonal relationships (R), finding meaning by serving a cause beyond oneself (M), and recognizing areas of accomplishment and achievement (A)] PERMA are the building blocks of well-being, which is the basis for flourishing. Individuals in such a state thrive, feel full of vitality, and prosper both at an individual and a group level. Seligman and Csikszentmihalyi (2000) positioned PP as a rigorous scientific approach: "Positive psychology does not rely on wishful thinking, faith, self-deception, fads, or hand waving; it tries to adapt what is best in the scientific method to the unique problems that human behavior presents to those who wish to understand it in all its complexity" (Seligman and Csikszentmihalyi, 2000, p. 7).

POSITIVE PSYCHOLOGY IN APPLIED LINGUISTICS

New Developments in the Periphery (2012–2015)

Context

One could argue that the seeds of PP fell on fertile ground in applied linguistics. Research into "affective" factors had blossomed,

[1]A description of the chronological development of PP lies beyond the scope of the present paper.

and many researchers focused on attitudes, motivation, and foreign language anxiety, which clearly had an emotional dimension, albeit slightly hidden from view, with a strong bias toward negative emotions (anxiety). Educational psychologists and teacher trainers had emphasized the importance of positive affect in foreign language (FL) classes (Arnold, 1999; Arnold and Fonseca, 2007; Arnold and Fonseca Mora, 2011) and the role of emotions in FL learning had been highlighted (Dewaele, 2005; MacIntyre et al., 2009; Bown and White, 2010; Puozzo Capron and Piccardo, 2013; Dewaele, 2015), but overall this type of research had remained somewhat in the shadow in a field dominated by a cognitive perspective (Sharwood Smith, 2017) and no connection had been established with PP.

Theoretical Contributions

Although a number of early papers had adopted PP variables in applied linguistic research (Egbert, 2003, 2004;[2] Tardy and Snyder, 2004; Rubio, 2011), the first paper to explicitly introduce PP research in applied linguistics was, not surprisingly, co-authored by a prominent psychologist and an applied linguist with a strong interest in foreign language (FL) teaching (MacIntyre and Gregersen, 2012). They refer to Fredrickson's (2001, 2003, 2006) "broaden and build" theory of emotions and its associated action tendencies. They report the five functions of positive emotions as follows:

> First, positive emotions tend to broaden people's attention and thinking, leading to exploration and play, new experiences and new learning. Second, positive emotion helps to undo the lingering effects of negative emotional arousal. A related, third function of positive emotion is to promote resilience by triggering productive reactions to stressful events, such as improving cardiovascular recovery and making salient feelings of happiness and interest while under stress. Fourth, positive emotion promotes building personal resources, such as social bonds built by smiles, intellectual resources honed during creative play, and even when young animals practice self-preservation maneuvers during rough-and-tumble play. Fifth, positive emotions can be part of an upward spiral toward greater wellbeing in the future, essentially the vicious cycle in reverse (MacIntyre and Gregersen, 2012, pp. 197–198).

Because emotions are semi-controllable, MacIntyre and Gregersen (2012) argued that teachers have the potential to influence students' emotions by appealing to their imagination and to help them notice the gap between their current and future selves. Teachers also need to create a safe environment where the influence of negative emotions is reduced. They proposed the technique to encourage students to use their imagination to modify negative emotional schema: "to reduce the intensity of conditioned negative-narrowing emotional responses that individuals associate with language learning by replacing it with a relaxation response when confronted with the negatively conditioned stimulus" (p. 205). The aim is not so much the complete absence of negative emotions, but rather the harnessing of the power of positive emotions in order to create a balance. Indeed, joy, interest, contentment, pride, and love allow students to learn better as they enhance their ability to notice things in the classroom environment and strengthen their awareness of language input. Being in a positive emotional state allows students to absorb the FL better and to erase the after effects of negative emotions. Finally, positive emotions help build students' longer term resiliency and hardiness to overcome future negative events. Gregersen (2013) explained that PP could be hugely beneficial for FL teachers and learners who could capitalize on positive affect while mitigating the effect of negative emotions, i.e., anxiety.

A special issue on PP, guest edited by MacIntyre and Gregersen, grew out of a symposium at the 2014 *International Conference for Language and Social Psychology* in Hawaii. MacIntyre and Mercer (2014, p. 154) refer to the saying that as a scholarly area "PP has been said to have a short history and a long past." Identifying the early adopters of PP in applied linguistics, MacIntyre and Mercer (2014) referred to Lake (2013) who "was one of the first to explicitly adapt and apply PP concepts" (p. 158) in his study of Japanese learners' positive self, positive English L2 self, self-efficacy, and intended effort. One could add that traces of positive emotion were already present in Horwitz et al.'s (1986) Foreign Language Classroom Anxiety scale with the item "I feel confident when I speak in English class," which was to be reversed to reflect anxiety.

MacIntyre and Mercer (2014) also considered the criticism aimed at PP, especially that formulated by Lazarus (2003) who disliked "(1) the over-use of cross-sectional research designs, (2) a tendency to treat emotion too simplistically as either positive or negative, (3) inadequate attention to both differences among individuals within a group as well as the overlap between groups when discussing statistically significant group differences, and (4) poor quality measurement of emotions" (p. 160). MacIntyre and Mercer (2014) argued that Second Language Acquisition (SLA) researchers might have an advantage over psychologists:

> In future studies, SLA research might be at an advantage over the discipline of psychology, having travelled much further down the road of recognising the genuine value in research that allows a variety and mixture of epistemological and methodological stances. SLA research has developed an openness to different understandings of empirical studies such as those employing systematic, rigorous qualitative research (p. 161).

Addressing Lazarus' (2003) criticism of cross-sectional designs and simplistic distinction between positive and negative emotions, MacIntyre and Mercer (2014) encourage researchers to look at emotions over different time scales, from the short term in seconds to the long term in years, and they point to the concept of "ambivalence" in SLA, where learners can

[2]The two papers are identical.

simultaneously experience a positive and a negative emotion. They also point to the social turn in SLA that has highlighted the crucial importance of contexts in SLA. Next, they point to the emerging interest in complex dynamic systems that is particularly useful in PP-inspired applied linguistic research, where multiple variables interact and fluctuate dynamically. Finally, they argue in favor of a combination of group-level perspectives as well as dense individual perspectives "that can describe in some detail the processes that lead to happiness, the protective force of learned optimism, or describe the most enjoyable facets of learning for a specific person" (MacIntyre and Mercer, 2014, p. 166).

The organization of the first conference on the *Psychology of Language Learning* (PLL) by Sarah Mercer at the University of Graz in 2014 also consolidated a fledging field. It gave veteran and younger researchers who had been working in this area the opportunity to meet and discuss PP concepts and to generate interest in the PP approach.

Empirical Studies

Among the contributions in MacIntyre and Mercer's (2014) special issue, Oxford and Cuéllar (2014) used Seligman's (2018) PERMA model to analyze the narratives of five university students learning Chinese in Mexico. A grounded-theory approach allowed them to identify the themes that did not entirely overlap with PERMA, namely "(1) emotions, (2) unification of engagement and meaning, (3) relationships within and across cultures, and (4) accomplishment" (p. 183).

Answering similar questions, but adopting a quantitative approach, Chaffee et al. (2014) investigated how 100 Canadian university FL students managed to sustain their motivation and love of the FL in a negative learning environment. Resilience and positive reappraisals were found to be the key to enjoy a difficult language learning experience with a controlling teacher.

In a large-scale mixed-methods study, Dewaele and MacIntyre (2014) used an online questionnaire to collect quantitative and narrative data from 1,746 FL learners from all over the world about their FL Enjoyment (FLE) and FL Classroom Anxiety (FLCA). They established that these are essentially separate emotion dimensions. Levels of FLE were higher – and FLCA lower – among more advanced students and those who felt that they performed above the group average. Cultural background and age also had an effect on FLE and FLCA with North American participants and older learners reporting more FLE and less FLCA while Asian participants and younger learners reported lower FLE and higher FLCA. Qualitative analysis of the feedback on the most enjoyable episodes in the FL class revealed that specific classroom activities that involved some degree of autonomy were the most frequently mentioned sources of FLE. Teachers who were supportive, positive, well organized, and happy and who could be funny and respectful of students boosted students' FLE.

In a study that included both FL learners and teachers, Gregersen et al. (2014) adopted a qualitative approach to examine how emotional intelligence played a role on perceived growth in the attainment of L2 possible selves among 19 American university students and pre-service TESOL teachers in a series of PP interventions over a 3-week period. A focused analysis of two participants, one student and one pre-service TESOL teacher, showed that they used emotional intelligence to deal with stressful situations and managed "to understand and integrate their experiences inside and outside the classroom as part of the language learning and teaching process" (p. 328).

Singing was at the heart of the PP intervention described in Murphey (2014). He reported how he taught his 155 Japanese students short English affirmation songlet-routines they would sing to others out of the classroom over a 4-year period. He found that "when we share important information we all can become more 'well' especially when that sharing involves us singing it together" (p. 225).

Falout (2014) argued that spatial factors in the classroom could contribute to a positive atmosphere. More specifically, circular seating arrangements that increase proximity to the teacher can boost a sense of trust, empathy, and belonging in the group of language learners as it creates an all-inclusive social action zone for the whole class.

Aguilar-Río (2013) combined classroom observation and subsequent interviews with one language teacher in order to understand the thoughtful planning and the emotional responses underlying her actions in an institutional context. Similarly, Gabryś-Barker (2014) presented a qualitative study of 50 EFL trainee teachers narratives and their perceptions of teacher enthusiasm and the positive impact it has through emotional contagion on teaching and learning success. She presents a list of verbal and non-verbal strategies that trainee teachers could adopt to overcome setbacks and become enthusiastic teachers.

Critical Considerations

We are aware that our review is not exhaustive, but it represents a sample to illustrate the rapid emergence and burgeoning of the new research area. In this early period, the majority of these PP studies linked positive (or negative) emotions to SLA or teaching with the aim of identifying their specific effects. It is striking that most designs were cross-sectional reflecting the first concern of Lazarus (2003) about previous work in PP. Dörnyei (2007) made a similar point about the preponderance of cross-sectional research in applied linguistics. Longitudinal research allows researchers to describe change over time and to dig into causality (p. 78). However, Dörnyei acknowledges that the amount of time and effort longitudinal research requires makes it less attractive for researchers who are under constant pressure to publish (p. 88). Moreover, it is easier to recruit participants for cross-sectional studies where only a single effort is required, in contrast with longitudinal designs where multiple data collection leads to considerable participant attrition. One consequence of the snapshot approach in the quantitative studies is that it is difficult to pinpoint causation. Considering Lazarus' (2003) second point about the simplistic categorization of emotions as either positive or negative, we would argue that valence being a universal dimension (Frijda, 1986), it is a legitimate way to categorize emotions, while remembering that ambivalence exists and that emotions can fluctuate quickly (MacIntyre and Mercer, 2014). Lazarus' (2003) third point about lack of attention to intra-group differences does equally not apply to the studies

we reviewed so far, where no single group was considered as homogeneous, and where the voices of participants were heard in the mixed methods and/or qualitative studies. Lazarus' (2003) final point about poor-quality measurement of emotions does not apply to the qualitative studies, but the psychometric qualities of quantitative research instruments were to be investigated in more detail in the next period. One distinguishing feature of the work in the early period is that it happened very much in the periphery. In other words, major journals were more likely to reject the new work, even if they had accepted work by the same authors on more traditional topics. Similarly, some of the work developed in the period was presented at major conferences, such as the annual conference of the *American Association of Applied Linguistics*, but proposals for panels on PP at the same conference were turned down.

The Flowering of PP Research in Applied Linguistics (2016–Present)

Context

Symbolically, one could argue that PP penetrated mainstream applied linguistics research with the organization of the second PLL conference at the University of Jyväskylä in 2016, where plans were made for the establishment of the *International Association for the Psychology of Language Learning* – which happened at the PLL3 conference at Waseda University in Tokyo in 2018. Also, the publisher, Multilingual Matters, agreed to establish a new book series entitled *Psychology of Language Learning and Teaching* with Sarah Mercer and Stephen Ryan as series editors, to give a unique place to contributions that would have otherwise have been placed in the more generic SLA book series. Two edited books in 2016 also heralded the official arrival of PP in mainstream applied linguistics. The first book was entitled *Positive psychology in SLA* (MacIntyre et al., 2016) with contributions that focused on "what makes language learning meaningful and fulfilling" (p. 4) The book editors conclude that "Positive psychology has an added dimension of practice and applications that can further inform both the teaching and learner development sides of SLA" (MacIntyre et al., 2016, p. 378). The second book, edited by Gabryś-Barker and Gałajda (2016) was entitled *Positive psychology perspectives on foreign language learning and teaching* and contained contributions by MacIntyre, Oxford, Gregersen, and Mercer as well as a number of prominent Polish researchers. From 2017, papers adopting a PP perspective in applied linguistics started appearing in more established and prestigious applied linguistic journals. Until then, new online journals such as *Studies in Second Language Teaching and Learning* had provided a perfect platform for the fledging area. As applied linguists grasped the potential that a PP perspective offered to their research, its popularity increased, its status grew, and what had until then been the early flowers announcing the arrival of spring, turned into an outburst of color and sweet smells of ever-expanding flower beds. A number of special issues and edited books appeared on learner emotions, and on learner and teacher psychology (Agudo, 2018; De Costa et al., 2018; Li, in press; Mercer and Kostoulas, 2018; Dewaele and Li, 2018; Dewaele, 2018; Berdal-Masuy and Pairon, 2019), to the point that White (2018) talked about the emotional turn in applied linguistics and TESOL, complementing Pavlenko's (2013) affective turn.

From 2016, the epistemological and methodological range of PP research in applied linguistics and TESOL expanded rapidly and further connections were established with existing concepts and theories on motivation. New dependent and independent variables were included in research designs.

Theoretical Contributions

Oxford (2016a) offered a general introduction of PP to applied linguists, using PERMA as a starting point for the development of her own EMPHATICS vision. The acronym stands for "Emotion and empathy, Meaning and motivation, Perseverance, including resilience, hope and optimism, Agency and autonomy, Time, Hardiness and habits of mind, Intelligences, Character strengths, Self factors (self-efficacy, self-concept, self-esteem, self-verification)" (Oxford, 2016a, p. 11).

Mercer (2016) focused on empathy in FL teaching and learning, arguing that it plays a central role in interpersonal skills and social relationships in the classroom. Indeed, empathy fosters appreciation of foreign cultures and peers among learners, and it allows teachers to engineer positive group dynamics that create an optimal classroom atmosphere. Falout (2016) followed a similar route, drawing on PP to investigate learners' past and imagined future selves in order to allow learners to reflect on their FL learning experience, to nurture positive emotion, and to build greater engagement, adaptability, and self-consistency.

Kusiak-Pisowacka (2016, p. 289) reflected on ways to implement PP principles in FL testing, with the aim of making "evaluation a positive experience for both learners and teachers." By adopting a positive approach to testing, and using less traditional techniques such as think-aloud protocols, interviews and conferencing with students, evaluation can become "a fruitful constructive learning/teaching situation" (p. 289).

MacIntyre et al. (2019a) set out an ambitious agenda for PP in applied linguistic research and sought to allay fears that PP focused exclusively on the positive. Their first point is that PP can strengthen the field by encouraging researchers to acknowledge that there are interactions between positive and negative phenomena and that equating the positive to "good/motivated/successful" and negative to "bad/unmotivated/unsuccessful" is simplistic as "language learners' and teachers' emotional and psychological experiences are complex and often conflicted" (p. 269). A second point is a resolute rejection of the deficit model in learners and teachers. Rather than obsessing about what FL learners and teachers lack, MacIntyre et al. (2019a) argue that it would be more fruitful to look at strengths and opportunities – without denying that problems may exist. Their third point is an acknowledgement that FL learning involves more than just a balancing of the positive and the negative at an individual level: "The complexity also extends to a perception of the learner as an individual who is set into a sociocultural context. Language learning and teaching are by their very nature intercultural experiences" (p. 269). In terms of epistemology, they argue in favor of "empirical and theoretical plurality" (p. 269), encouraging quantitative, qualitative, and mixed-method research, preferably with scholars and practitioners joining forces.

They call for "programmatic research on both the psycho-social and language development effects of PP Interventions" (p. 269).

Empirical Learner-Focused Studies

Since 2016, studies that focused on the first two pillars of PP (c.f., Seligman and Csikszentmihalyi, 2000) namely positive emotions and positive character traits have bloomed. Variables such as empathy, selves, flow, perseverance, motivation, engagement, perseverance, love, and passion have attracted widespread attention. One vibrant area that has expanded geographically and methodologically since its inception in the first period is the research on learners' FLE and FLCA. What these studies have in common is a desire for the findings to lead to improved educational practices allowing teachers to optimize the emotional climate in their FL classrooms in order to foster linguistic progress and well-being.

Self-concept was at the heart of Lake's (2016) investigation into a group of 212 first-year Japanese female students in a private university in Japan. Using Structural Equation Modeling, he found that characteristics at a global level, referencing the whole person, such as a positive self-concept, are not necessarily directly linked to L2 proficiency, but rather to an intermediate domain level where positive L2 self and L2 self-efficacy are located.

Ibrahim (2016) adopted a phenomenological approach to focus on enjoyment, directed motivational currents, and long-term engagement of 7 FL learners. The main source of happiness in learning the L2 came from the transformational process of personal growth, including skills, image, and identity.

Following up on previous studies on flow, Czimmermann and Piniel (2016) looked into Hungarian FL learners' experiences of flow and anti-flow (anxiety, boredom, and apathy) and found that the key for obtaining flow experiences is providing learners with sufficient time to build concentrated engagement with motivating tasks that are difficult, but manageable, and giving learners sufficient autonomy to execute them without teacher interference. Flow and anti-flow were also the focus of Dewaele and MacIntyre's study (in press) on 232 Spanish FL learners from around the world. Participants were found to experience significantly more flow than anti-flow in their classroom. Percentage of time in a state of positive flow was positively linked to a higher degree of multilingualism, high relative standing in the group, age, and number of years of FL study.

Belnap et al. (2016) focus on boosting the perseverance of 52 American language students by increasing their self-efficacy and self-regulating abilities during an intensive Arabic program in Jordan where they faced communication challenges. Material was collected through journals, interviews, and oral proficiency tests. Progress in proficiency was found to be positively linked to satisfaction with speaking Arabic.

Enjoyment and love were the focus of Pavelescu and Petrić's qualitative investigation (2018) into the experiences of four high school EFL learners in Romania. Two participants experienced strong and stable love toward English, while the other two participants reported enjoyment in their English language learning without being in love with English. Pavelescu and Petrić (2018) argued that love served as the fuel for the learning process, as it allowed learners to create effective coping mechanisms when some classes were not enjoyable and it helped them invest greater effort into the learning and the use of English in and out of the classroom. Passion was also the focus of the quantitative empirical study by Chen et al. (2019) with 260 high school L2 learners in Taiwan. The authors developed a process model linking passion and adaptive outcomes both *in* L2 as well as *outside* in one's life in general. Based on the Dualistic Model of Passion findings, demonstrated that being passionate about L2 learning provided positive benefits for both the learning of an L2 as well as heightening the well-being of learner in general. In a recent study on bilingual U.S. college students, Chen and Padilla (2019) found four important components (emotional, social, psychological, and linguistic) that are central to well-being and which contribute to flourishing.

Arguing that researchers should also consider the emotional experiences of language students outside the classroom, Ross and Rivers (2018) collected data through semi-structured interviews from eight university ESL learners in Australia. Ross and Rivers (2018) found that their participants' emotional experiences in English beyond the classroom were more intense than those inside the classroom.

Researchers have also been looking for sources of FLCA and ways to alleviate FLCA (Oxford, 2017). Jin and Dewaele (2018) considered the effect of learners' positive orientation and perceived teacher and student emotional support on FLCA of 144 Chinese EFL university students. Statistical analyses revealed that positive orientation was linked to significantly lower FLCA. However, while stronger perceived teacher support did not significantly lower levels of FLCA, stronger emotional support from peers was linked to lower levels of FLCA.

Dewaele and MacIntyre (2016) re-analyzed their 2014 corpus using Principal Components Analysis. They use the metaphor of left and right feet to describe learners' FLE and FLCA. This mixed-method study allowed them to identify two sub-dimensions of FLE, namely social and private FLE. Analysis of qualitative data showed that risk was inherent in enjoyable episodes and that FLE and FLCA do not behave in a seesaw manner, where the absence of one automatically boosts the presence of the other. Early studies on FLE and FLCA focused exclusively on the effect of learner-internal variables (Dewaele and MacIntyre, 2014). More recent work has also included learner-external variables in the research design in order to see which are better predictors of FLE and FLCA. Moreover, data were collected from single contexts (city or country) in order to have more homogeneity in the linguistic and cultural profiles of the participants and in the target languages. These latest studies pay particular attention to the dynamic interactions among a wide range of independent and dependent variables.

One such context-specific study was that of Dewaele et al. (2018b) who collected data on FLE and FLCA from 189 secondary school pupils in two schools in Greater London who had English as an L1 and were mostly studying French as a FL. A weak negative correlation was found between FLE and FLCA. Attitudes toward the teacher and teacher practices were found to have a much stronger effect on FLE than on FLCA. FLCA was linked to negative attitudes toward the FL,

lower relative standing in the peer group, and being less advanced in the FL. In contrast, FLE was strongly predicted by positive attitudes toward the FL, positive attitudes toward the teacher, frequent use of the FL by the teacher, a larger proportion of time spent on speaking during classes, a higher relative standing in the peer group, and being more advanced in the FL.

In a follow-up study, Dewaele and Dewaele (2017) used a pseudo-longitudinal design to see whether levels of FLE and FLCA, and their predictors, remained stable during secondary education. A comparison of the 12–13 year olds, the 14–15 year olds, and the 16–18 year olds revealed that FLCA remained unchanged while FLE increased slightly over time. A different set of independent variables predicted FLE and FLCA in the three age groups. In the youngest group, FLE was predicted by peers and FLCA by the self. In the middle group, FLE depended more on the teacher while FLCA was again predicted by the self. In the oldest group, FLE was very strongly predicted by the teacher while FLCA was predicted by peers. It thus seems that limited changes in mean levels of FLE and the stability in FLCA hid dynamic interactions between various psychological and sociobiographical variables in shaping learners' FLE and FLCA.

In a final follow-up study, Dewaele and Dewaele (in press) investigated to what extent FLE and FLCA vary at a single point in time when facing two different teachers for the same FL. Participants were a subgroup extracted from the complete sample, namely 40 students who had one main teacher and a second teacher for the same FL. FLCA was found to be constant with both teachers, but students reported significantly higher FLE with the main teacher. This corresponded with significantly more positive attitudes toward the main teacher, more unpredictability, and more frequent use of the FL in class by the main teacher, which are all predictors of FLE. Classroom-specific items linked to the teacher interventions to create a positive emotional atmosphere contributed to higher FLE scores. Items reflecting more stable personal and group characteristics varied much less between the two teachers. Dewaele and Dewaele (in press) conclude that FLE is a more fleeting classroom emotion while FLCA is more stable.

In addition to studies developed in Western contexts, an increasing number of studies on FLE and FLCA have been conducted in Asian countries. Intrigued by lower FLE and higher FLCA among Asian FL learners reported in Dewaele and MacIntyre (2014), researchers focused specifically on the uniqueness of FLE and FLCA in the Chinese context. Li et al. (2018) developed a Chinese Version of the FLE Scale and collected data from 2,078 Chinese high school students. Three factors emerged from a Principal Component Analysis: FLE-Private, FLE-Teacher, and FLE-Atmosphere. Participants reported that the teacher and to a lesser degree peers shaped their FLE.

Following this avenue of research, Li et al. (2019) investigated the relationship between FLE, FLCA, and EFL achievement of 1,307 Chinese EFL university students. A significant negative link emerged between FLCA and self-perceived EFL proficiency while FLE was significantly, positively, linked to self-perceived EFL proficiency, confirming earlier research (Piechurska-Kuciel, 2017; Dewaele and Alfawzan, 2018). The strength of the relationship between emotions and self-perceived EFL proficiency in Li et al. (2019) depended on the participants' proficiency level. FLE was a stronger positive predictor of self-perceived EFL proficiency than FLCA in the low proficiency group, where participants reported more FLCA and less FLE. In the medium and high proficiency groups, FLCA became a stronger predictor of self-perceived EFL proficiency. Participants reported that disappointing English test results and harsh criticism by the teacher inflated their FLCA while good test results, friendly words from the teacher, and good social standing boosted their FLE.

Similar patterns between FLE and FL achievement emerged in Jin and Jun Zhang's (2018) study of 320 Chinese EFL high school students. A three-factor solution emerged from a factor analysis of an adapted FLE scale: Enjoyment of teacher support, Enjoyment of student support, and Enjoyment of FL learning. FLE exerted both direct and indirect effects on students' achievement scores. Enjoyment of FL learning had the strongest effect on FL achievement with enjoyment of teacher support and enjoyment of student support having an indirect effect. The same authors developed a shorter version of their previous Chinese version of the Foreign Language Enjoyment Scale (Jin and Jun Zhang, 2019) claiming it showed a more solid dimensional division and better psychometric properties than Li et al.'s (2019) scale.

In another study with Chinese EFL learners, Jiang and Dewaele (2019) investigated to what extent levels and sources of FLE and FLCA of 564 Chinese students differed from FL learners outside China. While mean levels of FLE were found to be quite similar, FLCA levels were higher than in Dewaele and MacIntyre (2014). Relationships between learner-internal, teacher-related variables and levels of FLE and FLCA were generally comparable to those identified outside China, with the exception of a positive relationship between Chinese students' FLE and teachers' predictable behavior.

Stressing the importance of looking at other target languages beyond English, Dewaele et al. (2019b) focused on 592 learners of Turkish as a FL in Kazakhstan. Kazakh students' levels of FLE and FLCA in Turkish classes were found to be broadly similar to those reported in previous research. FLE in Turkish was found to be strongly predicted by attitude toward Turkish, followed by teacher-centered variables with little effect of learner-internal variables. The only slight difference with previous studies was that FLCA was weakly predicted by some learner-internal as well as teacher-centered variables.

The effect of the teacher on FLE and FLCA of 210 Spanish EFL students was the exclusive focus of Dewaele et al. (2019a). Teacher characteristics were found to explain more than twice as much variance in FLE than in FLCA. The strongest predictor of FLE was teacher's friendliness while the teacher's strong foreign accent in English lowered students' FLE. Participants reported more FLCA with younger teachers, teachers who were overly strict, and teachers who used little English in class.

The influence of political and historical context and the effect of the target language were at the heart of the investigation

of De Smet et al. (2018) on the FLE and FLCA of 896 Belgian francophone primary and secondary school pupils. They compared two target languages (English and Dutch) in two different types of school in francophone parts of Belgium. The first type was regular school where students were taught in French and where they had FL classes of Dutch and English. The second type was a school that had adopted Content and Language Integrated Learning (CLIL) and where some content classes were taught in Dutch or English. De Smet et al. (2018) found that CLIL pupils experienced significantly less FLCA than their non-CLIL peers, but that levels of FLE were similar. English elicited significantly less FLCA and more FLE than Dutch, which suggests that the historical and political context, and more specifically inter-group relations between the francophone and Dutch-speaking communities, as well as the type of school system, shaped FL learners' emotions.

In a study based on cross-sectional and longitudinal data from 108 Japanese EFL pupils, Saito et al. (2018) investigated to what extent FLE, FCLA, and motivation affected the development of comprehensibility in English over a period of 3 months. A factor analysis unveiled a three-factor solution similar to that reported in Dewaele and MacIntyre (2016) with FLCA, Social FLE, and Private FLE. Levels of Private FLE (but not FLCA) and a clearer vision of ideal future selves were significantly positively correlated with English use both inside and outside of the English classroom and with pupils' total frequency of English conversations. Students with the largest gains in comprehensibility in English reported significantly more Private FLE and less FLCA. An important finding was that Private FLE and Ideal L2 Self were independent predictors of gains in comprehensibility.

The following studies focused specifically on dynamic fluctuations and change in FLE and FLCA. Firstly, Boudreau et al. (2018) adopted the idiodynamic approach to measure fluctuation in FLE and FLCA on a second-by-second basis for about a minute. Ten Anglo-Canadian students completed speaking tasks in French L2 after which they viewed the recording of their performance and reported their levels of FLE and FLCA. Subsequent interviews about the reasons for the fluctuations allowed the researchers to understand local causes. Correlation analyses of the multiple FLE and FLCA values of each participant revealed that these veered from positive to negative and then to zero. High FLE momentarily coincided with low FLCA, but this relationship could shift completely a few seconds later. It confirmed the view that FLE and FLCA are independent dimensions. Participants explained in the interview that the fluctuations could be linked to difficulties in word searches, to momentary failure to control FLCA, to enjoyment or boredom in discussing a particular aspect of the task.

Dewaele and Dewaele (2018) adopted a more traditional quantitative perspective to measure the effect of FLE and FLCA on Willingness to communicate (WTC) of 189 British secondary school pupils who were studying a FL in London. FLCA turned out to be the strongest negative predictor of WTC. Weaker positive predictors of WTC were frequent FL use by the teacher, a positive attitude toward the FL, social FLE, and age. They concluded that teachers play a key role in boosting learners' WTC by generating a positive and supportive emotional classroom. Moreover, fostering linguistic and cultural interest in the FL encouraged learners to seize the opportunity to use the FL in front of their peers and teacher.

The same research questions guided Dewaele's (2019b) study on the predictors of WTC of 210 Spanish EFL learners. Here also, FLCA turned out to be the strongest (negative) predictor of WTC, explaining twice as much variance as FLE and teacher's frequency of use of the FL that were positive predictors of WTC.

Further research into the unique nature of FLE and FLCA explored the role of personality traits. Dewaele and MacIntyre (2019) collected data about FLE and FLCA from 750 FL learners from around the world. They found that FLCA was strongly predicted by the personality trait Emotional Stability and less so by Social Initiative. In contrast, FLE was strongly predicted by teacher-centered variables and less so by the personality trait, Cultural Empathy. Considering the relative effect of personality traits on FLCA and FLE, it turned out that they predicted about a third of the variance in FLCA (a large effect size) but only a tenth of variance in FLE (a medium effect size). This can be used to further the argument that FLE and FLCA might be weakly correlated, but that they are definitely separate emotions (c.f., Dewaele and MacIntyre, 2014, 2016). Moreover, an analysis of participants' stories about episodes of FLE and FLCA in class confirmed the statistical findings: they attributed FLE most often to the teacher while FLCA was mostly frequently linked to themselves.

In the latest development to improve the psychometric properties of the FLE questionnaire, Botes et al. (2019, unpublished) used exploratory and confirmatory factor analysis to re-analyze the dataset from Dewaele and MacIntyre (2014). A five-factor solution emerged, explaining close to half of the variance, with a first factor (FLE) that the majority of the items loaded onto and which explained close to a third of the variance. The items loading onto the next four factors were Personal Enjoyment, Social Enjoyment, Scholarly Enjoyment, and Teacher Appreciation. Botes et al. (2019, unpublished) concluded that FLE consists of a higher order general FLE factor with four first-order factors.

Budzińska (2018) pointed out that PP-inspired research in applied linguistics has privileged the first two pillars of PP, namely positive emotions and positive character traits, while the third pillar, the role of positive institutions, has been under-researched. Her ethnographic study of a Polish language school showed that the presence of happy and highly dedicated teachers who invested in their students' linguistic progress, as well as their emotional well-being, created an upward spiral for the institution. The institution did not seek to reduce negativity, but focused on expanding positivity (p. 51).

Teacher-Focused Studies

PP-influenced research also emerged in the field of FL teacher emotions with edited books and special issues (Agudo, 2018; De Costa et al., 2018; Mercer and Kostoulas, 2018; Gkonou et al., in press). Researchers focused on the many threats to teachers' emotional well-being (including teacher-internal variables such as their personality, classroom-specific variables

such as the behavior of student, and wide contextual variables such as the institution or the national education system).

Mercer et al. (2016) and Talbot and Mercer (2018) focused on language teachers' emotional well-being and the regulation strategies they use to manage their emotions in challenging situations. Similarly, Morris and King (2018) looked at how seven Japanese university teachers use emotion regulation strategies to deal with student apathy, classroom silence, misbehavior and difficult working conditions. In a follow-up study on the same database, Morris and King (in press) combined semi-structured interviews, classroom observations, and stimulated recall sessions to understand the dynamic interplay between context and their teachers' regulation of their own and their students' emotions, especially the negative ones, in order to fulfill their responsibilities, their teaching, and the maintenance of their own psychological well-being.

Emotion regulation was also at the heart of Oxford's investigation (in press) into five teachers and teacher educators' dynamic use of empathy, emotional intelligence, emotion regulation, and emotional labor to develop a "compass of emotion," comprising both positive and negative emotions, allowing them to strengthen their emotional well-being.

Trait Emotional Intelligence (TEI) was also a central independent variable in Dewaele and Mercer's (2018) study on 513 EFL/ESL teachers. Participants with higher levels of TEI reported significantly more positive attitudes toward students and enjoyed lively students more. Further research on the same database showed that higher levels of TEI were linked with better self-reported classroom management, pedagogical skills, and creativity (Dewaele and Li, 2018; Dewaele, 2018; Dewaele et al., 2018a). Dewaele (in press) found that teachers with high TEI were significantly more intrinsically motivated, had stronger identified regulation, and were less amotivated.

Li and Rawal (2018) showed that love toward the profession sustained a mathematics teacher in China and an English teacher in Nepal. Mutual love, understanding, and support between teachers and students was vital during classroom interactions and helped the teachers avoid being dragged down by work-related sociopolitical factors. A case study of a veteran English lecturer in China showed that Buddhist faith had a "transformative influence on both her emotional experiences and her identity development" (Ding and De Costa, 2018).

MacIntyre et al. (2019b) focused on the statistical relationships between 47 EFL teachers' levels of well-being, perceptions of stress, and personality profiles. They used the PERMA profiler questionnaire and a big five-personality questionnaire, the International Personality Item Pool (IPIP). They found that Emotional Stability was most strongly correlated with the PERMA dimensions. The correlation was positive and particularly strong with positive emotions (35% of shared variance) and was negatively correlated with negative emotions (31% of shared variance). The PERMA well-being score correlated significantly with four of the five personality traits (Agreeableness, Conscientiousness, Emotional Stability and Intellect). Only Extraversion did not correlate with teacher well-being. Considering the most frequent chronic stressors in their professional lives, participants listed heavy workload, financial stress, and long hours. Financial difficulties also topped the list of life event stressors in the past year.

Intervention Studies

The interventions in the current period are focused less on linguistic outcomes and more on learners' (and teachers') well-being, engagement, agentic feelings, emotional awareness, sense of control over their lives and ability to surmount obstacles. Such a mindset can play a crucial role in linguistic development for learners and professional development for teachers (Fresacher, 2016; Gabryś-Barker, 2016; Guz and Tetiurka, 2016; Helgesen, 2016; Hiver, 2016; Mercer, 2016; Oxford, 2016b). Interventions can include poetry (Piasecka, 2016); music (Fonseca-Mora and Herrero Machancoses, 2016), walking in the classroom space music (Mitchell et al., 2019), a combination of music, laughter, gratitude (Gregersen et al., 2016), gratitude, altruism, music, pets, exercise and laughter (Gregersen, 2016) or even helping others in order in order to get out of a self-focus (Murphey, 2016). Gregersen et al. (in press) used a cognitive reappraisal strategy during a moderately successful weeklong intervention with a single teacher-participant attempting to limit stress by highlighting the "silver linings."

In the concluding chapter of the book *Emotional Rollercoaster of Language Teaching*, King et al. (in press) point out that teachers' emotional resilience can be strengthened firstly by raising awareness of their own emotions and that of their students and, secondly, by helping them develop strategies to avoid stress and diminish the longer-term risk of burnout. Teachers, like martial artists, need a strong control of body and mind, and sufficient physical and mental resilience to face challenges in the classroom and in the institution (c.f., Benesch, 2017), in order to defend themselves if needed, and to remain humble and realistic about their skills and achievements. King et al. (in press) conclude that emotional regulation needs to be included in teacher education, both pre-service and in-service.

Critical Considerations

Most of the studies that incorporated constructs from PP in this second period aimed at understanding variation at an individual or at a group level in order to optimize students' or teachers' strengths and well-being, and to improve foreign language teaching and learning, and assessment as a result. Overall, it seems that researchers paid heed to MacIntyre and Mercer's (2014) exhortations, as studies in this period focused on emotions over different time-scales, confirmed the existence of ambivalent emotions, took into account the importance of contexts ranging from classroom to institution to country, and adopted a wide range of epistemological stances and methodological approaches. The influence of dynamic system theory permeated the field, with plenty of evidence emerging that learner and teacher emotions fluctuate dynamically depending on interactions between internal and external factors and may change over the longer term. Also, the number of studies adopting individual-level perspectives seems to be larger than those with group-level perspectives in the field of teacher emotions.

Some issues that have been pointed out in the past remain relevant today, including the danger of oversimplification of complex interacting processes in FL learning, such as telling unprepared FL learners that positive feelings are "the only path to greater proficiency" (Komorowska, 2016, p. 39). This danger is linked to the fact that research designs can only have a finite number of dependent and independent variables (c.f., Dörnyei, 2007) that can obscure the full panorama of interacting variables lurking in the background. Considering the second period, there seems to be a general trend toward more robustness, with development of psychometrically sound instruments and use of triangulation to zoom in on interesting phenomena. With cross-sectional studies dominating the field, it is clear that more longitudinal designs are needed in order to draw clearer causational conclusions (c.f., Lazarus, 2003). Also, case studies provide great insights but offer little generalizability (c.f., Dörnyei, 2007). We also feel that more PP-inspired interventional studies are needed in FL classrooms, using a wide variety of approaches, that seek ways to boost learners' linguistic skills as well as their well-being (MacIntyre et al., 2019a).

CONCLUSION

Providing a comprehensive overview of a field in full expansion is as difficult as trying to document the flowering of a thousand flowers, bushes, and fruit trees in a country park in spring sunshine, armed with a single camera. Inevitably, the views will be influenced by the photographer's knowledge of the lay out of the park and the actual journey through it. It will be further shaped by the photographer's predilection for certain spots, for certain colors, for certain contrasts between light and shade, for the presence or absence of water, of mist, of wildlife, or other visitors in the pictures. It is safe to assume that no two photographers would return home with identical pictures from the same park on the same day. While some central features would undoubtedly figure in the resulting albums of both photographers, composition, lighting, and perspective of pictures would be different. Moreover, because of restrictions on the maximum number of pictures, though decisions would have to be made on what to include and what to leave out. An album with 1,000 thumbnail pictures might be less attractive than one with fewer, but larger pictures. The commercial photo album promoting such a country park would not claim to be exhaustive, but would aim to raise awareness of its existence and maybe attract visitors to the park. Similarly, the current overview and special issue that it is part of aim to raise the profile of this emerging field of PP in applied linguistics in order to encourage teachers, students, and researchers to take a look and maybe to join us in the joyful quest for a better understanding of the complex workings of learners' and teachers' mind and hearts.

AUTHOR CONTRIBUTIONS

J-MD, XC, AP, and JL contributed to research design and literature review.

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Role of Bilingualism and Biculturalism as Assets in Positive Psychology: Conceptual Dynamic GEAR Model

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Are bilingualism and/or biculturalism good for a person's positive well being? A growing number of studies have shown different positive outcomes of being exposed to two cultures or speaking two languages respectively, but the benefits of being both bilingual and bicultural have rarely been investigated theoretically or empirically. The purpose of this paper is to summarize the main beneficial outcomes of bilingualism and biculturalism, and to integrate these benefits into a new conceptual framework: *Positive Bilingualism and Biculturalism GEAR model*. The GEAR model suggests that the beneficial outcomes of bilingualism and biculturalism can be systematically classified into four positive dimensions (psychological **G**rowth; cognitive **E**xploration; linguistic **A**wareness; and social **R**einforcement), in which there are dynamic interactions among these four dimensions. The hypothetical GEAR model provides an intricate theoretical approach to understand the potential benefits to an individual of experiencing more than one language and one culture in their life. The proposed model in this research offers a systematic framework for conducting future research to examine whether bilingualism and biculturalism accrue benefits to the individual.

Keywords: bilingualism, biculturalism, linguistic awareness, cognitive exploration, assets, positive psychology

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Frequently asked questions among scholars interested in bilingualism are, "How many people are bilingual worldwide? Why is bilingualism important both at the individual and societal level? What do we know about bilinguals that distinguish them from monolinguals? How are bilingualism and biculturalism interrelated? And, under what conditions are both bilingualism and biculturalism equally promoted? It is known that approximately half of the world's 7.4 billion people are bilingual (Grosjean, 2012). This should not be too surprising since with 193 countries and approximately 6,900 languages and with migration across borders for thousands of years it only makes sense that many people across the globe would find it necessary to speak more than a single language (Grosjean, 2010). Also of importance is that bilingualism can be found among people of all social classes and age groups. Globally, many countries are officially bi/multilingual (e.g., Canada, Belgium, and Switzerland). Although some countries have only one official national language, they may have a considerable number of bilingual speakers (e.g., France and Germany) (Wei, 2008). In one of the largest language surveys, 56% of Europeans (surveyed in 25 different countries) reported that they could use another language besides their mother tongue to communicate (European Commission, 2006).

An important question that must be asked before continuing is: who is bilingual? There is no standard definition of bilingualism (Grosjean, 1982; Anderson et al., 2018). Some researchers have strictly defined bilinguals as individuals who possess native-like control of two languages (Bloomfield, 1933), and who are equally fluent in both languages (Peal and Lambert, 1962). Other researchers hold a broader definition that consider a bilingual to be a person who is skilled in at least in one of the four facets of linguistic competences (i.e., speaking, listening, reading, and writing), even to a minimal degree in a second language. Thus, degree of bilingualism may vary in different skill dimensions (Macnamara, 1967). Other definitions suggest that bilinguals are individuals who can use two languages alternately, or produce meaningful utterances in two or more languages in order to satisfy some communicative need (see review in Grosjean, 1994). The latter points of view may better reflect the reality of bilingualism in society, because it is unusual to identify situations where linguistic skills in two languages are equally employed across the whole range of human discourse. Accordingly, bilinguals mainly use one or the other of their languages to achieve a specific purpose in different contexts, and unequal fluency in their languages is not uncommon (Grosjean, 2012). For our purpose here, we will refer to people with two (or more) language repertoires as bilinguals, regardless of possessing language skills in a second language with varying degrees of proficiency up to full fluency in both languages.

Types of bilingualism have been classified according to various criterion, such as degree of bilingualism (e.g., limited, partial, and proficient bilingual), balanced level (e.g., balanced and non-balanced), mastery skills of reception or of production (e.g., receptive bilingual and productive bilingual), age of language acquisition (e.g., early or late bilingual), sequence of language acquisition (e.g., simultaneous or sequential bilingual), and cognitive processing mechanism between verbal sign and mental image (e.g., coordinated bilinguals, compound bilinguals, subordinated bilinguals) (e.g., Macnamara, 1967; Cummins, 1979). Increasingly research has shown that different types of bilingual experience can affect a bilingual's developmental trajectory. For example, Crosbie (2014) suggested that those bilingual speakers who learn a second language in a bicultural context might possess a more developed sense of social justice, because of their increased unequivocal empathy for cultural diversity. Lee and Kim (2011) revealed that participants with a higher degree of bilingualism tend to perform better on creative thinking tasks. Researchers have also suggested that learning contexts can directly shape the cognitive abilities of bilinguals (Anderson et al., 2018).

Bilingualism is often important for satisfying a person's economic, social, educational, and political needs. Which is especially true when there is high interdependence between countries with mutual borders or when speakers of different languages reside within a common geographic area. In the United States, the lingua franca of the dominant group is English, but speakers of other languages who reside in the US must become bilingual, in order to participate fully in social activities and to gain access to educational, medical, and political resources. Thus, for linguistic minorities learning English, while also maintaining the heritage language and culture, is not only a basic survival need but also the vehicle of social status advancement and economic mobility (Citrin et al., 1990). In addition to the immigration-based need above, in today's global world with its linguistic and cultural diversity, and intercultural contact, many people become bilingual for their work in business, tourism, research, diplomacy, and media in response to the globalization-based demand (García, 2011).

The phenomenon of bilingualism and biculturalism has become increasingly more prevalent and has become the focal interest of research in social and cross-cultural psychology (Benet-Martínez et al., 2006). For some time, researchers have investigated the effects of bilingualism and have identified many linguistic and cognitive beneficial outcomes for bilingual speakers (Bialystok, 1988; Bialystok et al., 2009; Anderson et al., 2018), such as improved metalinguistic skills, better memory and visual spatial skills. On the other hand, different behavioral outcomes have been associated with biculturalism. For example, individuals who identify themselves as bicultural, meaning that they believe themselves to be behaviorally competent in two cultures also possess a set of interdisciplinary outcomes, such as higher levels of creativity, and attentional control in addition to their intercultural competence (Peal and Lambert, 1962; LaFromboise et al., 1993; Padilla, 2006). However, the joint impact for a person showing bicultural and bilingual competence has rarely been investigated systematically (Chen et al., 2008).

WHAT ARE THE BENEFICIAL OUTCOMES OF BILINGUALISM?

Early research on bilingual language development in children argued that exposure to two languages could be harmful to a child's language proficiency and verbal intelligence (Pintner, 1932; Jones and Stewart, 1951). However, Peal and Lambert (1962) showed that earlier research was flawed and that when controlling for confounding factors (i.e., SES, gender and urban-rural contexts), bilingual children performed better on verbal and nonverbal intelligence tasks than their monolingual peers. Since the publication of the Peal and Lambert (1962) study, a large number of empirical studies have demonstrated that bilingual exposure in childhood can have significant cognitive and social advantages. For example, many studies have reported that bilingualism was correlated with better conflict resolution and executive control/selective attention (see review in Bialystok and Viswanathan, 2009). Bialystok has conducted a series of studies on testing the executive functions of bilingual children, and she has reported that children who were raised speaking two languages showed advantages in nonverbal executive control over monolingual children (Bialystok and Martin, 2004; Bialystok and Viswanathan, 2009). Along these lines in a meta-analysis Adesope et al. (2010) found evidence to support the cognitive beneficial effects of being bilingual, including higher levels of attentional control, working memory, and abstract representation skills. Despite a wave of empirical studies that continue to support the notion of a cognitive benefit due to bilingualism across ages

(Chung-Fat-Yim et al., 2018; Thomas-Sunesson et al., 2018), some studies have questioned whether there is a bilingual advantage in executive processing (Paap and Greenberg, 2013; DeBruin et al., 2015). For example, Paap and Greenberg (2013) conducted three studies to compare the executive processing ability between bilinguals and monolinguals; their results showed no significant difference between these groups. Hilchey and Klein (2011) based on the results of numerous empirical studies found cognitive advantages due to bilingualism to be more apparent in middle-aged and elderly adults, but very small or even absent effects of bilingualism in children and young adults.

Among these mixed results, researchers further recognized that there is a range of hidden factors that can explain the inconsistent results regarding a bilingual cognitive advantage (e.g., different cultural and linguistic contexts, employing bilinguals with different language learning histories, use of different measurement tools and measuring indicators) (Hilchey and Klein, 2011; Paap and Greenberg, 2013; Torres and Sanz, 2015). For example, Hilchey and Klein (2011) offer an explanation that suggests that a wide range of cognitive advantages (e.g., executive processing) due to bilingualism are observable by using cognitive assessment tools, but not through the traditional nonlinguistic inhibitory techniques used in much of this research. In another example of a complex finding having to do with creativity, Kharkhurin (2010) found that bilinguals demonstrated higher levels of verbal creativity, but lower levels on nonverbal creativity.

Besides studies that have focused exclusively on bilingual cognitive advantages, other advantages of bilingualism should not be ignored. Previous research has also found that early bilingualism has a positive impact on metalinguistic awareness (Cummins, 1978; Bialystok, 1987, 2001b; Ricciardelli, 1992b), psychological adjustment (Chen et al., 2008), and subjective well-being (Tran, 1995). Furthermore, some research has pointed out that the effects of bilingualism were related to different factors. For example, children with stronger bilingual ability reported better psychological status (Tran, 1995); metalinguistic awareness performance could vary by the bilingual's level of proficiency in the language of testing; cognitive task performance could be different based on students' length of time in a bilingual immersion program (Bialystok and Barac, 2012). According to Cummins (1979) threshold theory, whether bilinguals actually demonstrate positive cognitive effects depends on their competences in both languages. In other words, a bilingual child may only experience the positive cognitive effects if s/he has reached a high level of linguistic proficiency in the languages. Lacking in the child bilingual research literature are studies that seek to understand the cross-dimensional relationships and beneficial outcomes that presumably exist when a child attains proficiency in two languages.

WHAT ARE BENEFICIAL OUTCOMES OF BICULTURALISM?

Similar to bilingualism, early social science views on biculturalism were also negative. For example, in some early research by the noted sociologist Park (1928), he argued that being mixed race and/or bicultural would lead people to suffer from psychological conflict, identity confusion, and normlessness. Concurring with this negative view, Stonequist, who published *Marginal Man* in 1937, maintained the idea that the bicultural person is best captured in the following quote:

> *The marginal person is poised in the psychological uncertainty between two (or more) social worlds; reflecting in his soul the discords and harmonies, repulsions and attractions of these worlds…within which membership is implicitly if not explicitly based upon birth or ancestry… and where exclusion removes the individual from a system of group relations.* (Stonequist, 1937, p. 8)

The breakthrough in our understanding of biculturalism did not occur until 1993 with the seminal paper by LaFromboise et al. (1993). In this paper, the authors reviewed the important literature on biculturalism and showed how various models of biculturalism have been used: assimilation model (Gordon, 1978), acculturation model (Padilla, 1980), alternation model (Ogbu and Matute-Bianchi, 1986), multicultural model (Berry, 1986), and fusion model (Weatherford, 2010). Building on these previous models, LaFromboise et al. (1993) recognized that acquiring bicultural competence could be a way to be bicultural without suffering negative psychological outcomes. In order to acquire and maintain competence in two cultures, an individual needs to develop a set of six skills: knowledge of cultural beliefs and values in each culture; positive attitudes toward both cultural groups; bicultural efficacy; communication ability; role repertoire; and a sense of being grounded in both cultures. According to this new perspective, an individual can demonstrate a high level of cultural competence in a second culture while also remaining tied to the culture of origin with the development of these six skills. With the development of greater competency in each culture, the higher the level of biculturalism the person attains and the more enabled they become to effectively manage the challenges of a bicultural existence.

Over time, researchers began to focus increasingly on the positive impacts of biculturalism and found that individuals who possessed behavioral competencies in more than one culture may have a higher capacity to detect and reorganize daily cultural meanings of each group to which they identify (Peal and Lambert, 1962). Psychologically, biculturalism may provide positive coping responses in a racialized society (LaFromboise et al., 1993; Padilla, 2006; Chen et al., 2008). Socially, bicultural individuals who have competence in more than one culture may increase their capability of social competence because by having dual cultural knowledge they are able to demonstrate more social flexibility in response to different social contexts, because of having access to both cultural communities (Feliciano, 2001). It should be noted that not all bicultural individuals experience the full range of positive outcomes; for example, the variations in bicultural identity integration (BII) do have different impacts on their beneficial outcomes, such as creativity (Benet-Martínez and Haritatos, 2005; Saad et al., 2013).

Although accumulated evidence supports the views that bicultural individuals tend to have more advantages socially and culturally, research is limited in showing the benefits in other social/behavioral domains. For example, people who switch more often between different cultural and social frames will have more complex cultural representations, higher ability to detect daily cultural meanings, and possess greater attentional control (Benet-Martínez et al., 2006; Saad et al., 2013). Individuals who identify with both home and host cultures have been found to demonstrate more creativity and to enjoy greater professional success than their monocultural counterparts (Tadmor et al., 2012).

Moreover, some studies have shown that these bicultural positive consequences can interact with each other. Feliciano (2001) found that drawing social resources from both cultures could then benefit bicultural youth for their academic success. However, these interactions have seldom been discussed in the literature. In order to fully capture the dynamics of bicultural experiences, researchers need to examine biculturalism from a multilevel and multidimensional perspective (Chao and Hong, 2007).

SUMMARY

Previous studies of bilingual and bicultural benefits have, however, been incomplete in three important ways: (1) limited exploration of bilingualism and biculturalism simultaneously for their joint effect on positive assets; (2) an ambiguous picture of the relationships among the positive outcomes of bilingualism and biculturalism, resulting from a large bias by focusing on a few aspects such as the cognitive benefits of bilingualism and positive social outcomes of biculturalism while ignoring other possible benefits; and (3) a dearth of studies designed to investigate how bilingualism and biculturalism are linked with each other.

THE NEED FOR A NEW POSITIVE THEORETICAL FRAMEWORK

To address the research gap described above it is of great importance to (1) combine the assets attributable to bilingualism and biculturalism in order to gain an overarching perspective of how they were work in unison; (2) examine the benefits of bilingualism and biculturalism in a more complex way, by extending how these benefits possibly influence other behaviors, which lend themselves to classifying these additional assets in a systematic way; and (3) explore the links and interactions among all positive assets. To accomplish these objectives, we propose to use tenets from positive psychology to offer a framework for uniting bilingualism and biculturalism.

Positive psychology (PosPsy) aims to investigate realistic ways of fostering more well-being in individuals and communities by promoting positive traits, happiness, and flourishing (Seligman and Csikszentmihalyi, 2000). Through PosPsy, researchers have sought to explore and promote the strengths and positive assets of human existence, instead of solely using psychology to prevent or intervene on social problems and weaknesses. Several asset-based models have been proposed. For example, the broaden-and-build theory by Fredrickson (2001) suggested that four resources (cognitive, psychological, physical, and social) can be developed by experiencing positive emotions that can enable the individual to become a better self. Keyes and Haidt (2003) also proposed three assets that lead individuals to flourish: emotional, psychological, and social well-being. Park et al. (2004) have applied the strength-based approach to investigate human well-being by identifying 24-character strengths (e.g., curiosity, social intelligence, gratitude, hope, optimism, humor, mercy, forgiveness, and sense of purpose) that can enhance individuals' life satisfaction. Consistent with the aim of PosPsy, the new theoretical framework that we propose here seeks to capture the important components of being bilingual and bicultural through new positive psychological lens. This new theoretical framework employs a positive psychological asset-based perspective to explore the beneficial outcomes associated with bilingualism and biculturalism, and to help language and culture researchers better understand the assets of bilingualism and biculturalism in a positive, complex, holistic, and dynamic way.

THE GEAR MODEL

This paper outlines a new, multidimensional model that envisions bilingualism and biculturalism as multilayered and interacting with each of its components. The Positive Bilingual and Bicultural GEAR model consists of four components: psychological, cognitive, linguistic, and social resulting in *psychological **G**rowth*; *cognitive **E**xploration*; *linguistic **A**wareness*; and *social **R**einforcement*. The model is shown below in **Figure 1**.

DESCRIPTION OF THE COMPLEX AND DYNAMIC GEAR MODEL

In this section, we provide a description of the assets associated with each component of the GEAR model.

Psychological Growth

There is a growing body of literature that indicates that bilingualism is closely related to one's psychological development. First, language learning is viewed as a key factor associated with self-related constructs [e.g., self-confidence, self-concept, self-esteem, self-efficacy, and identity (Duff, 2007; Mercer, 2011)]. As a result, bilingual individuals may have different self-structures in their different languages; the use of a particular language is associated with the relevant specific cultural frame in which the language is embedded. This cultural belief system may promote different self-concepts depending upon the culture (Wang et al., 2010). Mercer (2011) further suggested that a bilingual learner's self-concept could be a complex, multilayered,

FIGURE 1 | It depicts the GEAR model and the interconnectedness between the four components that comprise bilingualism and biculturalism.

multidimensional network of interrelated self-beliefs; it is dynamic and also relatively stable according to its types and forms.

The language we use as a mother tongue connotes who we are culturally and linguistically and this provides the nurturance and stability necessary for a person's healthy development and fulfillment (Padilla and Borsato, 2010). Similarly, a person who is bilingual and/or bicultural reflects a person who identifies as a member of two linguistic and/or cultural groups. An individual's self-concept is closely related to their language group emotionally and socially (Fielding, 2015). Benet-Martínez et al. (2006) show that the experiences that a bicultural person has are often determined by their skin color and phenotype, learned observable behaviors, their accent, and how these are received by members of either of their two cultures. This also has the potential of affecting their self-concept. In line with this, bicultural identity research has found identity to be positively related to self-concept and negatively related to psychological discomfort (de Domanico et al., 1994; Clark and Flores, 2001).

Second, a large body of bilingual and bicultural research has shown that learning a second language could contribute to one's psychological well-being. For example, Oxford and Cuéllar (2014) found that learning Chinese can help Hispanic students to self-discover, and to enrich positive emotions associated with activity engagement, relationships, meaning, and accomplishment. In other words, learning as a second language can be viewed as a powerful life experience of openness to new a culture and its people, history, values, and artistic expressions. Furthermore, highly strategic language learners may reflect more positive outcomes related to well-being, such as resilience and hope (Oxford, 2014). Historically, the bilingual person has served as the intermediary through translation between monolingual members of different cultures. Accordingly, the bilingual and bicultural person experiences both personal and communal recognition for the ability to navigate across linguistic and cultural barriers in ways that provide positive experiences and psychological growth.

Cognitive Exploration

Accumulating research on bilingualism shows that bilingualism is an experience that has significant consequences for cognitive performance, such as conflict resolution (Bialystok et al., 2009), mental flexibility, and creative and divergent thinking skills (Lazaruk, 2007; Adesope et al., 2010). As explained by Lubart (1999), language, as a vehicle of culture, can shape creativity. Bilinguals may have a greater diversity of associations to the same concept and diverse ways to encode and access knowledge, so that they may have a more flexible and creative approach to know the world. It should be noted that several factors can lead to different degrees of creativity among bilinguals, such as second language proficiency, age of second language acquisition, input (e.g., formal vs. informal) of second language, pedagogical content of the second language, and a bilingual's personality characteristics. As reviewed by Ni (2012), a higher level of bilingual creativity is related to greater second language proficiency (Ricciardelli, 1992a; Lee and Kim, 2011), earlier age of acquiring the second language (Cushen and Wiley, 2011), more appropriate selection of pedagogical content in language class (Fleith et al., 2002), and an extrovert personality (Leung and Chiu, 2008).

Besides creativity, a recent study also found greater divergent thinking abilities among a group of foreign language learners, when compared to non-foreign language monolingual peers (Ghonsooly and Showqi, 2012). Moreover, these cognitive advantages may further contribute to their academic outcomes. Collectively these studies support the initial findings of Peal and Lambert (1962) that showed French-English bilingual students in Montreal had better academic performance than their French or English monolingual peers.

In terms of biculturalism, bicultural individuals may have higher levels of cognitive complexity than their monocultural counterparts. Knowledge of more than one culture may increase people's ability to detect, process, and organize everyday cultural meaning. Accordingly, the bicultural individual may be more able to flexibly shift their behaviors in culturally appropriate ways depending on the cultural environmental context (Chao and Hong, 2007). Moreover, different types of biculturalism may be related to different outcomes. For example, bicultural individuals who perceive their two cultural orientations as somewhat conflicting and incompatible think in cognitively more complex ways about their cultures than those who perceive their two cultural orientations as compatible. Benet-Martínez et al. (2006) have suggested that if a bicultural person perceives their two cultural orientations as conflicting and dissociated, they might make more effort to encode the cultural information than those who perceive their cultural identities as more integrated. More complex cultural representations among biculturals with lower levels of cultural integration suggest that the development of cultural schemas is of necessity richer in content, more differentiated and integrated. Further research is required to better understand the dimensions under which bilingual and bicultural individuals must develop their linguistic and cultural competencies.

Linguistic Awareness

Linguistic awareness entails an understanding of how a language works and as such is divided into numerous subcategories such as: phonological, semantic, syntactic, and pragmatic awareness. With development, the learner becomes increasingly able to engage in a cognitive process of thinking about the use of language – known as "metalinguistic awareness." With metalinguistic ability, the learner is able to see language as a code that is separated from the symbolic meaning of words. Metalinguistic awareness is the conscious understanding of the properties of language and how language is used to communicate with other interlocutors through either speech or written language. As children learn to speak their home language, they become increasingly more capable of monitoring and controlling their use of language. This becomes crucial in the learning of two languages by child bilinguals or in the learning of a second language once a first language is established.

Accumulating evidence has shown that bilingual individuals perform better on metalinguistic awareness tasks than their monolingual peers in terms of word awareness (Cummins, 1978), grammatical (syntactic) awareness (Galambos and Hakuta, 1988; Galambos and Goldin-Meadow, 1990), and phonological awareness (Rubin and Turner, 1989). These linguistic advantages were found not only among fully functional bilingual children but also children who had some bilingual immersion program experience and were still in the process of becoming bilingual (Bialystok et al., 2014). Moreover, these advantages may have differential effects on different linguistic domains. For example, learning two languages may increase one's "ear" or phonological awareness for regularities of form, but have no effect on grammatical or syntactic awareness for regularities in syntax among early bilingual children (Galambos and Goldin-Meadow, 1990).

Previous research provides evidence that bilinguals' level of metalinguistic awareness varies by language proficiency among bilingual speakers (Bialystok et al., 2003) and by different combinations of bilingual types, such as Spanish-English or Chinese-English bilinguals (Bialystok et al., 2003). Research on bilingualism has also shown that a bilingual's metalinguistic awareness can impact their language performance in both languages, such as reading and vocabulary knowledge (Cheung et al., 2010), as well as their ability to acquire a third language (Thomas, 1988). The issue here is that once we learn a second language we have a better grasp of how languages work and as a consequence have a deeper understanding of the metalinguistic skills that differentiate languages. Another feature of bilingualism is that the person who is proficient in two or more languages possesses a richer appreciation of subtleties between how languages are used in different contexts. A common practice among bilinguals that demonstrates the full impact of linguistic awareness is code-switching. According to Luna and Peracchio (2005), code switching is a way of communicating with language selection, and the change of language choice reflects the shift of individual's social identity. Because bilinguals possess a richer store of linguistic assets or "codes" (e.g., languages, dialects, styles, and registers), bilinguals possess higher levels of sensitivity for selecting codes according to different linguistic and cultural contexts. The ability to switch linguistic codes with ease often observed among bilinguals reflects the speakers' awareness of the functions of language variation in social interaction (Nilep, 2006). Therefore, linguistic and metalinguistic awareness are assets that many bilinguals demonstrate on a daily basis in their home and in their community of other bilingual speakers. Code-switching has been studied by sociolinguists who have shown that the rich switching between languages in bilingual dialogue is not random, but rather is a manifestation of a better understanding of the functional use of languages. This is counter to the earlier view that language mixing or Code-switching was a marker of a speaker who did not have command of either language and was used as an argument for not encouraging early child bilingualism (Alderson et al., 1997).

Moreover, a person's metalinguistic ability can interact with their cognitive abilities in varying ways (Bialystok et al., 2014). For example, Bialystok (2001a) has shown that bilingualism can enhance a child's metalinguistic awareness, especially in tasks where a high level of executive control is required. In other words, a bilingual's level of executive control may also determine their metalinguistic ability on a linguistic task.

Social Reinforcement

Research on the social effects of bilingualism has consistently shown that speaking more than one language increases one's ability to respect more linguistic and racial diversity (Dagenais et al., 2008; Little, 2012; Parys, 2015). This should not come as a surprise because languages are intertwined with cultures. Proficiency in two or more languages demonstrates that the person has a firmer grasp of diversity on different levels

because the ways in which people of different cultures interact are represented in how language is used in social discourse. In addition, the person who is proficient in two or more languages has more opportunities to interact with more diverse social and cultural groups than his/her monolingual counterpart, who is more restricted in social contacts. Language brokering is a prevalent language contact phenomenon in bilingual children who often are called upon to serve as informal translators for their family and community members (Shannon, 1990). This brokering or translating experience serves to reinforce the social connection within the bilingual heritage ethnic group, as well as between the heritage and mainstream ethnic groups. Language-brokering activities create opportunities for parents and other adult family members to teach their heritage culture, practices, values and traditions to their bilingual children. This activity fosters bilinguals' ethnic identity and their sense of belongings within their family's ethnic group (Weisskirch et al., 2011). Children who serve as bilingual language brokers play an important role in easing their families' connections to the mainstream society by opening their families' access to resources and information in various domains (e.g., medical, educational, and work; Orellana et al., 2003). Moreover, for bilinguals themselves, the task of language brokering increases their level of social self-efficacy and acculturation in mainstream society (Love and Buriel, 2007). The ability to serve as a language broker is an another example of an asset brought on by bilingualism since the ability to serve as a linguistic and cultural broker reinforces the social connection by bringing together people of different ages and backgrounds who otherwise might not interact with each other and thereby facilitating communication in a positive way across language barriers within and between ethnic groups.

As observed above, previous research has suggested the potential interaction between these four components (i.e., psychological growth, cognitive exploration, linguistic awareness, and social reinforcement) in general. For example, self-esteem contributes positively to one's creative and divergent thinking (e.g., Deng and Zhang, 2011; Cantero et al., 2016; Wang and Wang, 2016). However, individuals with higher levels of explorative cognition, such as cognitive flexibility or divergent thinking skills, tend to experience more self-esteem and life satisfaction (Kim and Omizo, 2005). Similarly, in the context of bilingualism and biculturalism, deep experiences with two languages and cultures enable bilinguals and biculturals to express greater cognitive flexibility, allowing them to better adopt and adapt to challenges of living in multicultural contexts, which in turn promote a more wholesome psychological development. In return, individuals with greater resilience and positive psychological perception toward self, might be more willing to explore cognitively and socially, rather than hold back because of the concern over failure and social rejection (e.g., Zeigler-Hill et al., 2015).

Furthermore, research has demonstrated the existence of a relationship between linguistic awareness and social reinforcement. For example, bilingual individuals with a higher sense of linguistic awareness are more capable of switching the appropriate registers based on different linguistic and cultural environmental contexts and in so doing are better able to engage in interpersonal communication across linguistic and cultural boundaries that reinforce the connections within and between different communities (e.g., Love and Buriel, 2007).

In recent years, language teachers have also begun to couple second language instruction with service learning, where students can use their newly acquired language in an authentic context, which increases a learner's civic responsibility (O'Brien, 2017) and social link with the global world (Caldwell, 2007). Learning a second language allows students to make more connections with a broader array of people across the globe (Melin, 2013) while also enriching their sociocultural ability (Wang et al., 2010). Importantly, Sung (2016) has shown that second language learners with high integrative motivation for learning a new language display open-minded attitudes toward speakers of the other language. These learners are highly motivated to seek out people, who speak the target language they are learning. In addition, research shows that these learners are also interested in the culture associated with the new language. They want to learn the language for the sake of the language and the culture and not for an instrumental motive like enhancing their employability. These learners may have significant others such as close friends or family members who speak the language, with heritage language learners typically having a particularly strong integrative motivation for learning the home language. Studies have found that language learners who possess integrative motivation are more successful language learners and attain higher levels of proficiency in the new language than those who merely want to learn the language for some instrumental advantage such as gaining college admission or securing employment (Gardner and Lambert, 1972). Furthermore, higher levels of motivation in second language were also related to one's higher self-perception of global competence (Semaan and Yamazaki, 2015).

Because language is a vehicle to understand culture, speaking a second language and experiencing its culture allow students to better understand and appreciate other cultures. Accordingly, bilinguals are typically more welcoming of diversity, whether cultural or linguistic, than their monolingual counterparts. This awareness of difference and diversity may contribute to decreasing stereotypes and implicit bias between groups of people while allowing for the development of rich interpersonal relationships that extend beyond social or cultural boundaries (Forsman, 2010). Bilingual and bicultural individuals have this capacity. Their openness to diversity allows them to enjoy and experience higher levels of intercultural communication with more people than individuals who must understand their world though a single language filter. As O'Brien (2017) suggests, bilingual speakers tend to demonstrate higher empathy and are more likely to advocate for social justice. In addition, individuals who learn a second language in a bicultural context may also have a more developed sense of social justice because of their increased empathy for culturally diversity (Crosbie, 2014).

In short, bilingualism and biculturalism serve as additional positive and meaningful assets for connecting with a broader community of people from different cultures and linguistic backgrounds. As a result being bilingual and/or bicultural can

contribute to reinforcing one's social bond and build positive relationships with people from different cultural backgrounds.

UNIQUENESS OF GEAR MODEL

There are many benefits associated with bilingualism and biculturalism; however, what is lacking is a coherent framework within which to understand the relative importance of these different types of benefits, and the possible interactions among their assets. Based on previous research, we propose our GEAR model as a useful conceptual tool for researching the unique assets of being bilingual and bicultural within the framework of three unique characteristics as discussed below.

First, the Gear Model evolved as an attempt to resolve the disorganized situation that currently exists in the literature on the benefits of bilingualism and to do so by using a positive asset based model. This model offers a different lens through which to study and to understand the benefits to individuals who are bilingual and/or bicultural. The goal is to classify and systematize these assets into a framework that enables us to better discuss the advantages of bilingualism and biculturalism. Although it is commonly known that language and culture are closely interrelated, we use language to communicate our thoughts and feelings, to connect with others, to identify with our culture, and to understand the world around us. Little research investigates the intricacies between bilingualism and biculturalism (Chen et al., 2008). The hope is that the GEAR model will serve as a bridge between bilingualism and biculturalism research by summarizing their common and differential effects on human behavior.

Second, the core of the model is to understand the beneficial outcomes of bilingualism and biculturalism using a positive psychological framework. The GEAR model combines bilingualism and biculturalism and examines their assets from an overarching positive perspective (i.e., psychological growth, cognitive exploration, linguistic awareness, and social reinforcement) that focuses on aspects of the human condition, which culminates in personal happiness and the feeling of flourishing (Linley et al., 2006). In other words, an understanding of the interdependence between bilingualism and biculturalism will result in a higher level of fulfillment and accomplishment since it is not necessary to make a decision favoring one language or culture over the other.

Third, our GEAR model extends the discussion of possible beneficial outcomes related to bilingualism and biculturalism in a broader way. The psychology surrounding biculturalism and bilingualism is a complex phenomenon that has evolved over time from a past negative perspective to a more recent focus that emphasizes the advantages of bilingualism and biculturalism. In addition, earlier research that focused on single impacts of bilingualism or biculturalism in certain domains, but the GEAR model provides a positive and holistic framework to look for the beneficial outcomes in a more complex way, as well as the links between the four proposed outcomes. The GEAR model aims to consider bilingualism and biculturalism as resourceful agents with their respective associated assets interacting with each other dynamically and in return promote a more positive bilingual and/or bicultural individual. Ideally, this dynamic perspective can result in original insights and a more comprehensive understanding of how bilingualism and/or biculturalism affect the individual in positive and psychological growth enhancing ways.

CONCLUSION

In sum, the GEAR model proposed here covers a broad array of literature on the positive benefits of bilingualism in the cognitive and linguistic domains of everyday life. While we acknowledge that not every study supports all the tenets of the GEAR model, we believe that overall, the literature is quite robust in favoring the positivity surrounding bilingualism and biculturalism. Hence, the GEAR model is a viable conceptual framework and tool to investigate and highlight the positive effects of being bilingual and bicultural, which takes relevant benefits into account. Based on the proposed model, we believe that bilingualism and biculturalism can lead to a set of interrelated personal assets in psychological, cognitive, linguistic, and social domains that enrich the lives of people because they have multiple channels of communication and lenses through which to interpret their daily experiences. We maintain that individuals who are bilingual and bicultural and who take an active role in the process of becoming bilingual and bicultural are more likely to experience a richer set of positive life outcomes (e.g., happiness, life satisfaction) than individuals who remain tied to a single language and culture or who give up a heritage language/culture in favor assimilating into a dominant language/culture.

FUTURE RESEARCH

Future research in bilingualism and biculturalism might consider applying the GEAR model as a theoretical framework to systematically analyze the beneficial intersections of being bilingual and bicultural. Empirical studies are needed that examine in methodologically sound ways the precise positive outcomes identified in the four components proposed by this model and which do so across different cultures where bilingualism and biculturalism are the norm or not. Several research paths are possible. In terms of the separate effects of bilingualism and biculturalism, it would be interesting to investigate the extent to which cognitive and psychological outcomes differ between bilingual and bicultural individuals. For example, researchers might explore the same outcomes by comparing bilingual subjects who are not bicultural (e.g., Catalan Spaniards who speak both Catalan and Spanish, but who are culturally Spanish), and those who are bicultural but not bilingual (e.g., many later generation Latinos in the USA). This might provide a clearer picture of the unique contribution of bilingualism and biculturalism in people's life.

In terms of the joint effects of bilingualism and biculturalism, more research is needed to identify the extent to which different combinations of bilingualism and biculturalism are linked and

how the beneficial outcomes may be attributable to each, such as higher bilingualism with lower bicultural identity or vice versa. For instance, in a multicultural country with people of mixed cultural heritage, early/native bilinguals are usually bicultural such independent with simultaneous bicultural bilingual identity could demonstrate beneficial effects in line with the GEAR model, which may be different from bilinguals who merely acquire their second language in a monocultural context. Thus, the proposed GEAR model could provide researchers with a framework to explore the main dimensions of the positive outcomes across different types of bilingual and bicultural group configuration. Future studies that are designed to provide empirical support across linguistic and cultural contexts to triangulate the positive benefits of bilingualism and biculturalism in a more complex and in-depth way are strongly encouraged.

Similar to the idea proposed by Ortega (2013), bilingual and bicultural researchers have been very good at asking what the other sciences can do for the study of language and culture. As the field enters the twenty-first century, it is time now to ask how our deeper understanding of bilingualism and biculturalism can contribute to how language and culture are taught in schools, why people hold strong allegiance to heritage languages and cultures, how better second/foreign language teaching and learning can contribute to enhancing intercultural communicative competence, and how second/foreign language teaching can do more for individual learners beyond the simple linguistic acquisition of a new language through a greater emphasis on the culture behind the language. By focusing on the benefits of bilingualism and biculturalism together, we are in a better position to reflect on how to assess what constitutes good second/foreign language teaching and learning in a more complete and intricate way.

AUTHOR CONTRIBUTIONS

XC designed the research and drafted the paper. AP designed the research and revised on the paper.

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Positive Psychology Broadens Readers' Attentional Scope During L2 Reading: Evidence From Eye Movements

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While positive psychology has drawn increasing interests among researchers in the second language (L2) acquisition literature recently, little is known with respect to the relationship between positive psychology and mental processes during L2 reading. To bridge the gap, the present study investigated whether and how positive psychology (self-efficacy) influences word reading strategies during L2 sentence reading. Based on previous studies, eye-movement patterns with first-fixation locations closer to the beginning of a word can be characterized as an attempt to process the word with a *local strategy*, whereas first-fixation locations farther away from the beginning and closer to the center of a word can be considered as an attempt to use a *global strategy*. Eye movements of a group of Japanese learners of English (N = 59) were monitored, and L2 reading self-efficacy was used to assess the participants' positive belief toward their L2 reading skills. Based on Fredrickson's (1998) broaden-and-build theory, we predicted an effect of L2 reading self-efficacy on participants' first-fixation locations. Results from mixed-effects regression showed that while reading strategies depended in part on other factors such as L2 reading proficiency and word properties, L2 self-efficacy influenced reading strategy. The present data suggest that while more self-efficacious L2 readers prefer a more efficient global strategy, attempting to read the word as a whole word, less self-efficacious L2 readers tend to employ a local strategy, focusing more on sublexical information. These findings lend support to the broaden-and-build theory in the context of L2 processing. The present study has implications for how positive psychology works along with L2 proficiency in the development of strategic selection during reading.

Keywords: L2 reading, self-efficacy, positive psychology, reading strategy, first-fixation location, eye movement

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INTRODUCTION

While negative emotions, predominantly anxiety, have been the center of research interest in the second language (L2) acquisition literature until recently, researchers have also shed light on the role of positive psychology, arguing for a more comprehensive perspective on the dimensions of emotions that encompasses the effects of both negative and positive emotions on L2 learning

(e.g., MacIntyre and Gregersen, 2012a,b; Dewaele and MacIntyre, 2014; MacIntyre and Mercer, 2014). One early study, from Lake (2013), reported that measures for L2-related positive psychology and L2 English proficiency were positively correlated among Japanese college and university students, a finding supported by subsequent studies focusing on foreign language enjoyment in the classroom (Dewaele and Alfawzan, 2018; Saito et al., 2018), suggesting a beneficial effect of positive psychology on the development of L2.

Apart from the link between positive psychology and L2 proficiency/L2 test performance, some studies have also focused on the relation between positive psychology and L2 behavior, reporting that foreign language enjoyment enhanced L2 learners' willingness to communicate in the classroom (Dewaele and Dewaele, 2018; Khajavy et al., 2018). These findings are in line with Fredrickson's (2001) notions on the function of positive emotions to broaden people's thought-action repertoires (see Khajavy et al., 2018). The present study aimed to build on the notions of Fredrickson (1998, 2001, 2003, 2004) with respect to the effects of positive psychology on L2 behavior, focusing on the mental processes underlying real-time L2 reading behavior, which, to date, has drawn comparatively little attention in the literature of L2 acquisition.

Positive Psychology and Scope of Attention

Fredrickson's (1998, 2001, 2003, 2004) work has inspired further research on positive psychology among researchers in the field of L2 acquisition (e.g., MacIntyre and Gregersen, 2012a,b; Dewaele and MacIntyre, 2014). Building on the earlier studies of Isen and colleagues on how emotions are associated with cognition (e.g., Isen and Daubman, 1984; Isen et al., 1985; Isen, 1990; see Fredrickson, 2004), Fredrickson (2001) proposes a "broaden-and-build" theory, suggesting that while negative emotions tend to "narrow people's attention, making them miss the forest for the trees" (p. 221), positive emotions such as joy, interest, contentment, and love, can "broaden people's momentary thought-action repertoires and build their enduring personal resources, ranging from physical and intellectual resources to social and psychological resources" (p. 219).

In two experiments, Fredrickson and Branigan (2005) tested the broaden-and-build theory's *broaden hypothesis*, which "states that positive emotions broaden the scopes of attention, cognition, and action, widening the array of percepts, thoughts, and actions presently in mind" (p. 315). American university students viewed films eliciting positive emotions including amusement and contentment, negative emotions including anger and anxiety, or neutral emotions (in a control condition). The participants then underwent a global-local visual processing task developed by Kimchi and Palmer (1982), in which they were presented with global-local figures (e.g., a triangle made up of square elements and a triangle made up of triangular elements), and were instructed to judge the similarity among figures. Using this method, the extent to which participants were influenced by the global or the local features of the figures was used to assess whether the scope of participants' attention was broadened, narrowed, or remained the same. The results support Fredrickson and Branigan's (2005) hypothesis that positive emotions broaden the scope of attention, a finding further backed by later studies (Wadlinger and Isaacowitz, 2006; Rowe et al., 2007), which suggest that positive emotions draw more attention to global than local features during information processing (cf. Sung and Yih, 2016).

With respect to L2 studies, it has been generally acknowledged that psychological variables and emotions are associated with cognition; however, related studies have focused on oral communication (e.g., Jeong et al., 2016). While there has been a line of research on L2 and bilingual processing of emotional words and text (e.g., Eilola et al., 2007; Hsu et al., 2015; Iacozza et al., 2017), research on how emotional or psychological states influence the scope of attention during L2 processing for reading has been limited. An early eye-tracking study from Dizney et al. (1969) reported that more anxious native English readers tended to make more fixations during reading. A more recent eye-tracking study on processing of emotional words conducted by Knickerbocker et al. (2015) showed that native English readers' levels of depression and anxiety, as assessed by questionnaire items, influenced where readers' eyes moved during sentence reading (in experiment 2). When moving their eyes from a word to the next, upcoming word, readers showing higher levels of depression and anxiety tended to initially (as a *first-fixation location*) move their eyes to the upcoming word at a position closer to the beginning of the word, compared to those showing lower levels of negative emotions. While the underlying mechanism of such effects of negative emotions on first-fixation locations[1] was not explicitly discussed by Knickerbocker et al. (2015), other recent studies (e.g., de León Rodríguez et al., 2015, 2016) have associated eye-movement measures including first-fixation locations with the *reading strategy* applied to words. This line of study may provide us a potential basis for how to investigate the influence of positive psychology our mental processes during L2 reading, and will be further discussed in the following section.

Reading Strategies, Eye Movements and First-Fixation Locations

According to the dual-route word recognition model (Coltheart et al., 2001), written words are processed via two routes: a *sublexical route* and a *lexical route*. Through the sublexical route, the letters of a word are translated from graphemes, whether single letters or sequences of letters, into phonemes, in a local and serial manner (i.e., following grapheme–phoneme conversion rules), before the word meaning is accessed. For instance, when THIGH is processed via the sublexical route[2], two graphemes, TH and IGH, are converted into /θ/ and /ai/, to assemble the phonological form of the word. In contrast, through the lexical route, the letter-string of a word is processed in a holistic (whole-word), parallel manner based on lexical

[1] First-fixation location is also termed "initial landing position."

[2] This example is excerpted from Coltheart (2005, p. 9).

knowledge. Readers directly access the word's orthography, as well as other lexical semantic information, in the mental lexicon via this route from the word's written form. Whether a word is processed via the sublexical or the lexical route depends on word properties such as length and frequency (Tiffin-Richards and Schroeder, 2015).

Recent studies have analyzed the dual-route perspective on word processing based on eye movements during reading (Hawelka et al., 2010; Kuperman and Van Dyke, 2011; Rau et al., 2014, 2015; de León Rodríguez et al., 2015, 2016; Gagl et al., 2015; Tiffin-Richards and Schroeder, 2015), and some of these eye-tracking studies have reported that readers' first-fixation location on a word may reflect their preference for the lexical or sublexical route during word reading (Hawelka et al., 2010; Kuperman and Van Dyke, 2011; de León Rodríguez et al., 2015, 2016). That is, readers will attempt to adopt a *local strategy* when processing a word via the sublexical route, with first-fixation locations closer to the beginning of the word, while a *global strategy* will be employed to process a word through the lexical route, with first-fixation locations farther away from the beginning and closer to the center of a word (de León Rodríguez et al., 2015, 2016).

First-fixation locations on words have drawn interests in research on eye movements in reading (see Rayner, 1998, 2009). During reading, the *optimal viewing position* for a word is around the center of the word (Vitu et al., 1990; O'Regan and Jacobs, 1992), as in this position most letters fall into the range of highest visual acuity. First-fixation locations farther away from the center of a word tend to lead to refixations on the word (O'Regan, 1990; Rayner et al., 1996).

Word properties, predominantly word length, have also been major factors influencing first-fixation location (Rayner, 1979; Joseph et al., 2009), and hence, reading strategy (Hawelka et al., 2010; Kuperman and Van Dyke, 2011). In addition, individual differences resulting from different levels of reading skills have also been reported to have an effect (Kuperman and Van Dyke, 2011). Based on eye movements during sentence reading among native English readers, Kuperman and Van Dyke (2011) reported that first-fixation location is a function not only of word length and frequency but are also of individual differences in reading skills, such as word decoding skills. Their findings suggest that a global strategy represented by first-fixation locations closer to the center of a word is more preferred for shorter and higher frequency words and among readers of higher reading skills. For L2 readers, a recent bilingual study by de León Rodríguez et al. (2016) has reported that bilingual readers tend to favor a local strategy when reading in their (non-dominant) L2, indicating a proficiency effect on first-fixation location and word reading strategy.

To sum up, the current state of the literature with respect to eye movements during reading has shown that first-fixation locations, which can be interpreted as indicating preferences for reading strategies, are a function of word properties and reading abilities. While aforementioned studies such as Knickerbocker et al. (2015) have reported data suggesting that affective or emotional factors may also influence first-fixation locations, their data are limited to negative emotions such as anxiety. More importantly, the theoretical account of how the emotions of a reader influence first-fixation location is yet to be explored.

The Present Study

In the literature on L2 acquisition, as noted earlier, while positive psychology has drawn increasing interests among researchers, no studies have investigated whether and how positive psychology influences mental processes during L2 reading. The present study aimed to bridge the gap by employing (1) Fredrickson's (1998, 2001, 2003, 2004) broaden-and-build theory, and (2) the aforementioned dichotomous conceptualization of eye-movement patterns based on the dual-route word recognition model (Coltheart et al., 2001) as the theoretical basis to examine whether and how L2 readers' positive emotions toward L2 reading influence their L2 reading strategies. According to the broaden-and-build theory's broaden hypothesis (Fredrickson and Branigan, 2005), which predicts an effect of positive emotions on attentional scope, we expect that readers who are emotionally more positive toward their L2 abilities should attend more to the global features of words (i.e., word orthography and lexical information) instead of local features (i.e., graphemes and sublexical information), and hence should prefer a global to a local strategy during L2 reading. In terms of eye movements, based on previous findings (e.g., Hawelka et al., 2010; de León Rodríguez et al., 2015, 2016), we anticipate that readers who favor a global strategy will attempt to fixate closer to the center of a word, while readers preferring a local strategy should have more first fixations closer to the beginning of a word.

Methodologically, in the present study, we used L2 reading self-efficacy, defined as a positive belief in one's own problem solving and L2 reading skills, to index positive psychology. Self-efficacy comes from one's experiences and emotional states (Bandura, 1997; Maddux, 2009). Thus, successful and positive experiences and feelings enhance self-efficacy. In the context of SLA, self-efficacy has been reported to have positive relationships with L2 reading and listening proficiency (Mills et al., 2006; Lake, 2013; Yabukoshi, 2018), learning strategies for L2 oral and pronunciation learning (Yang, 1999; Sardegna et al., 2018), as well as L2 vocabulary learning (Mizumoto, 2012, 2013), but little is solidly known with respect to how self-efficacy is associated with language processing during real-time L2 behavior. Based on the broaden-and-build theory, we predict that more self-efficacious L2 readers will prefer a global strategy during L2 reading.

We monitored L2 reading processes based on eye movements in a group of Japanese learners of English undergoing a sentence reading task to validate our prediction. As pointed out earlier, global vs. local reading strategy use is influenced by word properties such as word length and word frequency, as well as language proficiency (Hawelka et al., 2010; Kuperman and Van Dyke, 2011; de León Rodríguez et al., 2016). We anticipate interactions among all these factors and self-efficacy on reading strategies, indexed by first-fixation locations. For instance, self-efficacy and proficiency of L2 readers may matter little for first-fixation location when reading short words, most readers tend to fixate closer to the center of short words (e.g., Hawelka et al., 2010; Kuperman and Van Dyke, 2011). Moreover, self-efficacy may also interact with proficiency, as self-efficacy can only come

into effect given "requisite skills and knowledge" (Schunk and Pajares, 2002, p. 16).

The specific research questions of the present study are as follows:

(1) Does L2 reading self-efficacy influence L2 reading strategies?
(2) How is L2 reading self-efficacy associated with L2 proficiency and word properties with respect to effects on reading strategies?

MATERIALS AND METHODS

Participants

Fifty-nine Japanese native speakers (36 females and 23 males), aged 20.46 on average (*SD* = 1.96), received remuneration for participating in the experiment. All participants, with normal or corrected-to-normal vision, were undergraduate or graduate student at a university in Japan. They learned English as a foreign language (EFL), and had undergone at least 6 years of formal English instruction in Japan. Their English proficiency was between intermediate and upper-intermediate, with a mean self-reported TOEFL ITP (Test of English as a Foreign Language – Institutional Testing Program) score of 525 (*SD* = 52). The present study was conducted in accordance with the recommendations of the Grant-in-Aid for Scientific Research of the Japan Society for the Promotion of Science (JSPS). Written consent was collected from each participant.

The reading comprehension (RC) test developed by the Edinburgh Project on Extensive Reading (Hill, 1992) was employed to assess the L2 reading proficiency (L2RC) of the participants. The test consists of a narrative story and 20 questions on the content of the text; during the test, the participants were told to finish answering the questions within 30 min. The mean score on the comprehension test was 16.53 (*SD* = 6.59) and the Cronbach's alpha of the reading test was 0.86. For the assessment of L2 reading self-efficacy (L2RSE), an L2RSE index was obtained using related question items (e.g., "I am good at reading in English"; k = 4), taken from Mori (2002). Items were translated into Japanese and were responded to on a 6-point Likert-type scale (1 = strongly disagree, 6 = strongly agree). The mean rating for the L2RSE index among the participants was 3.59 (*SD* = 0.98), and the Cronbach's alpha was 0.75.

Materials

Each participant read 120 English sentences in the eye-tracking experiment. On average, each sentence contained 11.52 words (*SD* = 1.80), with a mean word length of 4.69 letters (*SD* = 2.31) and mean log-transformed HAL word frequency of 12.63 (*SD* = 3.14), as obtained from Balota et al. (2007). Among the 120 sentences, six were directly selected from the stimuli used in Kuperman and Van Dyke (2011). While there are three types of sentences used in Kuperman and Van Dyke (2011) – simple sentences without any embedding, sentences with an embedded relative clause, and sentences with double embeddings – we did not select from sentences with double embedding, as they were deemed too difficult to our L2 participants. Others were either sentences modified from Kuperman and Van Dyke's (2011) stimuli, or sentences created by a native English speaker. The final stimuli consisted of 45 simple sentences (e.g., "The traffic accident caused some serious injuries") and 75 sentences with a relative clause (e.g., "The tourist who had a camera took pictures of the mountain").

Procedure

All tasks were conducted individually in a sound-proof room. Brief practice sessions until participants got used to the required tasks preceded all of the measures. For the eye-tracking sessions, they sat in front of a 21-inch CRT monitor (EIZO FlexScan T965; 1024 × 768 pixel resolution; refresh rate = 120 Hz) with a chinrest at a viewing distance of approximately 65 cm to record eye-movement data from the participant's right eye at a sampling rate of 1000 Hz, using an EyeLink 1000 Desktop Mount (SR Research Ltd.) eye-tracker. At that distance, three letters subtended about one degree of the visual angle. Five-point calibration was conducted, and recalibrations were performed before each trial if the calibration became inaccurate.

For each trial, a fixation mark first appeared at the center-left of the computer screen. The participants fixated their eyes on the fixation mark until the mark was replaced by an experimental sentence, with the first letter of the first word at the same position as the fixation mark. Each sentence was displayed in a monospaced font (Courier New), black on a light-gray background, in a single line. The participants were instructed to read each sentence silently and to press a button right after they had finished reading. Presentation of sentences were randomized. One-third of the sentences were followed by a yes/no comprehension question to make sure that the readers had paid attention to the sentences and read them properly; the mean accuracy on these questions was 90.1%.

After the eye-tracking session, the participants took part in the RC test and answered the questionnaire items for L2RC and for L2RSE. The entire experiment was finished within 90 min for each participant.

Data Treatment and Analysis

Fixations with durations below 80 or over 1000 ms were classified as outliers (5.6% of the data). In addition, the initial and final words of each sentence, words with punctuation, as well as words without word-frequency information based on Balota et al. (2007) were removed from analysis (17.7% of total number of words read by a participant). To assess word reading strategy, first-fixation location (relative fixation position in a word measured as position/word length, with a value of 0.5 representing a first-fixation positioned at the center of the word, and a lower value representing a fixation closer to the beginning of a word), gaze duration (log-transformed during modeling; fixation duration measured as the sum of fixation time on a word before the eyes leave the word)[3], and first-pass fixation count (number of fixations on a word before the eyes leave the word) were used in the analysis. Instead of refixation probability, which

[3] Gaze duration includes words that received both single and multiple fixations.

measures the probability a word will be fixated more than once, we used first-pass fixation count since L2 participants tended to fixate more than twice for longer words.

All three of these measures are first-pass reading measures aimed at monitoring early cognitive processes during word processing. The number of observations from the eye-movement data for each measure was 55,467. 33.6% of the words fixated were made with multiple fixations. It is noteworthy that while first-fixation locations closer to the center are regarded as indicating a preference for attempting a global strategy over a local one, this does not necessarily mean that a word is eventually processed via the lexical route. A reader may attempt to adopt a global strategy and target a fixation position closer to the center of a word, in which the likelihood of making refixations is lower (O'Regan, 1990; Rayner et al., 1996), but refixations may still be made when lexical access is not completed with the first fixation (Reichle et al., 2003, 2009). In such a case, multiple fixations are made not only because of the decision taken on reading strategy at the beginning but also because the reader needs more time to process the word. In other words, instead of focusing on how a word is eventually processed, the preference of reading strategy depends on readers' attempt to decide where to fixate on in an upcoming word – a decision made before the word is fixated on.

Mixed-effects modeling using R (R Core Team, 2016) and the lme4 package (Bates et al., 2015) was employed to analyze the effects of L2RC and L2RSE on these eye- movement measures. Participant and word were treated as random effects. For the predictors, in addition to L2RC and L2RSE, word frequency (WF) and word length (WL) were also entered into the models, as these are factors that influence word reading strategy (e.g., Kuperman and Van Dyke, 2011). Interactions among L2RC, L2RSE, and word properties (WF or WL) were included in the linear mixed-effects models; in addition to these predictors and interaction effects, control predictors including trial order, word position in the sentence, as well as preceding word frequency (PWF) and preceding word length (PWL) were also entered into the modeling as they have been reported to influence eye movements (e.g., Kliegl et al., 2006; Kuperman and Van Dyke, 2011). Nevertheless, the effects of the control predictors will not be discussed as they are not directly related to the interests of the present study. Since L2RSE was correlated with L2RC ($r = 0.481$, $p < 0.001$), a linear model in which L2RSE was predicted by L2RC was fitted, and the residuals of the linear model were used as the predictor of L2RSE in the mixed-effects models, so as to partial out the effects of L2RC. The same procedure was completed for WF and WL, which were strongly correlated ($r = -0.748$, $p < 0.001$), with WF residualized prior modeling. All continuous variables were centered and standardized.

For model selection, we first fitted a maximal model including all the predictors and the aforementioned interactions. Predictors and interactions which did not improve model fit were then removed from modeling in a backward stepwise approach, using the step() function of the ImerTest package (Kuznetsova et al., 2015). This package was also used to calculate the *p*-values of the fixed effects in the linear mixed-effects models (based on Satterthwaite's approximation). For the visualization of interaction effects among predictors, partial effects were computed with the remef (Hohenstein and Kliegl, 2015) package and were displayed in figures created with the ggplot2 package (Wickham, 2009). Descriptive statistics for the eye-movement measures is presented in **Table 1**.

RESULTS

First-Fixation Location

The results for the final model fitting first-fixation location are displayed in **Table 2**. Main effects of WF and WL were significant, indicating that on average, first-fixation locations moved closer to the beginning of a word with a decrease in word frequency or with an increase in word length. Main effects of L2RC and L2RSE were not significant; however, significant interactions involving L2RC, L2RSE, and word properties were observed.

First, a significant two-way interaction between L2RSE and WF showed that the extent of the rightward shift of first-fixation location due to increase in WF was larger among more

TABLE 1 | Mean (*M*), standard deviation (*SD*), standard error of the mean (*SE*), and 95% confidence interval (*CI*) of the eye-movement measures.

Eye-movement measures	*M*	*SD*	*SE*	*CI*
First-fixation location	0.404	0.254	0.001	0.002
Gaze duration (ms)	430	319	1	3
First-pass fixation count	1.522	0.990	0.004	0.008

TABLE 2 | Linear mixed-effects model fitting first-fixation location.

	b	*SE*	*t*	*p*
Fixed effects				
Intercept	0.4047	0.0064	63.5310	< 0.0001
L2RC	0.0122	0.0062	1.9480	0.0565
L2RSE	0.0068	0.0063	1.0770	0.2861
WF	0.0107	0.0017	6.2280	< 0.0001
WL	−0.0754	0.0016	−45.7700	< 0.0001
L2RSE × WF	0.0023	0.0010	2.3200	0.0204
L2RSE × WL	−0.0021	0.0010	−2.0670	0.0387
L2RC × WF	Removed			
L2RC × WL	0.0014	0.0010	1.4260	0.1538
L2RC × L2RSE	0.0063	0.0067	0.9400	0.3515
L2RC × L2RSE × WF	Removed			
L2RC × L2RSE × WL	0.0023	0.0011	2.1840	0.0290
PWF	−0.0053	0.0012	−4.4160	< 0.0001
PWL	0.0297	0.0012	25.0790	< 0.0001
Word position	0.0227	0.0013	17.6020	< 0.0001
Trial order	Removed			
Random effects	**Variance**	***SD***		
Word (Intercept)	0.0005	0.0224		
Participant (Intercept)	0.0022	0.0471		
Residual	0.0537	0.2317		

L2RC = L2 reading proficiency; L2RSE = L2 reading self-efficacy; WF = word frequency, WL = word length, PWF = preceding word frequency, PWL = preceding word length, removed = removed during model selection.

self-efficacious than less self-efficacious participants (**Figure 1**), indicating larger frequency effects with increasing L2RSE. Moreover, a significant three-way interaction among L2RC, L2RSE, and WL and an embedded two-way interaction between L2RSE and WL were observed. As illustrated in **Figure 2A**, while on average first-fixation locations shifted leftward with increasing WL, the extent of the change in first-fixation locations among more proficient participants was smaller than that among less proficient ones, when L2RSE was higher. In other words, for longer words, the effect of L2RSE on first-fixation location, indicating a positive relationship between the two variables (i.e., first-fixation location shifting rightward with an increase in L2RSE) was stronger among more proficient (i.e., fitted-lines showing a steeper slope) than among less proficient participants (i.e., fitted-lines showing a flatter slope).

Gaze Duration

The results for the final model fitting gaze duration are displayed in **Table 3**. Similar to the results for first-fixation location, WF and WL significantly influenced gaze duration, indicating that on average, an increase in WF or a decrease in WL resulted in shorter gaze duration. A negative slope for L2RC was significant, indicating shorter gaze durations with increasing L2RC, while the main effect of L2RSE was not significant.

L2RC interacted significantly with WF, showing larger WF effects among less proficient than among more proficient participants (**Figure 3A**). That is, while decrease in WF prolonged gaze duration, the extent of the prolongation was smaller with increasing L2RC. Importantly, a significant three-way interaction among L2RC, L2RSE, and WL, which embedded two significant two-way interactions, between L2RSE and WL and between L2RC and WL, was observed. As displayed in **Figure 2B**, while the increase in WL resulted in longer gaze duration on average, with increasing WL, gaze duration drop with increasing L2RSE was larger among more proficient than among less proficient participants. In other words, larger effects of L2RSE were observed with increasing L2RC for longer words.

FIGURE 1 | Interaction between L2 reading self-efficacy and word frequency on first-fixation location. While L2 reading self-efficacy was treated as a continuous variable in the linear-mixed effects models, it is categorized and displayed in two quantiles (Lower and Higher). Partial effects were obtained with the remef (Hohenstein and Kliegl, 2015) and ggplot2 packages (Wickham, 2009). Error bands indicate 95% confidence intervals.

First-Pass Fixation Count

As shown in **Table 4**, the results for first-fixation count were similar to those for gaze duration. Significant main effects of WF, WL, and L2RC, were observed, indicating that increasing fixation count was associated with decreasing WF or L2RC, or with increasing WL. The main effect of L2RSE was not significant.

L2RC interacted significantly with WF, showing larger WF effects among less proficient than among more proficient participants (**Figure 3B**). The difference in fixation counts between more proficient and less proficient participants grew with decreasing WF. Again, a significant three-way interaction among L2RC, L2RSE, and WL, which embedded two significant two-way interactions, between L2RSE and WL and between L2RC and WL, was observed (**Figure 2C**). While an increase in WL resulted in a higher fixation count on average, for longer words, fixation counts dropped more with increasing L2RSE among more proficient than among less proficient participants.

DISCUSSION

The present study aimed to investigate whether and how positive psychology is associated with L2 mental process during L2 reading behavior. We connected Fredrickson's (2001) broaden-and-build theory with the dichotomous conceptualization of eye-movement patterns based on the dual-route word recognition model (Coltheart et al., 2001), with a view to expounding the mechanism underlying how positive belief toward L2 reading, indexed by L2 reading self-efficacy, might influence word reading strategies. We monitored the eye movements of a group of Japanese learners of English in a sentence reading task. Eye-movement patterns showing first-fixation locations closer to the beginning of a word were considered to show a preference for a local strategy attempting to process a word via the sublexical route, whereas first fixations located closer to the center of a word were considered to favor a global strategy for processing a word via the lexical route. Based on the broaden-and-build theory (Fredrickson, 2001), we anticipated that more self-efficacious L2 readers would prefer a global strategy during L2 reading.

The research questions were:

(1) Does L2 reading self-efficacy influence L2 reading strategies?
(2) How is L2 reading self-efficacy associated with L2 proficiency and word properties with respect to effects on reading strategies?

The present results showed that L2 reading self-efficacy modulated the effects of L2 reading proficiency and word

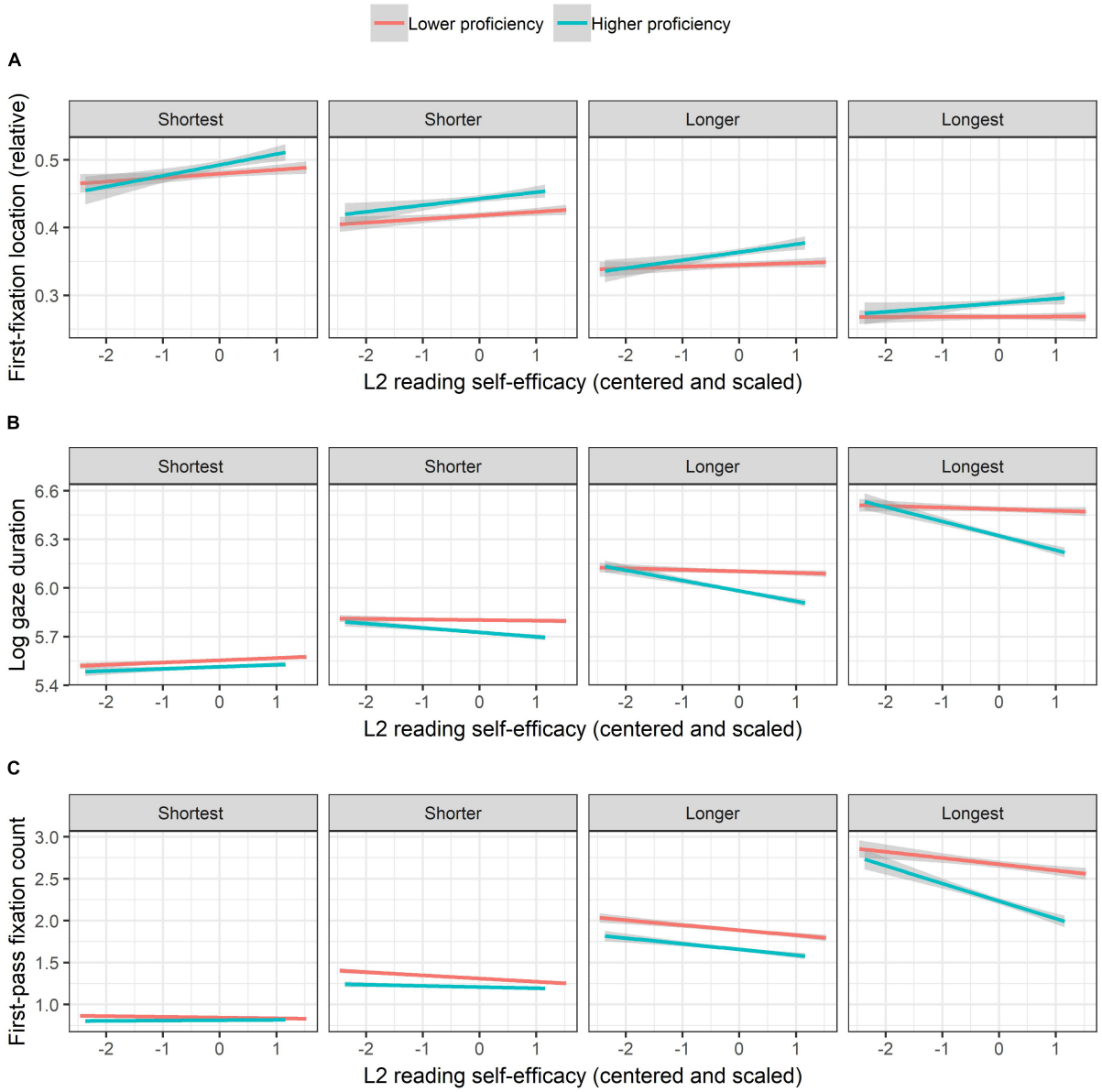

FIGURE 2 | Interactions among L2 reading proficiency, L2 reading self-efficacy, and word length on first-fixation location **(A)**, gaze duration **(B)**, and first-pass fixation count **(C)**. While L2 reading proficiency and word length were treated as continuous variables in the linear-mixed effects models, they are categorized and displayed in two (Lower and Higher) and four (Shortest, Shorter, Longer, and Longest) quantiles, respectively. Partial effects were obtained with the remef (Hohenstein and Kliegl, 2015) and ggplot2 packages (Wickham, 2009). Error bands indicate 95% confidence intervals.

properties on first-fixation location. Effects of L2 reading self-efficacy grew among readers with higher L2 reading proficiency for longer words, as well as for higher frequency words. Overall, the direction of the effect of L2 reading self-efficacy was that more self-efficacious L2 readers tended to have more first fixations positioned farther away from the beginning of a word. Hence, the present data provide a positive answer to research question 1. Previous findings supporting the broaden-and-build theory (Fredrickson, 2001) demonstrate that positive emotions broaden attentional scope during visual tasks (Fredrickson and Branigan, 2005; Wadlinger and Isaacowitz, 2006; Rowe et al., 2007); the present findings not only concur with these findings but also suggest that such an effect from positive psychology can also be observed in the mental processes during L2 behavior. Specifically, readers with more positive belief toward their L2 reading skills attend more to the global but not the local features of a word – as illustrated in the present study by participants with higher L2 reading self-efficacy being attracted to whole-word information over sublexical information such as letters and graphemes, whereas L2 readers with lower L2 reading self-efficacy attempted to glance the letters before reading the

TABLE 3 | Linear mixed-effects model fitting gaze duration.

	b	*SE*	*t*	*p*
Fixed effects				
Intercept	5.8660	0.0171	342.8640	< 0.0001
L2RC	−0.0558	0.0152	−3.6750	0.0005
L2RSE	−0.0126	0.0154	−0.8190	0.4166
WF	−0.1143	0.0078	−14.6240	< 0.0001
WL	0.3184	0.0076	42.0710	< 0.0001
L2RSE × WF	Removed			
L2RSE × WL	−0.0164	0.0020	−8.3840	< 0.0001
L2RC × WF	0.0065	0.0019	3.4070	0.0007
L2RC × WL	−0.0239	0.0019	−12.3930	< 0.0001
L2RC × L2RSE	−0.0263	0.0162	−1.6220	0.1105
L2RC × L2RSE × WF	Removed			
L2RC × L2RSE × WL	−0.0130	0.0021	−6.3090	< 0.0001
PWF	−0.0137	0.0029	−4.6640	< 0.0001
PWL	Removed			
Word position	0.0122	0.0033	3.6580	0.0003
Trial order	0.0099	0.0019	5.1550	< 0.0001
Random effects	**Variance**	***SD***		
Word (Intercept)	0.0221	0.1486		
Participant (Intercept)	0.0132	0.1150		
Residual	0.2023	0.4497		

L2RC = L2 reading proficiency; L2RSE = L2 reading self-efficacy; WF = word frequency, WL = word length, PWF = preceding word frequency, PWL = preceding word length, removed = removed during model selection

word, gathering fragmentary pieces of sublexical information to assemble the whole picture.

In the field of L2 studies, while positive psychology has attracted increasing interest among researchers, most of the studies have focused on how positive psychology is associated with L2 proficiency/L2 test performance (e.g., Lake, 2013; Dewaele and Alfawzan, 2018; Saito et al., 2018), as well as with L2 classroom behavior (Dewaele and Dewaele, 2018; Khajavy et al., 2018); little research has been done with L2 processing in mind. The present study provides fresh evidence that being positive toward one's own L2 abilities affects moment-to-moment decision making in mind; that is, eye movements are modulated as a result of a tendency to broaden one's attentional scope and target a fixation position closer to the center of a word, which brings more letters of a word into a visual area of highest acuity (i.e., the fovea).

Consistent with previous findings for first-language readers (Hawelka et al., 2010; Kuperman and Van Dyke, 2011), effects of both word length and word frequency on first-fixation locations were found significant, suggesting an increasing likelihood of preferring a global strategy to a local strategy for shorter or higher frequency words among our L2 participants. While the effect of language proficiency, which has been reported as a factor that influences strategic preferences in L1 readers (Kuperman and Van Dyke, 2011) and L2 readers (de León Rodríguez et al., 2016), was only marginally significant, the direction of the effect is similar to those reported in previous studies (Kuperman and Van Dyke, 2011; de León Rodríguez et al., 2016), with more proficient L2 readers favoring a global strategy. Importantly, word properties and L2 proficiency interacted with L2 reading self-efficacy, answering research question 2.

As shown by the significant interaction between word frequency and L2 reading self-efficacy, the present data indicate that the word frequency effect on reading strategy increases with higher L2 reading self-efficacy. Since the word frequency effect has been mostly interpreted as a learning effect (Brysbaert et al., 2018), this interaction effect between L2 reading self-efficacy and word frequency suggests both that L2 readers tend to employ a global strategy for words that have been repeatedly encountered

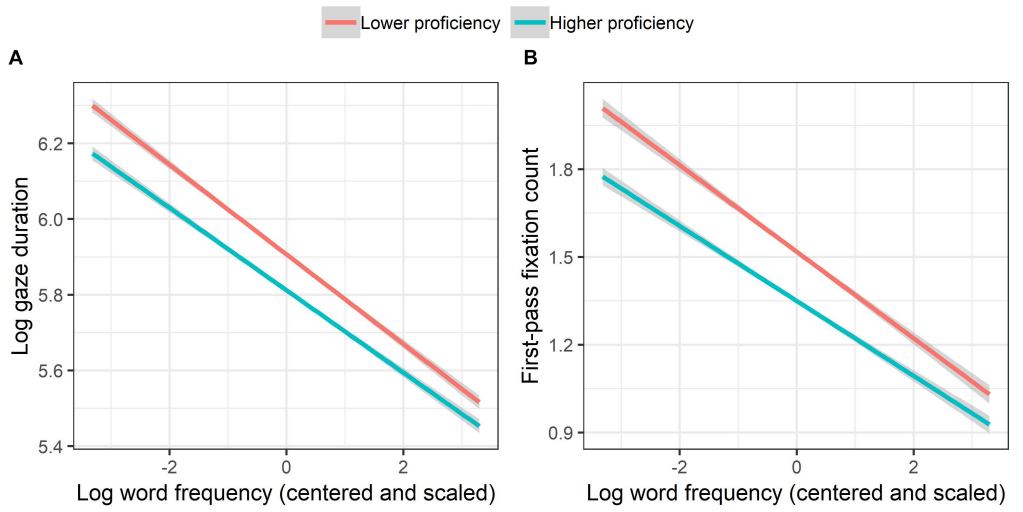

FIGURE 3 | Interactions between L2 reading proficiency and word frequency on gaze duration **(A)** and first-pass fixation count **(B)**. While L2 reading proficiency was treated as a continuous variable in the linear-mixed effects models, it is categorized and displayed in two quantiles (Lower and Higher). Partial effects were obtained with the remef (Hohenstein and Kliegl, 2015) and ggplot2 packages (Wickham, 2009). Error bands indicate 95% confidence intervals.

TABLE 4 | Linear mixed-effects model fitting first-pass fixation count.

	b	*SE*	*t*	*p*
Fixed effects				
Intercept	1.4450	0.0285	50.6730	< 0.0001
L2RC	−0.0994	0.0221	−4.5020	< 0.0001
L2RSE	−0.0429	0.0224	−1.9190	0.0602
WF	−0.1393	0.0174	−8.0030	< 0.0001
WL	0.5973	0.0168	35.4660	< 0.0001
L2RSE × WF	Removed			
L2RSE × WL	−0.0385	0.0033	−11.4990	< 0.0001
L2RC × WF	0.0117	0.0033	3.5880	0.0003
L2RC × WL	−0.0820	0.0033	−24.9050	< 0.0001
L2RC × L2RSE	−0.0190	0.0236	−0.8040	0.4248
L2RC × L2RSE × WF	Removed			
L2RC × L2RSE × WL	−0.0217	0.0035	−6.1780	< 0.0001
PWF	Removed			
PWL	−0.0197	0.0051	−3.8670	0.0001
Word position	−0.0284	0.0060	−4.7060	< 0.0001
Trial order	Removed			
Random effects	**Variance**	***SD***		
Word (Intercept)	0.1154	0.3397		
Participant (Intercept)	0.0278	0.1667		
Residual	0.5925	0.7698		

L2RC = L2 reading proficiency; L2RSE = L2 reading self-efficacy; WF = word frequency, WL = word length, PWF = preceding word frequency, PWL = preceding word length, removed = removed during model selection.

and well learned before and that L2 reading self-efficacy increases the likelihood of such a strategic preference.

Regarding the three-way interaction involving word length, L2 proficiency, and L2 reading self-efficacy, while the present data did not identify a significant main effect of L2 reading proficiency, the three-way interaction reported indicates that such a proficiency effect not only depends on the length of an upcoming word but also on the extent of one's positive beliefs toward one's reading abilities. As shown in **Figure 1A**, the difference in first-fixation locations between less and more proficient L2 readers was larger when L2 reading self-efficacy was higher. This finding extends the literature by showing that the effect of L2 proficiency on preference of reading strategies, reported in de León Rodríguez et al. (2016), may not alone be enough to trigger a change in reading strategies. Viewing the interaction from another angle, the effects of L2 reading self-efficacy dropped when L2 reading proficiency was lower; this supports the notion that the effect of one's self-efficacy depends on one's skills and knowledge (Schunk and Pajares, 2002).

Nevertheless, the reason why the effects of L2 reading self-efficacy dropped with decreasing L2 reading proficiency is unclear. One plausible explanation is that less proficient participants in the present study lacked the requisite decoding skills, partly due to a lack of exposure to English (their L2), leading to a less detailed mental lexicon, which in turn tended to defer lexical route processing (Share, 1999). Another, related account involves allocation of visual attention during reading. The premise of the idea of moderating effects of word properties on first-fixation location for the upcoming word is that readers can preprocess part of the information from upcoming words in the parafovea (where visual acuity is lower than in the fovea; for review, see Rayner, 1998, 2009; Schotter et al., 2012) and that the extent of attention directed to upcoming words in the parafovea depends on reading skills (Rayner, 1986; Häikiö et al., 2009; Veldre and Andrews, 2014), reading speed (Rayner et al., 2010; Ashby et al., 2012; for L2 readers, see Leung et al., 2014), and exposure to target language (for bilingual and L2 readers, see Whitford and Titone, 2015). Based on this account, less skilled participants, who read more slowly (i.e., longer gaze duration) than more skilled ones, might have experienced difficulty utilizing information from longer words gathered in the parafovea in the present study. Future studies should further examine what kinds of L2 reading skills are associated with the effect of L2 reading self-efficacy on L2 reading processes, as well as how parafoveal processing is involved.

Regarding the results for gaze duration and first-pass fixation count, first, expected effects of word frequency, word length, and proficiency, as well as their interactions, are in line with previous findings on eye movements during reading (e.g., Joseph et al., 2009; Hawelka et al., 2010; Kuperman and Van Dyke, 2011; for L2 and bilingual readers, see Whitford and Titone, 2012). Importantly, similar to the results for first-fixation location, three-way interactions involving L2 reading proficiency, L2 reading self-efficacy, and word length were observed. All together, the present data on the three eye-tracking measures (see **Figures 2A–C**) suggest that self-efficacious L2 readers tend to optimize their reading strategy so as to enhance processing efficiency, preferring a more efficient global strategy more than readers of lower self-efficacy or lower reading proficiency do. This "efficiency" account of the effects of self-efficacy is in line with the notion of Maddux (2009, p. 339; see also Bandura, 1997) that "self-efficacy beliefs influence the efficiency and effectiveness of problem solving and decision-making."

Pedagogically, the present findings provide a potential explanation of how pedagogical measures such as extensive reading improve L2 reading performance. Extensive reading is one of the most researched pedagogical measures for reading, and the bulk of empirical findings show that it has a positive influence on reading (see Nakanishi, 2015; Jeon and Day, 2016). Such a positive influence includes increasing reading rate (e.g., McLean and Rouault, 2017) and self-efficacy (Lake, 2014). In this regard, the present data may help explain how reading rate is enhanced via extensive reading by elucidating the relationship between word processing efficiency and self-efficiency, in light of reading strategy.

To conclude, the present study has shed fresh light on the effects of L2 reading self-efficiency on L2 reading strategy during sentence reading. The present data suggest that L2 reading self-efficacy interacts with other factors such as L2 reading proficiency and word properties to modulate reading strategies: as reflected by eye-movement measures, self-efficacious L2 readers tend to prefer a more global, more efficient reading strategy than those of lower self-efficacy, lending support to Fredrickson's (2001) broaden-and-build theory in the context of L2 processing.

The current findings are important. While positive psychology has drawn increasing interest among L2 researchers, research has been limited to classroom-based tasks and investigation (e.g., Dewaele and Dewaele, 2018; Khajavy et al., 2018), and studies employing laboratory-based tasks examining the relation between positive psychology and mental processes during real-time L2 behavior have been very few. The present study hence presents novel empirical evidence that positive psychology is associated with moment-to-moment decision making in L2 learners' mind during L2 reading.

Several valuable implications of the present study can be identified. First, the study highlights the importance of the relation between positive psychology and L2 proficiency. While a more efficient global strategy is preferred with increasing L2 reading proficiency (de León Rodríguez et al., 2016), the present findings suggest that such a strategic change due to development of L2 proficiency may be hindered if emotional factors are not taken into consideration. An L2 reader may still prefer a less efficient local strategy to read words if the reader does not develop a positive belief toward his/her own reading abilities. In this regard, for education practitioners, teaching materials or classroom activities which might be too difficult for the students should be avoided, as enhanced self-efficacy is built from successful experiences (Bandura, 1997; Maddux, 2009). Thus, the aforementioned pedagogical measure, extensive reading, which stresses the important of pleasure reading, should be effective and feasible (Lake, 2014).

A methodological limitation of the present study is the correlational approach. While the current method also has its advantages, for instance regarding the size of the data set (the reading corpus) and the number of data observations (Angele et al., 2015), the effects of L2 reading self-efficacy arose mainly in the interaction effects. More studies, utilizing an experimental approach with stricter control of stimuli, are needed to refine the present findings in future.

DATA AVAILABILITY STATEMENT

The datasets generated for this study will be made available by the corresponding author upon reasonable request.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. All participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

CL and LY collected the data. CL wrote the first draft. All authors contributed to the design and analysis of the data, and revised the drafts.

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A Music-Mediated Language Learning Experience: Students' Awareness of Their Socio-Emotional Skills

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In a society where mobility, globalization and contact with people from other cultures have become its distinctive traits, the enhancement of plurilingualism and intercultural understanding should be of the utmost concern. From a positive psychology perspective, agency is the human capacity to affect other people positively or negatively through one's actions. This agentic vision can be related to mediation, a concept rooted in socio-cultural learning theory, where social interaction is considered a fundamental cornerstone in the development of cognition. These social interactions in the language learning setting may be facilitated through musical activities due to their social bonding effect. This paper tries to offer insights into how a music-mediated experience in language learning may develop students' interpersonal and collaborative competences to become active members of a more inclusive society. Mediation, considered to be a paradigm shift in the foreign language classroom and for different out-of-class language learning possibilities, could also provide an environment where learners maximize their emotional intelligence. Our paper focuses on this paradigm shift spearheaded by the Common European Framework for Languages Companion Volume (CEFR/CV) and the considerable repercussions it is bound to have for foreign language didactics, as cooperative tasks become central to foreign language learning. We hypothesize that mediated language learning experiences (MeLLEs) imply a socio-emotional change in learners, focusing on the others, on their needs and interests, by trying to help them understand texts, concepts or facilitating communication with their peers. An intervention with a music-MeLLE was designed and implemented in an L2 classroom of adult learners with divergent backgrounds. A self-assessment scale with mediation descriptors and the socio-emotional expertise scale (SEE) were administered. Results show that students become more mindful of their strengths, and of their capacity for collaboration and teamwork. This leads to more awareness of their mediation

skills. Students' mediation skills correlate significantly with their socio-emotional skills – specifically with their expressivity. The implementation of a music-mediated experience also promoted tolerance and enhanced learners' intrinsic motivations for language learning at the same time as acknowledging their diversity.

Keywords: socio-emotional skills, foreign language learning, music, expressivity, teamwork, mediation

INTRODUCTION: A SOCIO-EMOTIONALLY ENRICHED LANGUAGE EDUCATION

Language, as a powerful human cultural artifact, mediates our knowledge of the world, our connection to others, and our own thought and self-regulation. All these functions intervene when a person takes the role of mediator – a very much needed helper for those who have difficulties in understanding texts, concepts or in communicating in a foreign language or culture (Piccardo et al., 2019).

In recent years, signs of increasingly narrow-minded attitudes, rejection of those who are different, and even tension between member states (Coste and Cavalli, 2015, p. 6) have been commonplace in European societies. In this context, the notions of mediation and plurilingualism (Piccardo, 2017) have become highly relevant. This concept of mediation, based mainly on Vygotsky (1978), was already included in the *Common European Framework for Languages* (CEFR) published in 2002, but it has gained a more central position within the *CEFR Companion Volume* (CERF/CV) (Council of Europe, 2018), released recently. Piccardo (2017) states that this work on mediation implies a paradigm shift in the foreign language classroom, while Coste and Cavalli (2015) connect it to the urge for educational tools for processes that build up pluricultural and plurilingual competences for collaborative dialogue, leading, in turn, to the development of the acceptance of others and the removal of social inequalities.

North and Piccardo (2016) affirm that "Mediation involves the use of language in creating the space and conditions for communication and/or learning, in constructing and co-constructing new meaning, and/or in facilitating understanding by simplifying, elaborating, illustrating or otherwise adapting the original" (p. 87). Thus, the learning process transcends the individual sphere and enters the interactive space. As explained by Piccardo in the CEFR/CV launch conference (2018), mediation implies a dynamic process of meaning-making through "languaging" (Swain, 2006) and "plurilanguaging" (Lüdi, 2015; Piccardo, 2018), while creating a shared safe "third space" (Kramsch, 2002). In fact, the Council of Europe emphasizes the mediating function of schools, because educating citizens who competently act as mediators relies also on the responsibility of institutions. Mediation fosters a wide range of discourse competences relevant for language learners because they are required to rephrase, to alternate languages, and even to combine and switch genres or oral and written expressions. Thus, language resources are developed through interaction (Coste and Cavalli, 2015, pp. 62–63).

However, a configuration of action-oriented learning experiences that may foster learners' and that may support teachers' awareness and predisposition toward the benefits of mediation is still needed. This is the focus of this paper: to explore how a music-mediated language learning experience (MeLLE) may affect students' motivation, students' socio-emotional development, students' foreign language competence, and students' willingness to cooperate with others. We believe that mediation as a paradigm shift in foreign language learning reinforced through musical activities provides an environment where learners maximize their socio-emotional abilities and their communicative skills.

Mediated-Foreign Language Learning Experiences

MacIntyre et al. (2016, p. 1) explain humans' capacity to affect other people positively or negatively through their actions. This capacity, called *agency*, is central in communication and relates to the concept of mediation. Agency means that all of those involved in the teaching and learning process – teachers, students, parents and school staff – can affect one another.

According to Underhill (1999), the good language teacher in his/her role of facilitator knows "subject, methods and internal processes" (p. 144) that "generate a psychological climate that is conducive to high quality learning" (p. 147). Feuerstein and Feuerstein (1991) explain this role of facilitator through their Theory of Mediation which states that adults, parents, or teachers mediate when they prepare the content and select those stimuli that help their learners to achieve success. The term "mediated learning experiences" was originally developed by the Israeli psychologist Feuerstein who worked with traumatized youths after the Holocaust. Oon Seng (2003) describes his work and affirms "When others were modifying materials for those with learning disabilities, Feuerstein chose to invest his energies in modifying those learners directly" (p. 54).

Similarly, the Council of Europe's preparatory study for the development of the CEFR/CV equates "pedagogic mediation" with successful teaching approaches, which encompass facilitating access to knowledge, collaboratively co-constructing meaning as a member of a group in a learning setting, and generating the necessary conditions by creating, organizing and controlling space for creativity (North and Piccardo, 2016; Piccardo, 2017). Thus, the following actions characterize pedagogic mediation: awakening students' awareness of the meaning and relevance of the task, ensuring that learners understand the purpose of the task, and monitoring to ensure that pedagogic intentions are shared in order to confirm that learners clearly know what the teacher is asking

for (Williams and Burden, 1997). In conclusion, teachers as facilitators and mediators foster students' desire to participate in the language classroom and promote student autonomy through the teaching of meaningful techniques and strategies that encourage reflection, creativity and agency (Jiménez Raya, 2017).

However, despite the fact that students may also act as mediators, the dynamic relationship among students of the same group is often forgotten, thus overlooking the potential that "any cognitive and affective learning can be substantially enhanced by adroit use of interpersonal and group dynamics" (Ehrman and Dornyei, 1998, p. 2).

Brown (2002) endorses Feuerstein's mediated learning experiences as an approach that may spur students' predispositions toward language learning. Socio-cultural theory defines the socialization effect of language (Lantolf et al., 2015), where learning a language goes beyond the acquisition of isolated words to name objects or actions. In our study, MeLLEs – which take an action-oriented approach – learners are regarded as social agents who co-construct meaning while mobilizing their general plurilingual and pluricultural competences. In the words of the CEFR/CV, engaging in mediation activities entails that "...one is less concerned with one's own needs, ideas or expression than with those of the party or parties for whom one is mediating. One needs to have a well-oriented emotional intelligence, [...] empathy for the viewpoints and emotional states of other participants in the communicative situation." Particularly with regard to cross-linguistic mediation, "[...] this inevitably also involves social and cultural competence as well as plurilingual competence" (Council of Europe, 2018).

Naturally, some individuals are more socially oriented than others (McBrien et al., 2018); thus, encouraging the full development of affective factors such as empathy, respect, tolerance, leadership and cooperation capacities is pivotal in order to achieve successful language learning through mediation, where the main focus is to use language in real-life situations to collaborate with others to co-construct meanings. McBrien et al. (2018) ascribe the learners' social aptitude to their emotional and social skills, along with their empathy and interpersonal sensitivity. During the validation phase of their socio-emotional expertise scale (SEE), which was performed through the analysis of high-quality socio-emotional interactions, they also identified adaptability and expressivity as two relevant factors to be considered. The interactive space where social interplay occurs is constantly being reassessed by participants in communicative acts and, thus, students' cognitive, social and affective abilities may be affected by a mental filter which hinders their performance in tasks that require interaction and teamwork. Social interactions in the language learning setting may be facilitated through musical activities due to the social bonding effect of music, because "language enables articulation of what is within us, whereas music strengthens what is shared between us" (Kraus and Slater, 2015, p. 208). In this sense, several authors maintain that the incorporation into the classroom of musical material can entail a series of benefits in terms of socio-emotional expression by creating a relaxed and safe classroom atmosphere (Fonseca-Mora et al., 2011). Tarr et al. (2014) confirm that a "self-other merging" occurs while music-making, but whether this phenomenon takes place while engaging in passive listening or when viewing music videos together is yet to be determined.

A growing body of research evidence explores the complementarity of musical activities in developing both first language and additional languages, based on the reciprocal relationship between music and language as the "two sides of the human communication coin" (Kraus and Slater, 2015, p. 216). Music has been found to be useful in reinforcing the learning of languages and the student's autonomy (Kerekes, 2015), while making it a more motivating and socializing learning process. Thus, while semantically precise communication is conducted through language, music has been linked to the enhancement of social cohesion within a group, the development of interpersonal skills and community building, because "the great strength of music lies in its facilitation of social bonding and shared emotion" (Kraus and Slater, 2015, p. 217). In fact, one of the major hurdles to succeeding in learning languages is the occurrence of negative emotions when engaging in collaborative activities and when adapting to the classroom environment. Fear, insecurity and shyness, among others, limit or prevent interaction with the group in the learning environment, lessening its pedagogical value. In this sense, emotional arousal induced by familiar musical stimuli (van den Bosch et al., 2013) could counterbalance the affective filters which constrain effective classroom communication. Fonseca-Mora and Herrero Machancoses (2016) assert that the use of music can be the tool that elicits fundamental positive emotions in the classroom: "Melodies and rhythm can create an attractive and enjoyable environment fostering learners' willingness to participate in the language classroom, similar to the effects on human well-being of music and songs in everyday life" (p. 362).

Despite the potential of music to boost cognitive, affective and social faculties, empirical evidence which fully defines the benefits that musical experiences furnish to adults' foreign language classroom dynamics is very scarce (Milovanov and Tervaniemi, 2011; Fonseca-Mora and González Davies, 2019). Because language learning is a multifarious activity which draws on the learner's cognitive, social and affective competences, we hypothesize that music could take on a role as mediator, enhancing motivation and positive emotions, which in turn stimulate the deepening and widening of language learning skills.

Aims

The purpose of this study is to determine the effects of a classroom-based educational intervention conducted over a 4-week period, designed to mobilize textual and communication-based mediation strategies as well as to further the development of socio-emotional finesse by adult language learners, thus expanding their affective skills and bolstering the relations with their peers within the classroom setting. In order to do so, a music-MeLLE designed to exploit adult language learners' mediation skills was conceived, placing students in plurilingual classes in the central role of mediators.

Although the role of the teacher as a facilitator of the MeLLE is pivotal and merits further consideration, the scope of the present study is restricted to exploring how this experience influences learners' mediation competences and socio-emotional expertise.

Research Questions

1 Does a MeLLE affect learners' perceptions of their socio-emotional and mediation abilities?
2 Do learners' perceptions of their socio-emotional expertise and mediation competences differ according to their proficiency level?
3 Are there differences in the outcome of the intervention based on the number of foreign languages spoken by learners?
4 Does the student's socio-emotional profile relate to their mediation competences after intervention?
5 How do learners value the music-MeLLE?

MATERIALS AND METHODS

Participants

The participants were adult students who were enrolled in an intensive English language course during the 2018–2019 academic year at a language school.

In order to measure the effects of the intervention, a pre–post approach was adopted for a sample of 44 students (65.9% female, 34.1% male) of different nationalities: 36 Spaniards (81.8%) and 18.2% (n = 8) from other countries (3 Latvian, 2 Turkish, 1 French, 1 Mexican, and 1 Slovak). Their level of competence in English fluctuated from A2 to C1 levels. Most of them had an A2 level (40.9%, n = 18); 14 students belonged to the B1–B2 level group (31.8%), while the remaining 27.3% (n = 12) had a C1 level. Research participants were multilingual: 43.2% (n = 19) spoke two languages, 31.8% (n = 14) three, and 25% (n = 11) more than three.

Instruments and Data Collection

Socio-Emotional Expertise Scale (McBrien et al., 2018)

The concept of SEE encapsulates an array of specific cognitive abilities which are relevant to successfully navigating social environments, among which the timing and synchrony of behaviors that support overall social-emotional ability are paramount. The descriptors which comprise the SEE are designed to determine the prevalence of two factors – adaptability and expressivity – in the respondents' psychological and societal repertoires. The descriptors contributing to each factor construe the students' ability to adequately engage in social interactions and their ability to competently convey affect and ideas to their peers, respectively. Following McBrien et al. (2018), the items pertaining to "adaptability" appraise the respondent's ability to adjust to a variety of social and emotional interpersonal situations; the construct of "expressivity," on the other hand, reflects the individual's ability to convey emotion to others.

CEFR/CV Mediation Descriptor Scales (Council of Europe, 2018)

A2–B2 level-differentiated self-assessment scales with mediation descriptors were developed for collecting data regarding the students' mediation skills and strategies before and after the classroom experience. Relevant descriptors from the CEFR/CV Mediation Descriptor Scales (MDS) were selected and customized to conform to the research aims of the intervention and to the linguistic competence of the participants. In the analysis, the descriptors were divided into two categories: textual mediation and communication-based mediation. For the purposes of this study, textual mediation focuses on learners' ability to make the information contained in oral or written texts accessible to others, while communication-based descriptors measure skills mobilized in order to avoid misunderstandings when communication exchanges take place and interaction with others is required.

Procedure

First, a music-MeLLE with action-oriented tasks entitled "Plurilingual Songs for Language Learners" was designed. The tasks included require textual and communication-based mediation. Second, the SEE test and the MDS were administered (**Figure 1**). Permission from principals to carry out the project was requested, and the teachers and students were informed beforehand of the project so that they could express their willingness to participate.

The initial data collection took place in the middle of the second trimester and it was completed again approximately 4 weeks later, once the participants had completed the allotted activities. In order to achieve the set aims, a batch of tasks encompassing music preference and perception and understanding of emotions were proposed. After being informed about the purpose of the study and the tasks they had to complete, the students were asked to cooperatively conduct an analysis of popular music videos of their choice, examining both the visual cues and the lyrics of the songs, and to infer the figurative meaning of the textual elements.

In session one, a modern music video was selected for its visual narrative script and its potential to trigger discussion with the purpose of modeling the activity. A description of its audio-visual and textual elements was elicited from the session. Subsequently, the students were organized into working groups to which different songs were assigned. They were asked to replicate the analysis, focusing on words or expressions connected to

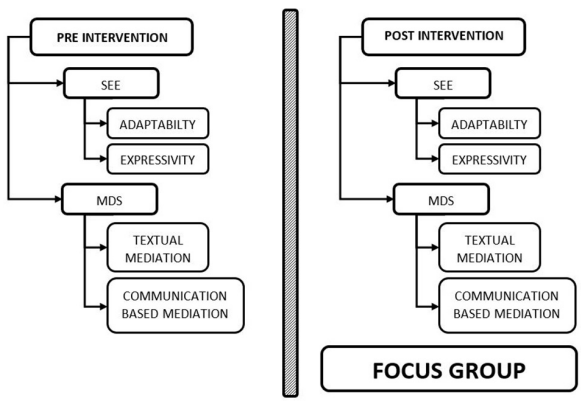

FIGURE 1 | Flowchart of the research design.

feelings and figurative language. As an independent study task, the students looked for examples of songs whose lyrics depict different emotional states; they subsequently brought their lyrics to the next session.

In session two, using the lyrics contributed by the team members, the groups collected examples of vocabulary, idiomatic expressions and metaphors used to articulate feelings. In a whole-class discussion, each group shared and compared their findings with their classmates. Recurrent themes and stereotypes across the examined songs were identified. Back in their working groups, the students were asked to list the features that quality songs should have.

In session three, the students reflected on the importance of deciphering the messages which are implicitly conveyed in popular music videos. Subsequently, they considered the music media consumption choices of youngsters nowadays and the impact that the exposure to certain topics might have on young people's development, as well as what alternative messages they would like to direct toward adolescents today. The groups were encouraged to discuss how they could use the typical features of songs and music videos to get educational messages across.

As a culminating task, the students were requested to post a blog entry recommending songs which carry positive messages or songs which can help to develop the linguistic competence of foreign language learners. Messages that students produced nominating the best songs for learning foreign languages were required to identify the elements which made those songs stand out for such a purpose. A model for a blog post was provided and comments were included which identified parts, style and features; time was allotted for the students to work on a draft of the text they intended to post online.

Once their texts were complete, they went through a peer editing process and received feedback based on a peer-assessment checklist provided by the teacher. Special emphasis was placed on the register and appropriateness of the reported observation messages, thus honing the affect-related processes that underlie desirable social behavior. When the production of the texts was complete, the students shared their posts on a blog administered by the teacher and were encouraged to post comments about their fellow classmates' entries.

Students were also asked to fill in the SEE and MDS in view of their music-MeLLE. Finally, a sample of twelve students was re-contacted to partake in a focus group interview, in order to value the mediated experience and supplement the information obtained during the previous quantitative research phase.

Data Analysis

A mixed method was used to analyze all data obtained.

The statistical analysis includes a univariate descriptive analysis of target study variables to inform the description of the variables in the sample. Non-parametric tests were used, given the non-normality of the variables under study determined by the Shapiro–Wilk and Kolmogorov–Smirnov tests. To ascertain the possible effect of the linguistic proficiency level of the subjects on the test results, the Kruskal–Wallis H test for pre- and post-test variables was carried out. The Mann–Whitney U test was used to identify the proficiency level groups among which such a difference existed. For the contrast between pre- and post-test moments, and given the non-normality mentioned above, the non-parametric Wilcoxon test was carried out. Finally, a correlation analysis based on Spearman's Rho was performed.

This quantitative analysis was completed using a qualitative, thematic analysis which revealed students' evaluation of the learning experience.

RESULTS

Between the pre- and post-test periods, the response rate remained invariant. In the post-test, fully completed questionnaires were received from 44 students. Descriptive variables were calculated, disaggregated both globally and by gender, and a pre–post comparison was carried out using the Wilcoxon signed rank test, which rendered significant differences in the pre- and post-scores of overall mediation ($W = -2.197$, $p = 0.028$) and the pre- and post-scores of textual mediation ($W = -3.341$, $p = 0.001$). No significant differences were observed in the pre–post socio-emotional variables or in the pre–post communication-based mediation variables (**Table 1**).

With respect to the comparison of results according to CEFR proficiency levels, there were also significant differences in overall mediation scores (KW = 15.411, $p < 0.01$) and textual mediation (KW = 29.827, $p < 0.01$) in its pre-moment, but there were no significant differences observed which were attributable to proficiency levels in the post-intervention nor in the rest of variables in both moments. For both variables, differences were found between the level of competence A and levels B and C; there were no differences between levels B and C. Regarding the pre–post contrast differentiated for each of the CEFR levels, significant differences were only observed in Level A for textual mediation ($W = -3.245$, $p < 0.01$) (**Table 2**).

When conducting pre–post intervention contrasts according to the number of languages spoken by the subjects under study, there were significant differences in textual mediation in learners who speak two languages (Zw = −2.788, $p < 0.01$) and in those speaking three languages (Zw = −2.040, $p = 0.041$), with no differences observed in students who speak more than three languages or for the rest of the variables under study (**Table 3**).

Finally, the relational study between the general scores in mediation, and the general and differentiated variables of socio-emotional skills after the intervention revealed a significant relationship between the general mediation and socio-emotional scores ($\rho = 0.409$, $p < 0.01$). When the general socio-emotional variable was disaggregated into its components of adaptability and expressivity, we only found a significant relationship between the overall mediation score and the expressivity score ($\rho = 0.465$, $p < 0.01$) (**Table 4**).

QUALITATIVE FINDINGS

In order to better understand the perceptions of the participants, a focus group interview was conducted. Twelve students were selected so that language proficiency levels would be equally represented; the Spanish and foreign ratio was balanced. They

TABLE 1 | Target study variables mean scores (SD) and pre–post differences.

	Total sample	Male	Female	Wilcoxon test	*p*
Pre-socio-emotional expertise	90.34 (13.03)	90.40 (11.02)	90.31 (14.15)	−0.393	0.695
Post-socio-emotional expertise	92.09 (1.25)	90.93 (10.73)	92.69 (10.14)		
Pre-adaptability score	57.52 (8.98)	57.73 (7.90)	57.41 (9.63)	−0.091	0.928
Post-adaptability score	58.41 (6.26)	57.80 (7.17)	58.72 (5.85)		
Pre-expressivity score	32.82 (4.97)	32.67 (3.98)	32.90 (5.48)	−0.802	0.423
Post-expressivity score	33.68 (4.93)	33.13 (4.56)	33.97 (5.16)		
Overall mediation pre	78.11 (15.30)	74.11 (15.48)	80.25 (15.04)	−2.197[a]	0.028*
Overall mediation post	81.70 (16.45)	79.57 (16.05)	82.88 (16.84)		
Pre-textual mediation	72.67 (19.34)	68.16 (19.04)	75.08 (19.41)	−3.341[a]	0.001**
Post-textual mediation	83.17 (15.74)	86.20 (13.33)	81.49 (16.93)		
Pre-communication-based mediation	80.60 (15.64)	76.31 (17.08)	82.98 (14.57)	−0.235	0.814
Post-communication-based mediation	79.63 (18.50)	76.15 (20.86)	81.64 (17.11)		

[a]*Based on negative ranks (H_0: POST < PRE). *Differences were significant at the 0.05 level (2-tailed). **Differences were significant at the 0.01 level (2-tailed).*

TABLE 2 | Contrasts according to CEFR proficiency levels.

			CEFR A[c]		CEFR B[c]		CEFR C[c]	
		p	*Z*	*p*	*Z*	*p*	*Z*	*p*
Pre-adaptability score	0.632[a]	0.729	−0.683	0.495	−1.508	0.132	−1.061	0.288
Post-adaptability score	2.368[a]	0.306						
Pre-expressivity score	3.542[a]	0.170	−1.092	0.275	−0.566	0.571	−0.903	0.366
Post-expressivity score	3.421[a]	0.181						
Pre-socio-emotional expertise	1.487[a]	0.475	−1.090	0.276	−1.365	0.172	−1.020	0.308
Post-socio-emotional expertise	2.682[a]	0.262						
Pre-textual mediation	29.827[a]	0.000**	−3.245	0.001**	−0.665	0.506	−1.011	0.312
A–B	0.500[b]	0.000**						
A–C	4.000[b]	0.000**						
B–C	59.000[b]	0.321						
Post-textual mediation	4.988[a]	0.083						
Pre-communication-based mediation	2.617[a]	0.270	−1.336	0.181	−1.379	0.168	−0.059	0.953
Post-communication-based mediation	5.086[a]	0.079						
Overall mediation pre	15.411[a]	0.000**	−1.327	0.185	−1.119	0.263	−0.222	0.824
A–B	47.500[b]	0.003**						
A–C	21.000[b]	0.000**						
B–C	63.500[b]	0.459						
Overall mediation post	5.367[a]	0.068						

[a]*Kruskal–Wallis test.* [b]*Mann–Whitney U, not corrected for ties.* [c]*Wilcoxon signed ranks test. **Differences were significant at the 0.01 level (2-tailed).*

TABLE 3 | Wilcoxon signed ranks test pre–post based on number of languages spoken.

	2 Langs		3 Langs		+3 Langs	
	Z	*p*	*Z*	*p*	*Z*	*p*
Pre–post adaptability score	−1.265	0.206	−0.910	0.363	−1.070	0.285
Pre–post expressivity score	−0.262	0.793	−0.315	0.752	−1.607	0.108
Pre–post socio-emotional expertise	−1.148	0.251	−0.816	0.414	−1.376	0.169
Pre–post textual mediation	−2.788	0.005**	−2.040	0.041*	−0.153	0.878
Pre–post communication-based mediation	−0.840	0.401	−0.051	0.959	−0.771	0.441
Pre–post overall mediation	−1.155	0.248	−1.570	0.116	−0.890	0.374

*Based on negative ranks (H_0: POST < PRE). *Differences were significant at the 0.05 level (2-tailed). **Differences were significant at the 0.01 level (2-tailed).*

TABLE 4 | Spearman's rho correlations between target variables.

		Overall mediation post
Post-socio-emotional expertise	ρ	0.409**
	p	0.007
	N	42
Post-adaptability score	ρ	0.246
	p	0.116
	N	42
Post-expressivity score	ρ	0.465**
	p	0.002
	N	42

***Correlation is significant at the 0.01 level (2-tailed).*

were invited to talk about their classroom experiences: what they had liked the most and what they least minded about the collaborative approach taken in this intervention, whether they favored further use of musical media to inspire their language learning, and whether they had become aware of anything new about themselves.

A thematic analysis of the students' responses was made by applying a four-step process to synthesize the data. Two of the authors independently reviewed the focus group transcript and identified recurring themes mentioned by participants. Then, the script was coded and the informative extracts were transferred to an *ad hoc* designed data extraction sheet. Finally, themes were grouped into two categories (**Tables 5**, **6**), subdivided into four key concepts: (1) music as a plurilingual and pluricultural mediator; (2) musical activation of agency and positive emotions; (3) teamwork as a valuable and enjoyable experience; and (4) flexibility and coping with uncertainty.

Analyzing the audio-visual narratives of music videos produced in different countries led to a better understanding of some traits of the target culture, and some reflections also made evident the awakening of the students' pluricultural and plurilingual competences. Several students highlighted the opportunity to showcase their work, as well as to access their classmates' contributions and provide feedback:

> "I think the most interesting thing was networking with other communities in other countries. That was the most powerful part. Because, after all, posting something on the Internet is easy, but it doesn't always allow you to connect with someone who is studying English out there." (Luis B.)

> "Posting our blog entry, seeing our final product online and getting to read what the rest of my classmates have produced, reading everyone's posts and seeing how our own blog was taking shape was really cool." (José Ignacio C.)

In general terms, students valued collaborative work as a rewarding and enriching experience. Some of them even openly expressed what they considered to be successful teamwork practices. Conversely, they were displeased when one team member failed to contribute equally to the collective effort; this was the main reason for their reluctance to work with others. On the whole, their reflections show that they were willing to collaborate with others in order to attain the final result. This implies that they managed to join forces to co-construct meaning, to understand new concepts and to access information. That is, they actively assumed the role of mediators. Related to this, students also considered that working with students from other nationalities was an enriching experience which could help them improve their language skills.

A significant number of interviewees reported having felt confused or overwhelmed during the initial stages of implementation of the lesson plan due to a lack of familiarity with the approach. However, they showed awareness of the importance of overcoming uncertainty when interacting with others and of the transferability of the skills acquired to everyday life situations. In their view, striving to come to an agreement in order to achieve a shared goal will be commonplace in the different contexts that they will encounter in their professional careers and personal lives. Consequently, students also felt proud of their ability to overcome the difficulties they had encountered during the learning experience. On the other hand, learners showed concern about difficulties met which had not been easily solved. They also expressed their need to further learn how to handle critical situations, similar to those experienced in teamwork.

Regarding this last issue, on one occasion the students complained to the teachers about the uncooperative attitude of one of their team members. When asked whether they had raised the issue and discussed it, they reported that they did not want to stir up a conflict with that person. It seemed that they were unsure about how to address the problem.

Finally, according to the learners' self-reported perceptions, music-MeLLEs seem to give prominence to reciprocity and negotiation of goals and outcomes, as set out by the teacher and pursued by the learners. They acknowledged the sense of practicality of this musical MeLLE because it is rooted in reality, in the immediate context of the students. In the adult education context, learners are often notably goal-oriented. The students also acknowledged the integration of diversified activities in its design, which they considered to be adaptable to different levels of complexity and well sequenced, with increasing difficulty to challenge and engage them.

DISCUSSION AND CONCLUSION

All the different research questions have been addressed by our study. The main aim of our study was to explore whether a music-MeLLE could potentially affect students' awareness of their socio-emotional and mediation skills while learning foreign languages. The most obvious finding to emerge from the analysis is that the MeLLE had an impact on students' awareness of their mediation skills, more significantly of their textual mediation skills.

The next question in this study sought to determine the co-dependency of language proficiency level and mediation skills. Prior to the intervention, overall and textual mediation competences were underdeveloped or overlooked by students with lower levels of CEFR proficiency, whereas students with an intermediate or advanced command of English displayed a

TABLE 5 | Students' views on the music-mediated experience.

Music as a plurilingual and pluricultural mediator
". . . trends in current music videos, fashions, everything we have discussed in class, gender equality, social critique, anti-sexist movements, those topics are present in music now more than ever before."
"The chance of finding out how people from other cultures process information is great."
"The forms of society and lifestyle are changing; in some countries they develop and change before they do in others and it is through music that young people are coming to learn about those changes."
"Music inoculates people with these messages (of cultural change)"
"I am now also wiser in terms of dealing and understanding Spanish culture's mindset."
Musical activation of agency and positive emotions
"We have been able to describe the different songs that each of us contributed and to examine what they conveyed."
"Choosing the song, talking about feelings and so on, and writing the text interpreting the author's intention was interesting."
"We like to find the emotions, what the lyrics want to express. As it is another language, they are expressed differently, the translations cannot be done literally, the language is figurative."
"(In class) We worked to recognize the emotions and what they meant to us."

TABLE 6 | Students' views on the progress of their interpersonal dimension.

Teamwork as a valuable and enjoyable experience
"We learn more together because we exchange knowledge."
"When one of us had difficulties in understanding something or was not sure on what to do, we would take the time to explain and help them in order for everyone to be on the same page."
"Because we had to speak and explain the matter as clear as possible in a language that was not our mother tongue – this way all my partners and I experienced the importance of speech in language learning and its impact on the different reactions of my classmates."
"It was nice to get to work with people that I had never met and with an Erasmus student, as I do not get that opportunity very often."
"Working as a team was very enjoyable, mainly because we were very organized and distributed the tasks evenly, everyone in the group knew what they had to do and did it to the best of their abilities."
"Working in a team has always been challenging for me, as I love doing things independently. You never know if you can fully count on people, especially on the ones you do not know."
Flexibility and coping with uncertainty
"I was dazed, for we had never had classes like this before."
"Initially I felt slightly uncomfortable, and also baffled because I didn't know which song to select."
We sometimes have had some different thoughts about how to carry out the project, but at the end we always reached a common agreement."
"The problem with English was a barrier as well. Our levels ranged from B1 to C1 and that level gap was a huge problem when explaining our ideas, so we helped each other."
"It has been a challenge because we are not used to doing teamwork activities, and I still have a lot to learn."
"I enjoyed the discussions because everyone had their own opinion that only meant that we care about the result and it only made the ideas more thought through."
"Each group leader should give directions to the members of the group [. . .] Otherwise, the other members of the group would be distracted even by a single person who did not perform what was asked of them. Unfortunately, this is what we experienced."

sound knowledge of their mediation skills and strategies. This seems to indicate that once an intermediate level of proficiency is reached in the foreign language, trainees feel more capable of mediating a text. A possible explanation for these results may be the lack of cross-cultural communication encounters undertaken by students at the initial stages of foreign language acquisition, as compared with a greater exposure to speakers of other languages that learners experience during subsequent years of language learning. However, after the intervention presented in this study, those differences between language proficiency groups were no longer observable, because the learning experience triggered a noteworthy increase in textual mediation scores as well as in overall mediation measures of the least proficient students. This might imply that the MeLLE assisted in making visible the usefulness of pre-existing cultural and language resources and gave the learners a sense of confidence to manage intercommunity relations (Coste and Cavalli, 2015).

As far as the number of foreign languages spoken is concerned, the data obtained shows that students who speak three languages outperformed, in textual mediation activities, their peers who spoke two languages. However, on the question of whether the number of languages spoken by the learners influenced the outcome of the intervention, it seems that the MeLLE benefits most those students who speak only one foreign language. This result may be explained by the fact that those who speak more foreign languages feel that their textual mediation competences have reached their full potential. The knowledge of at least two foreign languages seems to favor the natural development of text mediation skills. Hence, the adoption of a plurilingual take on language education, which focuses on

pursuing the learners' personal development, self-awareness, linguistic and critical awareness, and interculturality (Piccardo et al., 2019) is supported. The results obtained also suggest that similar interventions could probably offset the shortcomings of monolingual and bilingual education programs. Thus, in contexts in which implementing plurilingual teaching approaches is not feasible, interventions based on MeLLE would possibly parallel the students' perceptions of their mediation skills with those of more linguistically diversified, accomplished students.

However, the most remarkable result derived from the statistical data analyzed is the highly significant correlation between overall mediation competence and socio-emotional expertise. Therefore, our MeLLE affected students' awareness of their role as agents in interpersonal communication and this awareness linked to learners' socio-emotional portraits. When examining separately the two contributing factors of learners' socio-emotional profiles, expressivity and adaptability, it was the former that resulted in a more significant correlation. Because expressivity has been defined as "the ability to successfully convey affect and ideas to other people" (McBrien et al., 2018, p. 1), this could further indicate the benefits of adopting MeLLE in the language classroom.

Additional advantages of MeLLE are highlighted by the qualitative results collected during the focus group interview. The students' documented perceptions when exposed to the music-MeLLE seem to endorse the suitability of this approach to induce a measurable improvement of their wellbeing and a positive language learning setting, as well as to raise learners' awareness of their role as social agents within the communicative act. By the end of the intervention program, the students were familiar with the concept of mediation and had got used to working collaboratively. Students showed enthusiasm during teamwork tasks and they were able to show flexibility by overcoming the difficulties encountered. Besides, the students reported that these types of activities made them conscious of their own learning process. They recognized the importance of active listening, respecting everyone's opinions, and taking on an agentic role by providing feedback to the work of their peers. Moreover, they were satisfied with the common effort to find a shared language and to succeed in the tasks. However, they also demonstrated their need to learn more about how to manage personal accountability for the tasks assigned to each team member. Driven by the above-mentioned benefits, they were willing to engage in MeLLE in the future.

As for the role of music, the qualitative findings obtained in our focus group interviews appear to be consistent with the idea that songs can evoke positive emotions in the foreign language classroom (Fonseca-Mora and Herrero Machancoses, 2016). In this sense, learners highlighted the motivating potential of working with music of their choosing and sieving through familiar lyrics, discovering messages and emotional states expressed therein. These findings seem to correlate favorably with the studies conducted by van den Bosch et al. (2013) and further support the idea that familiarity with self-selected music may amplify the benefits of music-based classroom activities. Similarly, the interviewees reported a renewed feeling of group conscience and sense of belonging brought about by the musical input, which is coherent with the bonding effect mentioned by Tarr et al. (2014) and Kraus and Slater (2015).

The results recorded so far highlight the appropriateness of introducing these types of music-mediated experiences to the language classroom in order to improve students' development of mediation skills, awareness of their socio-emotional skills and of other people's perspectives or intentions (Steinbeis and Koelsch, 2009). By developing empathy toward others and social cognition, explaining and predicting other people's behavior, language learners become more socio-emotionally oriented and prepared to narrow intercultural gaps and social inequalities.

LIMITATIONS AND FUTURE RESEARCH

The tentative results of this study suggest the need to carry out a broader longitudinal study over an extended period of time to empirically confirm the effects of this type of pedagogic intervention on foreign language adult learners.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

MF-M: conceptualization, investigation, and funding acquisition. FM: methodology and formal analysis. EC-B, AF-C, FM, and MF-M: writing – original draft. EC-B, AF-C, and MF-M: writing – review and editing.

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Trait Emotional Intelligence and Classroom Emotions: A Positive Psychology Investigation and Intervention Among Chinese EFL Learners

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The link between emotional intelligence (EI) and negative emotions, especially anxiety, has been investigated in different educational contexts including second/foreign language (L2) learning contexts. However, the link between EI and positive emotions remains underexplored, despite the growing interest of second language acquisition (SLA) researchers in positive emotions, motivated by the Positive Psychology (PP) movement. Grounded on PP theories, a correlational and experimental investigation was conducted on EI and two typical L2 classroom emotions, namely Foreign Language Enjoyment (FLE) and Foreign Language Anxiety (FLA). For the correlational study, questionnaires were administered to 1,718 English learners from three high schools in China. Statistical results showed medium correlations among students' EI, FLE, and FLA. In the intervention study, a pre-test, treatment and post-test design was adopted. A six-week PP-based EI intervention ("ARGUER" training model in class and the "three activities" of PP in diary) was conducted in the experiment class of 56 students, while not in the control class of 52 students. Semi-structured interviews were conducted with five students in the experimental class and their English teacher. ANCOVA test results and qualitative findings indicated that the EI intervention was effective in improving EI, boosting more positive classroom emotions and alleviating negative classroom emotions. The findings in both the correlational and intervention studies are discussed in combination with previous studies. We also further address their theoretical and practical implications for L2 education.

Keywords: positive psychology, trait emotional intelligence, classroom emotions, foreign language enjoyment, foreign language anxiety

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INTRODUCTION

Positive Psychology (PP) has taken off in the field of Second Language Acquisition (SLA). Its two key commitments are to improve learners' achievement and to improve their well-being (Li and Dewaele, in press). Emotions and emotional intelligence (EI) constitute the kernel dimension of language learners' well-being (Oxford, 2016b; Li, 2018). EI was found to be closely related to language anxiety (Dewaele et al., 2008; Shao et al., 2013), empirically supporting the theoretical construct of EI. However, the link between EI and other L2 classroom emotions, especially positive emotions (e.g., enjoyment), remains

underexplored. Thus, the present study was primarily designed to investigate the relationship between EI and the two typical L2 classroom emotions (anxiety and enjoyment). Considering the malleability of EI (Mercer and Gkonou, 2017), a post-investigation intervention was also conducted based on the proposed "ARGUER" model and "Three Activities" from PP (see Seligman et al., 2005).

LITERATURE REVIEW

Positive Psychology in General Psychology and in Applied Linguistics

The notion of PP has developed immense popularity since Martin Seligman, often called the "father of PP," was elected as president of the American Psychological Association in 1996. The PP movement, starting with the landmark Special Issue in *American Psychologist* (2000), has catalyzed a shift from clinical psychology's view of identifying, preventing, and repairing problems, weakness or illness to PP's view of building strengths in life that contribute to the flourishing of individuals, communities, and societies (Seligman and Csikszentmihalyi, 2000; Maddux, 2002).

Positive psychology is considered to be flourishing with its main topic of "well-being." Seligman (2011) developed the well-being theory and proposed a five-dimensional PERMA model of well-being, namely "positive emotion (P), engagement (E), relationships (R), meaning (M), and accomplishment (A)" (p. 12). He claimed that the ultimate goal of PP is to improve well-being by increasing the five key areas of "PERMA" including positive emotions. However, PP, with its focus on well-being, does not ignore difficulties, obstacles, and negativity. Instead, it faces them from a strength-based perspective rather than weakness (Snyder and Lopez, 2002). This indicates that PP is not about fixing what is wrong, but about building what is right (Seligman, 2002).

Positive psychology has been flourishing in SLA with its basic commitments of enabling the well-being and L2 success of students (Strzałka, 2016; Szymczak, 2016; Jiang and Li, 2017). Resonating with the "positive renaissance" in general psychology, the area of SLA has also witnessed a "positive turn" (Dewaele and Li, 2018; Li and Dewaele, in press). Lake (2013) may be the first who introduced the term and perspective of PP to the field of SLA (Mercer and MacIntyre, 2014, p. 158). Shortly after the first study linking PP to SLA, the landmark Special Issue on "PP in SLA" came out (2014), showing signs of the advent of the PP movement in SLA. In 2016, two influential anthologies edited by MacIntyre, Gregersen and Mercer, and Gabryś-Barker and Gałajda brought the PP movement to a spurt with diverse topics and rigorous research methods (Al-Hoorie, 2017).

Influenced by Seligman's well-being theory (2011), PP has largely been mispresented as a way to eliminate obstacles and problems and being pertinent to positive emotions exclusively (Komorowska, 2016). Oxford and Cuéllar (2014), Oxford (2015), and Komorowska (2016) expressed their suspicion of the idealistic approach of creating a difficulty-free learning environment and claimed that language learning is inherently a complex process full of growth as well as obstacles and difficulties, where diverse emotions unavoidably occur, including both positive and negative emotions. Komorowska (2016), and Li (2018) argued that PP in the SLA context is more about seeking value in the obstacles and difficulties of L2 learning and taking a strengths-based approach to them.

In the context of language learning, Oxford (2016a,b) thus modified Seligman (2011) PERMA model of the well-being theory, with an exclusive concentration on positive emotions, to a new theoretical model named EMPATHICS (E: emotional intelligence and emotion; M: meaning and motivation; P: perseverance; A: agency and autonomy; T: time; H: habits of mind; I: intelligence; C: character strengths; S: self-factors). EMPATHICS is an acronym outlining nine complex, interrelated and interacting psychological dimensions. These dimensions are "part of human well-being and positively influence language learners' achievement and proficiency" (Oxford, 2016a, p. 26). Oxford (2016b) also argued for a holistic look on both positive emotions and negative emotions in L2 learning. According to the EMPATHICS model, the two variables, EI and emotions are primary elements of the first dimension ("E"), both of which are important factors in language learning (Dewaele et al., 2008; Oxford, 2016b, 2018). Furthermore, they are interrelated with each other theoretically. Thus, it is natural to propose the question: **What are the relationships between them empirically?**

Emotional Intelligence: Constructs, Measurements and Interventions

Before the advent of PP at the very beginning of 21st century (Seligman and Csikszentmihalyi, 2000), EI had already gained extensive attention in general psychology (e.g., Salovey and Mayer, 1990; Goleman, 1995; Mayer and Salovey, 1997; Petrides and Furnham, 2000, 2001). EI has risen to its popularity particularly in the field of PP for its significant role in human performance and well-being, both of which are the primary foci of PP (Allen et al., 2014). EI can therefore be rightfully viewed as a key concept of character strengths within PP (Salovey et al., 2002).

Theoretical Models of EI

The concept of EI became immensely popular in the media and public, with the release of Goleman's (1995) influential book entitled *EI: Why It Can Matter More than IQ*. The release occurred long before scientific investigation of its construct and the development of rigorous measurement (Allen et al., 2014). It has been enormously popular especially in organizational psychology. Many organizations started to assess the EI of interviewees as an additional criterion in the absence of psychometrically tested procedures or measurements (Matthews et al., 2002). The urgency to explore the potentially important construct motivated a plethora of definitions, models, and measurements developed by different research groups (e.g., Mayer and Salovey, 1997; Petrides and Furnham, 2000, 2001; Barchard, 2003; Brackett and Mayer, 2003; Bar-On, 2006; Mayer et al., 2016).

Competing theoretical models of EI were classified into two different types: ability models and mixed/trait models (Allen et al., 2014). The ability model conceptualizes EI exclusively as a person's emotion-related *ability*. The most influential ability construct is the Four-Branch model proposed by Mayer and Salovey (1997). They defined EI within a cognitive-emotional framework as the ability to (1) perceive emotions, (2) use emotions to facilitate thought, (3) understand one's own emotions as well as those of others, and (4) manage emotions. Task-based measures are required to assess EI as an ability, which remains a challenging task (Li, 2019). The first comprehensive and theory-based task measure for *ability EI* was the Multifactor Emotional Intelligence Scale (MEIS) (Mayer et al., 1999), with its refined successor called the Mayer, Salovey and Caruso Emotional Intelligence Scale (MSCEIT) (2002) (Mayer et al., 2002).

For mixed/trait models, EI was defined as a mix of personality traits including emotion-related personality traits (Petrides et al., 2016). Petrides and Furnham (2000, 2001, 2003) viewed *EI* as a personality trait pertaining to self-perceived emotion-related ability and should thus be measured using self-reported measures. The trait EI questionnaire (TEIQue) (Petrides and Furnham, 2001, 2003) incorporates items not only from the four-branch ability EI model (Mayer and Salovey, 1997), but also from the realm of personality (Goleman, 1995), and intelligences (social, intra-, and inter-personal intelligences) (Gardner, 1983; Goleman, 1995).

Following EI literature in applied linguistics (e.g., Dewaele et al., 2008; Shao et al., 2013; Li, 2019), the present study adopts the trait model of EI. That is, EI is viewed as a personality trait encompassing a cluster of dispositions and self-perceptions related to emotions, positioned at the lower levels of personality hierarchies (Dewaele et al., 2008, 2019b; Alba-Juez and Pérez-González, 2019). Trait EI is measured using self-reported measures including questionnaires (Petrides and Furnham, 2001). This conceptual decision was made to address the following concerns. First, empirical evidence on the very high correlation between EI and personality indicates that EI is substantially a personality trait (Allen et al., 2014). Second, contemporary language learning and teaching have an inherently communicative nature (Mercer and Gkonou, 2017). In other words, collaboration and cooperation prevalently occur among students, and also between language teachers and students. Thus, the construct of trait EI was adopted for its emphasis on and overlap with both intrapersonal and interpersonal EI (Li, 2019). Finally, as mentioned above, task-based tests of ability EI have proven to be a challenging task due to the inherent subjectivity of emotional experience. This indicates that EI is "thus not amenable to truly objective scoring procedures" (Dewaele et al., 2008, p. 919). Trait EI using the self-reported measure was adopted for its practicability, especially in a large-scale study.

Despite conceptual differences, we can conclude a theoretical link between EI and emotions. The link adequately underpins the main research question of the present study, regarding the relationship between EI and L2 classroom emotions.

EI Studies in SLA: EI and L2 Classroom Emotions

A series of EI-related studies also emerged and confirmed empirically its important role for both language learners (e.g., Dewaele et al., 2008; Shao et al., 2013; Gregersen et al., 2014; Strzałka, 2016; Li, 2019) and teachers (e.g., Gkonou and Mercer, 2017; Mercer and Gkonou, 2017; Dewaele et al., 2018).

As discussed above, EI is a significant predictor of well-being because of its strong link with emotions (Nelis et al., 2011), especially positive emotions. However, the theoretical links are only partially empirically supported in our field. To be more specific, previous studies revealed the negative relationship between EI and negative L2 emotions, particularly, language anxiety. For example, Dewaele et al. (2008) found that adult multilinguals with higher EI tended to feel less anxious. This indicates that individuals with higher EI perceived themselves as more competent in perceiving and understanding the emotions of their interlocutors, managing their own stress and feeling more confident (Oxford, 2017). In a Chinese EFL context, Shao et al. (2013) also found that learners who were more emotionally intelligent generally experienced a lower level of FLA, supporting the link between EI and the negative L2 classroom emotions. However, how EI is related to positive L2 classroom emotions remains to be explored that. Motivated by this gap, the present study is designed to investigate **the links between EI and both positive and negative L2 classroom emotions**, creating a fuller picture of the emotional landscape of language learners.

EI Interventions Within Positive Psychology

There has been a growing interest in developing school-based interventions aimed at raising EI (Salovey et al., 2002; Miller et al., 2009; Waters, 2011). EI interventions are closely tied to more general social and emotional learning (SEL) programs (Mayer et al., 2002; Brackett and Rivers, 2014), with a focus on developing social and emotional skills, such as emotion regulation and resilience among students, teachers, and school leaders. Its ultimate aim is to foster the well-being and academic achievements of students (Cohen, 1999; Zins et al., 2000; Brackett and Rivers, 2014; Pérez-González and Qualter, 2018).

There are hundreds of curriculum-based SEL programs, most of which provide emotion skill-building opportunities for students to identify, gauge, talk about and to regulate their feelings (Mayer et al., 2002; Brackett and Rivers, 2014). For example, the RULER approach to SEL is a multiyear, structured, comprehensive, and systematic approach that engages all the "stakeholders" involved in students' education including students, teachers, school leaders, support staff, and family members (Brackett et al., 2009, 2011). The RULER approach is theoretically grounded on the Four-Branch model of Mayer and Salovey (1997) and focuses on developing each stakeholder's five key emotional skills. Evidence shows that the RULER approach is useful for effective teaching and learning, and promoting well-being and performance for both children and adults (Mayer et al., 2008).

In the field of L2 education, MacIntyre et al. (2019b) argued for PP-based interventions in language learning and teaching to improve "interpersonal relationships, positive emotions, lower stress, greater well-being, and so on" (p. 5). Recognizing the major role of EI in well-being and performance for both language learners and teachers (Oxford, 2016a), Oxford (2016a) argued that there is a need for language teachers to help their students to develop and employ their EI in language learning and contact with others. Mercer and Gkonou (2017) also suggested incorporating training programs to develop EI in order to support effective teaching.

Unfortunately, in SLA, EI-specific interventions based on PP principles remain at a starting stage. There are quite a few theoretically grounded and evidence-based intervention practices whose efficacy have been tested. Among the limited number of attempts, Gregersen et al. (2014) innovatively implemented EI interventions to an English learner and a pre-service TESOL teacher by adapting three activities from PP whose efficacy have been empirically tested. The three activities include identifying "three good things" (see Seligman et al., 2005), "savoring" positive experiences (see Peterson, 2006) and developing participants' "learned optimism" in adverse experiences related to language teaching, learning, or education (see Seligman, 2006) (Gregersen et al., 2014, p. 340–347). However, as pointed out by Gregersen et al. (2014), the intervention practice could be more EI-oriented with exercise tightly tied to specific emotional skills, which may bring greater outcomes. Furthermore, a qualitative approach was adopted to focus on intervention effectiveness, leaving room for other research methods which can better visualize the changes before and after intervention practices.

Thus, **the EI intervention implemented in the present study was designed to improve EI-specific skills based on the theoretical constructs of *trait EI***. A mixed method of both quantitative and qualitative approaches was adopted to test the efficacy of EI interventions for language learners.

L2 Classroom Emotions

Emotion had traditionally been neglected as "irrational factors" until the introduction of humanistic language teaching values in the 1970s and 1980s. Scholars began to take a holistic view on language learners, emphasizing their cognition and emotion equally (Arnold, 1998, 1999; Al-Hoorie, 2017; Piniel and Albert, 2018; Dewaele et al., 2019a this volume). Echoing this view, the *Affective Filter Hypothesis* (Krashen, 1985) was proposed to underline the fundamental role of emotion in language learning. The hypothesis motivated a plethora of studies on language anxiety in the past three decades (Gkonou et al., 2017).

However, the advent of PP in SLA (MacIntyre and Gregersen, 2012; Mercer and MacIntyre, 2014) catalyzed an "affective turn" and a "positive movement." The broaden-and-build theory of positive emotions (Fredrickson, 1998, 2001, 2003) underpinned the emotional movement in SLA. This has contributed to a shift from an exclusive focus on anxiety to a wide range of classroom emotions including both positive and negative emotions (Dewaele and Li, 2018; MacIntyre et al., 2019b; Prior, 2019). A great variety of different L2 classroom emotions other than anxiety have been reported by language learners and users in different contexts. Pishghadam et al. (2016), for instance, investigated the emotional experiences of 308 Iranian EFL university students and found that positive and negative classroom emotions coexisted with each other. The major positive foreign language emotions identified were "enjoyment, pride, and hope, and the major negative emotions were anxiety, shame, boredom and helplessness" (p. 508). Galmiche (2017), and Ross and Stracke (2017) studied the emotional experiences of shame and pride in the language learning process. In the study of MacIntyre and Vincze (2017), situated within a German-as-a-foreign-language context of Italian language secondary schools, 10 positive emotions including "joy, gratitude, serenity, interest, hope, pride, amusement, inspiration, awe, and love" (p. 61) and nine negative emotions including "anger, contempt, disgust, embarrassment, guilt, hate, sadness, feeling scared, and being stressed"(p. 61) were identified as basic L2 motivation-related emotions. MacIntyre et al. (2019a) further investigated an inclusive but not exhaustive list of ten positive emotions ("interest, excitement, strength, enthusiasm, pride, alertness, inspiration, determination, attention, and activeness") (p. 4 in the text) and ten negative emotions ("distress, upset, guilt, scare, nervousness, hostility, irritation, shame, jitter, and afraidness") (p. 4 in the text) evoked over the past week among L2 learners.

Furthermore, in the first two Special Issues on L2 emotions, namely "Emotions in SLA" and "A PP perspective on emotions in SLA" (Li, in press), a variety of emotions were examined among learners of distinctive language profiles (diverse first languages as well as target L2s) at different instruction levels (from primary level to tertiary level) in diverse L2 learning contexts (countries all over five different continents). For example, Pavelescu and Petrić (2018) investigated the emotional experiences of four Romanian EFL high school students and found that enjoyment and love were the most frequently experienced positive emotions during their language learning process. Pavelescu and Petrić (2018) explored the emotion types that Hungarian English majors experienced in their general use of the L2 and four specific language skills. Nine in- and out-of-class emotions were identified. Seven positive emotions were identified, namely "pride, contentment, comfort, relaxation, and enjoyment," and two negative emotions were identified, namely "anxiety and not like" (p. 142).

The fruitful findings on diverse classroom emotions does not mean that emotions or positive emotions had not been investigated before 2012, in fact, many researchers and practitioners laid the foundation for the "affective turn" within PP (e.g., Arnold, 1999; Cook, 2000; Broner and Tarone, 2001; Brantmeier, 2003, 2005; Kramsch, 2006; Imai, 2010). However, these studies are flourishing with the PP movement in SLA, creating the strong wave of scholarly interest in L2 classroom emotions that we are currently witnessing (Dewaele and Li, 2018; White, 2018).

Despite the growing number of studies in emotions flourishing with PP movement in SLA, in the Chinese EFL context, studies on emotions are still greatly confined to anxiety, with PP at its starting stage (Li and Dewaele, in press).

Foreign Language Enjoyment and Anxiety

In the above-mentioned list, enjoyment and anxiety were reported as two of the most prevalent classroom emotions. They were metaphorically conceptualized as "malevolent and benevolent wolves" (Gregersen et al., 2017) and "feet" (Dewaele and MacIntyre, 2016) for every language learner despite their language proficiency. This could also manifest as a result of the large number of studies on the two emotions termed as Foreign Language Enjoyment (FLE) and Foreign Language Anxiety (FLA) in diverse contexts of L2 learning from a PP perspective (e.g., Dewaele and MacIntyre, 2014, 2016; Dewaele and Dewaele, 2017; Dewey et al., 2018; Elahi Shirvan and Taherian, 2018; Khajavy et al., 2018; Jiang and Dewaele, 2019; Li et al., 2019).

Previous studies have consistently confirmed the triangular relationship between FLE, FLA and L2 achievement. More specifically, there is a significant positive relationship between FLE and L2 achievement, while negative relationships between FLA and L2 achievement, and between FLE and FLA (e.g., Dewaele and Alfawzan, 2018; Jin and Zhang, 2018; Saito et al., 2018; Li et al., 2019). This indicates that learners who enjoy more in their L2 exploration tend to feel less anxious and achieve more. In terms of the correlation between FLE and FLA, despite the general negative relationship pattern between them, Dewaele and MacIntyre (2016) also pointed out that they are two separate emotions instead of two poles of a same dimension and that other interacting patterns exist between them.

Previous studies have also revealed a large list of correlates of the two emotions, including learners' socio-psychological-behavioral variables and teacher-centered variables (e.g., Dewaele and MacIntyre, 2014; Saito et al., 2018; Dewaele et al., 2019c). Among them, EI was revealed as a significant predictor of language anxiety (Dewaele et al., 2008; Shao et al., 2013). However, the link between EI and positive L2 classroom emotions including FLE remains underexplored (Li, 2019). Furthermore, previous studies exclusively used a quantitative method to reveal the links between EI and FLA, inadequately showing exactly how EI is used by L2 learners to cope with emotion-related information in their L2 learning. Thus, in the present study, a quantitative approach was adopted to investigate the relationship between EI and the two prevalent classroom emotions of FLE and FLA, supported by a qualitative approach showing in detail the employment of EI in different positive and negative emotional experiences in English learning.

RESEARCH QUESTIONS

Motivated by the gaps exhibited in previous studies, the following research questions were formulated. Specifically, Study 1 was guided by RQs1-2, and Study 2 was an intervention practice guided by RQ3.

RQ1: What are the levels of students' EI and English classroom emotions?

RQ2: What are the interrelationships between students' EI and English classroom emotions?

RQ3: Is the ARGUE training model of EI effective to boost more positive emotions and alleviate negative classroom emotions?

STUDY 1: INVESTIGATION OF TRAIT EMOTIONAL INTELLIGENCE AND CLASSROOM EMOTIONS

Methods

The present study followed an exploratory sequential design. It first reveals statistically significant patterns quantitatively, and then validates, enriches, and embellishes the quantitative results with qualitative findings (Creswell and Clark, 2011, p. 81).

Participants and Local Context

The participants for the present study were 1,718 second-year senior high school students from three schools in Lu'an City, China. This suggests that they followed the same curriculum for the English course regulated by the Ministry of Education of the People's Republic of China and meant that they were at same instruction level. They were going to take the National College Entrance Examination in their third academic year. A standardized English test is part of this entrance exam, a prerequisite for admission to universities. Furthermore, for all the participants, Chinese (Lu'an dialect or Mandarin) was their L1 and English was their only FL. None of them had overseas experience. Furthermore, reckoning with previous findings that students at different proficiency levels may show different psychological characteristics (Saito and Samimy, 1996; Marcos-Llinás and Garau, 2009; Dewaele and MacIntyre, 2014), the participants involved were from three schools of different types and at varying academic levels (i.e., two public schools and one private school, and from the Top 1 school to schools of lower rankings according to the local academic ranking in Lu'an City).

Detailed information of the participants is displayed in **Table 1**.

Instruments

Trait emotional intelligence questionnaire – short form (TEIQue–SF)

The TEIQue instruments were developed on the basis of *trait EI* theory (Petrides et al., 2007; Petrides, 2010). The TEIQue–SF is the short version (consisting of 30 items, two items for each of the 15 facets) of the full-form TEIQue (comprised of 153 items) (Petrides and Furnham, 2006; Petrides, 2009). Two items were selected for each of the 15 facets from the full-form TEIQUE and included in the TEIQue–SF. The selection was primarily based on the correlations between scores for each item and for the total facet. Both forms of TEIQue adopt a 7-point Likert-type response scale, ranging from "1 (Disagree completely)" to "7 (Agree completely)," suggesting that the possible score of participants range from 30 to 210. Correspondingly, total scores below 120 signify an underdeveloped EI; total scores between 120 and 150 indicate a moderately developed EI; and total scores above 150 denote a well-developed EI.

The reliability (Cronbach's alpha) of the short form proves to be very satisfactory in several studies in different FL contexts (e.g., Cronbach's alpha = 0.79, N = 425; Dewaele et al., 2008) including the Chinese EFL context (Cronbach's alpha = 0.86, N = 510; Shao et al., 2013), usually higher than 0.80 and has not dropped below 0.70 in any study. The alpha for the scale in the present study was found to be as high as 0.796 (N = 1,718).

Previous studies also showed that the measure had a relatively stable construct validity across languages (Mavroveli et al., 2007; Mikolajczak et al., 2007; Andrei et al., 2016). The four factors that are confirmed are 0.74 (Emotionality), 0.76 (Self-Control), 0.80 (Sociability), and 0.85 (Well-Being), respectively (Petrides, 2009), with 15 subscales (e.g., emotion perception, emotion expression, emotion management, social awareness, trait optimism, self-motivation, empathy, etc.; for a full list, see Petrides, 2009, p. 89, 93).

Following the study of Shao et al. (2013) in the EFL context in China, the present study also adopted the translated version of the TEIQue-SF. The original TEIQue-SF was translated into Chinese by the first author and further checked by three professionals in the field of applied linguistics, English literature, and psychology, respectively.

Chinese version of foreign language enjoyment scale

The FLE Scale was originally developed using an international sample, with a majority (67.2%: 1171/1742) of European participants (Dewaele et al., 2016, p. 245). In the Chinese EFL context, Li et al. (2018) translated the 14-item and two-factor *FLE Scale* (Dewaele and MacIntyre, 2016) into a Chinese one, and modified it using a Chinese sample (N = 1,718). The modified *Chinese version of Foreign Language Enjoyment Scale (CFLES). The CFLES turned out* to have eleven items with a new three-factor structure confirmed (i.e., *FLE-Private*, *FLE-Teacher* and F*LE-Atmosphere*, Li et al., 2018). The CFLES adopts a 5-point Likert scale, ranging from '1 (Strongly disagree)' to "5 (Strongly agree)," with possible scores ranging between 11 and 55. Within the range, a total score below 33 indicates low or no FLE, a total score between 33 and 44 denotes a moderate level of FLE; and a total score above 44 signifies a high level of FLE.

Li et al. (2018) (N = 1,718) reported a high reliability for the global CFLES and its subscales of *FLE-Private*, *FLE-Teacher*, and *FLE-Atmosphere*: 0.826, 0.792, 0.896, and 0.778, respectively. The split-half reliability was reported to be as high as 0.878. Strong construct validity (CFA) [$\chi^2(41) = 72.975$; CFI = 0.975; TLI = 0.967; SRMR = 0.034; RMSEA = 0.041], convergent validity, and discriminant validity were also found in the study of Li et al., 2018, p. 188–190). The present study was based on the same dataset as Li et al. (2018), indicating the same reliability and validity for FLE.

Foreign language classroom anxiety scale

The Foreign Language Classroom Anxiety Scale (FLCAS) was originally designed to measure anxiety specific to foreign language learning contexts (Horwitz et al., 1986). It is a well-established instrument that has been widely applied in different countries with learners of various L2s and L1s (e.g., Aida, 1994; MacIntyre et al., 1997; Matsuda and Gobel, 2004; Marcos- Llinás and Garau, 2009; Park and French, 2013; Shao et al., 2013). It is comprised of 33 items, responded to on a 5-point Likert scale, ranging from "1 (Strongly agree)" to "5 (Strongly disagree)." It is generally recognized as having a one-factor structure (Horwitz et al., 1991) concerning performance evaluation within both academic and social contexts.

It demonstrated very high internal reliability ($\alpha = 0.93$, $n \approx 300$) and high test-retest reliability with an interval of 8 weeks ($r = 0.83$, $p < 0.001$, $n = 78$) in the FL context of the U.S., with all items significantly correlated to a global scale (Horwitz, 1986, p. 560).

High validity of the scale has also been demonstrated in criterion-related studies, specifically by investigating the correlation of the FLCAS with other closely related scales such as with Spielberger (1983) *Trait scale of the State-Trait Anxiety Inventory* ($r = 0.29$, $p < 0.01$, $n = 10$), with Watson and Friend (1969) *Fear of Negative Evaluation Scale* ($r = 0.36$, $p < 0.01$, $n = 56$), and with Sarason (1978) *Test Anxiety Scale* ($r = 0.53$, $p = 0.001$, $n = 60$) (Horwitz, 1986, p. 560, 561). In terms of the construct validity, FLCAS is generally considered as having a one-factor structure with three related kinds of anxiety integrated, i.e., communication apprehension, test anxiety, and fear of negative evaluation (Horwitz et al., 1986, 1991; Horwitz, 2017).

The present study adopted the Chinese version of FLCAS validated by Wang (2003). In the present study, the Cronbach's Alpha for the FLCAS is 0.920 (N = 1,718), showing that the scale has high reliability.

Open Questions for Emotional Intelligence and Classroom Emotions

Two open questions were designed for the participants to elicit data on EI and classroom emotions. Based on the trait emotional intelligence theory (Petrides et al., 2007; Petrides, 2010), the EI-related questions in L2 classroom settings were designed as follows: (1) "Do you have awareness of your feelings in L2 learning? (2) Do you have awareness to regulate, manage or control them, and if so, how do you do that?"

Procedures

There were two phases involved in data collection, a quantitative phase and a qualitative phase, respectively. In the quantitative phase (from early May to June 2017), a composite questionnaire was adopted to retrieve data for participants' demographical information (e.g., gender, age, and academic discipline), as well as the test variables in the present study including TEI, FLE, and FLA. Before the administration of the questionnaires,

TABLE 1 | Participants' demographic information (N = 1,718).

	School	No.	Male	Female	HSS	NS	Mean Age (*SD*)
Quantitative	A	349	195	154	38	311	16.61 (0.75)
Phase	B	439	253	186	186	253	16.69 (0.75)
(EI, FLE and FLCA)	C	930	447	483	743	187	16.93 (0.75)
	Tot.	1,718	895	823	967	751	16.81 (0.77)
Qualitative phase (EI)	C	64	35	29	20	44	17.74 (0.64)

HSS = Humanities and social sciences; NS = natural science.

both written and oral consent was obtained from different sides including school presidents, headmasters and English teachers as well as the students from each school. For the 49 students under 16 years old, written consent was also obtained from their guardians (parents or grandparents). Paper-and-pen questionnaires in a classroom situation were adopted because of the prevalent ban of mobile phones and personal computers in most schools at primary and secondary levels in China. In both oral and written instructions, students were assured that all the information they provide would remain confidential, and that all the data would be analyzed and used only for research purposes in an anonymous way. Furthermore, absence in the study or withdrawal from the study at any time would have no consequence for the students.

The qualitative stage took place in October 2017. Participants were involved and asked to respond to two open questions.

Quantitative Results and Discussion

The following findings were obtained in response to the research questions.

Levels of Emotional Intelligence and L2 Learning Emotions

Before doing referential analyses, Kurtosis and Skewness were calculated to establish that EI, FLE, and FLA exhibited normality (see **Table 2**). Descriptive statistics was then conducted to provide a general profile of students' EI, and two typical classroom emotions of FLE, and FLA. **Table 2** displays the results for the test of normality (skewness and kurtosis with their standard errors), and the parameters of mean score, standard deviation, median, mode, minimum and maximum for these target variables.

Trait emotional intelligence questionnaire – short form has 30 items coded on a 7-point Likert scale, indicating a possible score range between 30 to 210. As exhibited in **Table 2**, all of the three descriptive parameters of EI, namely mean score, median, and mode fell into the middle-to-high range of 120–150. The mean scores of the EFL learners in the present study were lower than those in previous studies at Chinese university levels (M = 140.78, SD = 20.75; Shao et al., 2013). This difference may be explained by the claim that EI may improve with age (Salovey and Mayer, 1990) and be developed through experience (Mercer and Gkonou, 2017). Additional frequency analysis showed that 5 (0.29%), 518 (30.15%), 1,136 (66.12%), and 59 (3.43%) out of the 1,718 participants fell into the low, low-to-middle, middle-to-high, and high range of EI, respectively, indicating the general tendency of most students (about 70%) to perceive themselves as moderately to highly emotionally competent in coping with emotion-laden information of their own as well as others. Standard deviations (17.87) in **Table 2** indicate great variations among students' EI scores. The Max. (198) and Min. (54) indicated that some students reported very high EI, while others reported a very low level of EI, highlighting the huge individual differences among the participants. This suggests that EFL teachers should be aware of and psychologically prepared for the inherent differences in emotion-related abilities among students, especially in FL classrooms which are infused with various emotional experiences arising from interactions between the FL teacher and students (Miyahara, 2015).

The CFLES is a 5-point Likert scale with 11 items, and thus participant scores range between 11 to 55. As shown in **Table 2**, all three parameters of mean, median, and mode fell between the middle-to-high range of 33–44; however, they were just slightly higher than the threshold score of 33, indicating that participants experience a moderate level of FLE. An additional frequency analysis showed that 84 (4.89%), 656 (38.18%), 873 (50.81%) and 105 (6.11%) out of the 1,718 participants fell into the low, low-to-middle, middle-to-high, and high range of FLE, respectively, indicating that a large percentage (more than 40%) of participants reported experiencing low or little FLE. Standard deviations (6.96) in **Table 2** indicate great variations among the FLE scores of the participants. The Max. (55) and Min. (11) indicated that some students reported experiencing high levels of enjoyment, while others reported experiencing little or no enjoyment in English learning, pointing to the inter-individual variability among the learners in the emotional experiences of enjoyment in English learning.

The FLCAS has 33 items coded on a 5-point Likert scale, with a possible score range between 33 to 165. According to the mean, median, and mode displayed in **Table 2**, participants reported a middle-to-high level of FLA, indicating the general tendency that most participants experienced moderate levels of FLA. Additional frequency analysis showed that 81 (4.71%), 733 (42.67%), 817 (47.56%), and 87 (5.06%) out of the 1,718 participants fell into the low, low-to-middle, middle-to-high, and high range of FLA, respectively, indicating that a large percentage (52.62%) of participants reported experiencing a middle-to-high or high level of FLA. Standard deviations (19.87) in **Table 2** indicate great variations among the FLA scores of the participants. The Max. (164) and Min. (35) indicated that some students reported experiencing a high level of anxiety, while others reported experiencing a low level of anxiety, pointing to the huge individual differences among students in their experiences of anxiety in English learning.

TABLE 2 | Descriptive statistics for emotional intelligence and classroom emotions (N = 1,718).

Variable	Score range	Mean	*SD*	Mdn	Mode	Min	Max	Skewness	*SE1*	Kurtosis	*SE2*
EI	30–210	134.09	17.87	135	130	54	198	−0.07	0.06	0.52	0.12
FLE	11–55	34.35	6.96	34	34	11	55	−0.29	0.06	0.66	0.12
FLA	33–165	100.19	19.87	101	103	35	164	−0.05	0.06	0.19	0.12

EI = Emotional intelligence; FLE = Foreign language enjoyment; FLA = Foreign language classroom anxiety.

An independent-samples *t-test* was conducted manually on the average score for each item in the FLE scale as well as the FLA scale between the Chinese sample in the present study and the international sample in the study by Dewaele and MacIntyre (2014). The results (see **Table 3**) shows that participants in the present Chinese EFL context reported a significantly higher level of FLA ($t = -3.195$, $p < 0.01$, $d = -1.27$, $r = -0.54$), while lower levels of FLE ($t = 11.79$, $p < 0.001$, $d = 0.40$, $r = 0.20$) were reported compared to their counterparts in the international sample. This also echoes the research findings that Chinese L2 learners scored relatively low in positive emotions and high in negative emotions in their L2 exploration (MacIntyre et al., to appear).

One possible reason could be the very strong exam orientation in FL learning in China and the high stakes it represents. Many students take extra English classes in 'cram schools,' from pre-school to the tertiary level, which can increase their levels of language-related stress. Compared to students in other parts of the world, Chinese students endure a considerable degree of cultural pressure: "being raised in a collectivistic culture which places a high value on education and filial piety, Chinese adolescents are pressured to achieve academically, not to disappoint their significant others, and to maintain their social identity" (Essau et al., 2008; p. 803). Although the exact cause of these great differences remains to be explored, considering the relatively high level of FLA and low level of FLE, we can safely conclude that there is considerable room for improvement in English education in a Chinese senior high school context. In fact, English classes are required for senior high school students almost each weekday, it is thus troubling to see students learning English with little or no enjoyment but with a lot of anxiety. Despite the distinctive effects of positive and negative emotions in L2 achievement, we suggest taking a holistic view within PP on leaners' development and investing more efforts in maintaining and improving students' emotional well-being, for instance, by fostering more positive emotions like enjoyment and alleviating the effects of negative emotions like anxiety.

Correlations Among Students' Emotional Intelligence and Classroom Emotions

Pearson correlation analyses were conducted among the three variables after the above-mentioned normality test (**Table 2**).

Medium sized correlations (Plonsky and Oswald, 2014) were found between each two variables (see **Table 4**). To be more specific, students' TEI was significantly related to both classroom emotions, in a positive relation to FLE while in a negative relation to FLA, indicating that more emotionally intelligent English learners tended to enjoy more and feel less anxious during their language exploration. This provides insightful pedagogical implications in that the improvement of TEI may contribute to more positive emotional experiences and fewer negative emotional experiences. Thus, training or intervention of TEI may also further function as intervention on classroom emotions including FLE and FLA. Qualitative analyses in the subsequent section will shed more light on the EI and L2 learning emotions of students.

Consistent with previous studies (e.g., Dewaele and MacIntyre, 2014, 2016; Dewaele and Alfawzan, 2018; Li et al., 2019), the present study revealed a significant negative relationship between the two prevalent classroom emotions. This suggests that in general leaners experiencing more enjoyment tended to feel less anxious in their L2 learning, and *vice versa*. This also suggests that boosting more enjoyment may be employed as an intervention to distracting learners from their "anxious selves." A qualitative study shows more details of learners.

Qualitative Findings

Emotional Intelligence and L2 Classroom Emotions

Fifty-five participants (15 males, 40 females) answered the open question related to EI. These questions were organized based on the theoretical constructs of EI (Petrides, 2009). More specifically, participants were asked a set of questions related to their EI. More specifically, they were asked whether they had awareness of their feelings during L2 learning, and whether they had the awareness to regulate, manage, or control them, and if so, how to do that.

Eleven out of the 55 participants reported that they had no awareness of their feelings in L2 learning while the remaining 44 participants reported that they had a strong awareness of their feelings and emotions in L2 learning. Furthermore, they drew on their TEI to cope with the feelings and emotions they experienced.

The narratives were analyzed and salient themes were identified when they support, complete, or enrich the quantitative findings on the relationship between TEI and positive and negative L2 learning emotions. In other words, they were coded when they reflected participants' ability to effectively respond to and cope with an emotional experience in their language journey.

The narratives showed that most participants were aware of their feelings especially in stressful situations or when experiencing anxiety. They also had the awareness of the

TABLE 3 | Comparisons of classroom emotions between the present study and the study by Dewaele and MacIntyre (2014).

Studies	Contexts	FLE		FLA	
		Mean (range)	*SD*	Mean (range)	*SD*
The present study	China (*N* = 1,718)	3.12	0.63	3.04	0.60
Dewaele and MacIntyre (2014)	International (*N* = 1,742)	3.82	0.46	2.75	0.83

TABLE 4 | Correlations among students' emotional intelligence and L2 classroom emotions.

	1	2	3
TEI	–		
FLE	0.313***	–	
FLA	−0.389***	−0.438***	–

*N = 1,718. ***Indicates statistical significance at a p < 0.001.*

necessity to cope with negative emotions (e.g., anxiety, stress). Specifically, first, some of them tended to make themselves *feel more neutral* by self-distraction, engaging themselves in something or some events unrelated to the present emotional stimulus. For example, some students responded as follows, "When I felt so stressed or anxious in English learning, I would just do something unrelated to English, requiring no attention or cognitive efforts." Strategies including reading non-English books, listening to music, sleeping, and having a cup of coffee were frequently mentioned as effective ways to distract themselves from the stressful or anxious situation. Second, some students also reported that they tried to *make themselves feel more positive or opposite emotions* in stressful or anxious situations by distracting themselves with something which can boost positivity. For example, they mentioned involving themselves in interesting English songs which may enhance their interest and likings toward English. They also mentioned thinking of things in English learning which brings happiness and motivates them to learn. They emphasized thinking positively in emotional regulation, especially changing their mood, and boosting their confidence in English learning by having clear and attainable goals.

Besides the self-distraction, some students reported *self-comforting experiences* in stressful and anxious situations. Taking a breath, closing ones eyes, and trying to calm down were frequently mentioned self-soothing behaviors.

Unlike self-distraction and self-comforting, other students reported their experiences of *employing the psychological process of motivation and cognition* to cope with their negative feels or emotions such as anxiety, frustration, and stress directly. For example, some students reported that when they felt anxious or stressed, they would make more efforts and be fully attentive in ongoing tough tasks (e.g., reading, recitation, English class), which was originally the negative emotional stimulus. Other students reported that when they felt frustrated or stressed, they would remind themselves of the great importance of English and the benefits of having a good command of English to make themselves feel more extrinsically motivated in English learning.

Altogether, considering the findings, we can conclude that they were closely tied to the theoretical constructs of TEI (Petrides, 2009, p. 89). For example, the findings empirically instantiate the facets of TEI in the specific domain or context of EFL learning. For example, the following facets including "emotion perception," "emotion regulation," "stress," "self-esteem," "trait happiness," "trait optimism," "adaptability," and "self-motivation" (Petrides, 2009, p. 89) were found in the narratives. To conclude, TEI is related to the emotional awareness, as well as the ability to respond and cope with negative emotions, or to generate more thought-facilitative positive or neutral emotions, supporting the quantitative findings on the significant relationships between TEI and two typical kinds of emotions in L2 learning. Thus, we can argue that, students who have a higher level of TEI tended to feel less anxious and enjoyed more in a certain situation *via* specific regulatory strategies.

Conclusions and Implications

The quantitative and qualitative results converge to confirm the significant relationships between TEI and both positive and negative L2 classroom emotions, and the general negative relationship between FLE and FLA with other interacting patterns.

The present study shows its main limitation in its measurement. The quantitative data was retrieved only from self-reported scales, meaning that the emotional abilities in the present study are basically self-perceived emotion-related abilities and are unavoidably amenable to social desirability bias. Furthermore, the traditional research methods based on retrospective data collection may either overlook the short-lived and dynamic feature of emotions in the astatic and fluctuating communication process, or define an emotion partially as one specific emotional reaction, which is significantly stronger or occurs closer to the end of the event.

Despite the limitation, the present study still provides insightful theoretical and practical implications. Theoretically, the quantitative and qualitative findings converge to support the theoretical construct of TEI, linking TEI to both positive and negative emotions empirically in our field of L2 learning. Practically, the quantitative and qualitative findings highlight the co-existence of a great variety of L2 classroom emotions. This provides pedagogical implications that the teacher should be psychologically aware of and should be prepared to embrace leaners' affective ambivalence (MacIntyre et al., 2009) instead of attempting to create an ideal negativity-free learning environment for their students. Instead, it is more fundamental to equip students with relatively stable emotional strengths and emotional ability to cope with situation-dependent, short-lived and dynamic emotions.

The findings also show the relationships between TEI and different L2 classroom emotions, complemented by qualitative findings on how EI was employed to cope with emotions. Grounded on both the empirical findings and the theoretical links between TEI and emotions, the following intervention of EI was implemented to improve students' EI and further affect their classroom emotional experiences.

STUDY 2: EI INTERVENTION BASED ON THE "ARGUER" MODEL AND "THREE ACTIVITIES"

Methods

The whole intervention program is summarized in **Table 5** and subsequently described in greater detail. The outline for the training is presented in the **Appendix**.

Participants

Two classes from a boarding high school (School D) in Lu'an City, China, were involved in the whole program. In this school, most of the students were students who were left-behind, without their parents living with them. The two participating classes were randomly assigned as the intervention group and the control

TABLE 5 | Summary of the intervention practice.

Procedures	Activities	Participants		Instruments	Duration/frequency
		Intervention	Control		
Pre-intervention survey	Questionnaire 1	56 students	52 students	*TEIQue–SF* CFLES FLCAS	Once
EI intervention	EI training	56 students	/	ARGUER	6 h (1 h per week)
	Diary	56 students	/	ARGUER and "Three Activities" from PP	12 times (twice per week)
Post-intervention survey	Questionnaire 2	56 students	52 students	*TEIQue–SF* CFLES FLCAS	Once
	Interview	5 students and their English teacher	/	Face-to-face semi-structured interview	Once

group, respectively. They had the same English teacher. For the intervention group, 56 students (Mean age: 16.12; *SD*: 0.74) of Year One participated in the pre- and post- intervention surveys and the intervention activities ("ARGUER" approach to EI training and diary reflection). Five of the students and their English teacher took the post-intervention interview. In the control group of 52 students (Mean age: 16.22; *SD*: 0.73), there was no intervention practice and the students were only required to complete the pre- and post- intervention questionnaires. Before the conduction of the intervention program, we obtained both written and oral consent from the principal of the school, the headteachers of the classes, the English teacher, and the students. We also obtained written consent from 11 guardians (parents or grandparents) of those students under 16 years old.

Instruments

Composite questionnaire

The instruments used for pre- and post- intervention questionnaire surveys were composed of TEIQue–SF (Petrides and Furnham, 2006; Petrides, 2009), CFLES (Li et al., 2018), and FLCAS (Horwitz et al., 1986) (refer to the section of Instruments in the previous large-scale investigation study).

The "ARGUER" model

ARGUER model of EI training was based on *trait EI theory* (Petrides and Furnham, 2000, 2001, 2003) and *four-branch ability model of EI* (Mayer and Salovey, 1997) and designed by adapting the RULER model (Brackett et al., 2009, 2011). The ARGUER model was designed mainly in combination with emotional experiences in EFL learning/use-specific contexts. The acronym represents six interrelated emotional skills, indicating that the acronym here is not intended for taxonomy or hierarchy, instead each skill is likely to influence another. The first author was the trainer, conducting the training of all the six "ARGUER" dimensions throughout the 6 weeks (1 h for one EI dimension training in 1 week). Herein, for simplicity, we describe briefly each of them separately.

Awareness of feelings and emotions in self and others in week 1

An inductive approach was adopted throughout the training program. First, the first author, the trainer in the intervention program, asked the students and the English teacher to discuss the importance of emotions in different life aspects including English learning and teaching supported by their own experiences. Then, they were asked to reflect on the degree of their awareness of the emotions in themselves and others in general contexts as well as in English learning and teaching contexts. Finally, the trainer made a summary by emphasizing the importance of emotions, and awareness of emotions, and showing the necessity of developing one's emotional awareness as a habit both in daily communication and English learning and teaching.

Recognizing emotions in week 2

The students were asked to reflect on their ability to recognize the emotions in others including their classmates and English teacher. Verbal and non-verbal cues were mentioned as basic ways for them to recognize their English teacher's emotions. They were also asked to support themselves by using examples in the English class (the English teacher was informed of the potential discussion related to her beforehand). Comparatively speaking, the emotions of their classmates were seldomly discussed. Instead, they mentioned classroom atmosphere which they can judge from the degree of engagement, voluntary behaviors, and the emotions of a large group of students. After the discussion, the trainer emphasized the importance of the ability to recognize emotions of others in daily communication as well as in interactions in English class (e.g., teaching/learning effectiveness and positive relationship), and summarized different ways of recognizing emotions (e.g., facial expression, spatial movement, gesture, posture, pause, repetition, volume, pitch) supported by pictures or examples.

Generating positive emotions that facilitate thinking in week 3

In Week 3, the students were trained to improve their awareness and ability to generate positive emotions. They were asked to reflect on and discuss the following questions:

(1) What kind of positive emotions have you experienced in English learning?
(2) Are these emotions beneficial to you or your English studies?
(3) Do you frequently experience these emotions?
(4) Do you have the awareness to generate these kinds of emotions?

(5) If you experience these emotions, do you have the awareness to keep them.

After the discussion, the trainer summarized the types of positive emotions, the benefits they bring in different aspects including psychological, social, and psychical domains supported by PP theories, for instance, the broaden-and-build theory (Fredrickson, 1998, 2001, 2003) and the control-value theory of achievement emotions (Pekrun et al., 2007), empirical studies (Dewaele and Alfawzan, 2018; Saito et al., 2018; Li et al., 2019) and self-examples. The trainer also highlighted the need to enhance the awareness of generating and keeping positive emotions by employing some aspects of their TEI including self-motivation, trait optimism, and trait happiness based on the *trait EI model* (Petrides, 2009).

Understanding causes and consequences of emotions in self and others in week 4

In Week 4, students were trained to improve their emotional skills in identifying and analyzing the antecedents and consequences of emotions especially in English learning or use. First, students were encouraged to reflect on and share their emotional experiences. Then, two cases in English class based on the trainer's own experience was provided for the students to identify the English teacher's emotions, and the antecedents and consequences of them. Finally, the trainer summarized the students' emotional experiences. Grounded in the broaden-and-build theory (Fredrickson, 1998, 2001, 2003), the control-value theory of achievement emotions (Pekrun et al., 2007), and some empirical studies (e.g., Li et al., 2018), the trainer pointed to the intra-and inter-personal factors for and process of the instigation of emotions, providing implications for effective emotion regulation by intervening on the antecedents of the emotional process. Furthermore, the trainer also pointed to the important role and possible consequences of emotions in both language learning and well-being, supported by the above-mentioned theories and empirical studies (e.g., Li et al., 2019).

Expressing emotions appropriately in week 5

Two cases were provided for students to improve their awareness of the importance of expressing emotions appropriately. The two cases based on the trainer's own experience were both about students who benefited from expressing their emotions to someone they trust.

Regulating emotions in self and others effectively in week 6

Students were asked to reflect on the ways they regulate or manage their emotions and then to share them with their deskmates. Some of them were invited to share the most effective way to cope with their negative emotions especially in English learning. The trainer summarized the most frequently mentioned emotional skills or strategies. Furthermore, according to the control-value theory (Pekrun et al., 2007), control and value appraisals of an emotional stimulus are prerequisites for emotion instigation. The trainer thus taught the students to change their appraisals of either control or value, further regulating their emotions fundamentally.

"Three activities" from PP

The present study adopted the PP-based "Three Activities" as part of the diary, which was developed in a language learning context by Gregersen et al. (2014) based on the original study of Seligman et al. (2005). "Three Activities" herein refers to "identifying "three good things, savoring positive experiences, and developing learned optimism" in English learning (Gregersen et al., 2014, p. 328, p. 340–345).

Semi-structured interview for students

Five students (who volunteered to participate when the class was informed of the interview) from the experiment class were interviewed after they completed the post-intervention questionnaire. The prompts for the interview were arranged as follows:

(1) What do you think of the AUGUER model of EI training? Beneficial or not? Why?
(2) Do you feel any changes in yourself and others during or after the training? If so, please give some examples.
(3) The program is over now, are you still willing to continue some emotional practices? Why?

Semi-structured interview for English teacher

The English teacher of the two classes was also interviewed. The prompts for the semi-structured interview were as follows:

(1) What do you think of the AUGUER model of EI training? Beneficial or not? Why?
(2) Do you feel any changes in the class? If so, what are they? Please specify them.

Procedures

A pre-test, treatment, and post-test design was adopted to testify the efficacy of EI intervention. First, the pre-intervention survey was conducted shortly after the quantitative results of Study 1 were obtained. More specifically, a pre-test between-group comparison was conducted between the two participating classes to guarantee that they were at comparable levels in terms of their TEI ($t = -0.937$, $p = 0.351$) and L2 classroom emotions, namely FLE ($t = 1.060$, $p = 0.291$) and FLA ($t = 1.138$, $p = 0.258$). Based on the results, the two classes were assigned as the intervention group and the control group, respectively.

Second, the EI intervention practice was implemented from June to July 2017. The intervention lasted for 6 weeks, consisting of ARGUER training of EI in evening classes (a prevalent form of self-study class in the evening for secondary school students in China), and weekday diary, reflection along ARGUER dimensions and "Three Activities" from PP.

Third, the post-intervention survey was conducted in the two groups using the same composite questionnaire as was used in the pre-intervention survey. Furthermore, five students from the intervention group and their English teacher participated in face-to-face semi-structured interviews.

Results and Findings

ANCOVA tests for EI, FLE and FLA were conducted to compare intervention and control post-test scores with pre-test scores, controlled as co-variables. **Table 6** displays the results.

TABLE 6 | Pre- and post-comparison within the intervention and control groups.

	Groups		Mean	*N*	*SD*	Skewness	*SE1*	Kurtosis	*SE2*	*F*(1,105)	*p*	η^2
EI	Intervention	TEI1	134.93	56	17.99	−0.017	0.319	−0.625	0.628	23.486	0.000	0.183
		TEI2	139.05	56	18.76	−0.181	0.319	−0.361	0.628			
	Control	TEI1	137.88	52	14.44	0.620	0.330	1.355	0.650			
		TEI2	138.37	52	14.45	0.630	0.330	1.207	0.650			
FLE	Intervention	FLE1	36.75	56	5.17	−0.060	0.319	0.914	0.628	6.346	0.013	0.057
		FLE2	38.98	56	5.60	−0.621	0.319	0.861	0.628			
	Control	FLE1	35.40	52	7.84	0.049	0.330	1.015	0.650			
		FLE2	36.06	52	7.33	−0.435	0.330	1.146	0.650			
FLA	Intervention	FLA1	98.27	56	19.24	0.262	0.319	0.723	0.628	17.726	0.000	0.144
		FLA2	95.63	56	17.55	−0.137	0.319	1.247	0.628			
	Control	FLA1	94.02	52	19.55	−0.092	0.330	0.015	0.650			
		FLA2	94.38	52	19.95	−0.233	0.330	0.231	0.650			

According to this table, in the intervention group, there was a significant increase in the scores for TEI and FLE, and a decrease in FLA, indicating the significant effect of EI training in all of the three variables. However, the effect size for the intervention on FLE was quite small. Altogether, we can conclude that the EI intervention consisting of ARGUER and the three activities is effective in improving EI and to correspondingly boost more positive emotions, reducing negative emotions in the context of EFL learning.

The qualitative interview with five students supported the efficacy of EI with rich details. They reported benefiting from the training in different aspects, most of which are inherently tied to the instigation of more positive emotions and reduced negative emotions. For example,

Xiaoming (pseudo name)

> *. . .I felt so surprised that we could have such kind of training. I am so* ***happy*** *that our headteacher cares about our mental states so much in addition to our learning achievements. The past 6 weeks were so* ***rewarding and unforgettable.*** *I felt much* ***more emotionally aware and competent****. Sometimes I felt so tired and frustrated In English class, I tried to* ***remind myself of the importance of English for my future, and I got motivated*** *to learn English again. Also, sometimes, when I felt bored because of the repeated recitation of English words, I would consciously* ***change my focus to other tasks which were more likely to bring me enjoyment and happiness****. . .*

This extract showed the interviewee's positive attitude toward EI training. It also indicates the benefits of the EI training including enhanced emotional awareness, increased self-motivation, improved awareness and the ability of emotion regulation, and more chances of experiencing positive emotions. Those outcomes are exactly the elements of EI according to its theoretical constructs (Petrides, 2009)., foregrounding the link between EI and emotions in English learning.

Xiaoli (pseudo name)

> *. . .Sometimes, when I saw that nobody responded to the enthusiastic English teacher, which was very* ***embarrassing****, I would volunteer to answer the question. I felt* ***the English teacher was relieved and very happy*** *about that, which also* ***made me happy****. . .*

This extract indicated the interviewee's positive change in responsive behaviors in class. She demonstrated an increased level of empathy toward the English teacher, which in turn brings her happiness. In other words, the EI element of empathy (Petrides, 2009) is linked to emotions.

Xiaowang (pseudo name)

> *. . .Time flies! The 6 weeks passed so quickly. I have become* ***accustomed to reflecting on my ARGUER and "three activities"*** *in my diary. I am not sure whether I will still keep the diary, but I am definitely sure that I will* ***make it a habit to reflect on my emotional skills and emotional experiences, not only in English learning but also in my daily life****. Thanks to the training, I find myself* ***stronger and happier****.*

This extract indicted the effectiveness of the EI training in improving trait happiness and optimism, both of which are key elements of TEI construct (Petrides, 2009).

The above narrative corresponded to the two prompts for EI, highlighting the effectiveness and popularity of EI training. The English teacher, the leading side of classroom interaction, was also interviewed for her perceptions of students' emotional states in English learning. The following excerpts are from her narrative:

> *. . .The training is* ***rewarding*** *for it points to* ***the mental health of students****, which is equally important for students' development. However, so little has been done in this aspect. Thus, I hope you can do more in this field, which will help students become* ***emotionally stronger and healthier****, especially those introverts who dislike or feel uncomfortable expressing their emotions even when they need social support.*

> *. . .The most impressive change is that I noticed* ***more responsive and motivated behaviors****. They seem to be more cooperative in class. Previously, it is easy to embarrass myself in a class activity where nobody reacts to me. Now, they seem to be* ***more considerate toward me****. Furthermore, their l****earning motivation is greatly enhanced****. Maybe, it is because you shared your motivating academic stories with them. . .*

The teacher's excerpts echoed students' in the recognition of the benefits of the EI intervention: more empathy and enhanced

language learning motivation. Considering the quantitative results and qualitative findings, the present study in the specific field of SLA, supports the main claim that increasing EI bolsters well-being, emotional experiences and social relationships in the studies by Nelis et al. (2011) and by Lea et al. (2018).

Conclusions and Implications

Before concluding, we have to note two of the limitations in the present study. First, this study was a 6-week snapshot of EFL learners' emotional experiences throughout the EI intervention. There is no way to know the lower limits and upper limits of the length of intervention implementation and assessment. Furthermore, it remains unknown whether the effectiveness from the intervention are short-lived or not. A delayed post-test could be a good way to elucidate this. Finally, most students from the two classes are children who have been left behind for many years and were studying in the boarding school when the study was conducted. The experiences of being left-behind without their parents supporting them daily may have some influence on their psychological features, including EI and emotional experiences in school (Liang and Wang, 2018). Thus, great caution should be taken in terms of the generalizability of the findings to samples or contexts.

Despite these limitations, this is the first mixed-method study showing an EI intervention program in EFL learners and its effectiveness in improving emotional skills as well as affecting emotional experiences based on the *trait EI theory*. This program was tightly grounded on the RULER approach in general psychology as well as "three activities" adapted from PP and used in a language education context (Gregersen et al., 2014). As we were trying to improve learners' awareness of and skills in different EI dimensions, we were at the same time moving to increase their ability to cope with different emotion-related information in learning. As EI dimensions such as happiness, optimism, self-motivation, and emotional regulation can put the wind in one's sails, more positive emotions can inevitably be boosted, and negative emotions can be reduced and managed because of the joint effects of gains in different EI dimensions and positive emotions.

The present study shows practical implications for L2 education in that it offers a theory-grounded and operational intervention practice from a PP perspective in the context of Chinese EFL learning.

SUMMARY OF STUDY 1 AND STUDY 2

To conclude, the current research revealed the significant relationships between TEI and L2 classroom emotions, presented a PP-based EI intervention practice in the EFL context, and testified to its effectiveness.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. All participants above the age of 16 provided written informed consent, For participants below the age of 16, written informed consent was obtained from their parents or their legal guardians.

AUTHOR CONTRIBUTIONS

CL designed the research, collected, processed, and analyzed the data, and wrote the whole manuscript. JX revised the manuscript.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

APPENDIX

TABLE A1 | Outline of Emotional Intelligence Training Sessions.

Session 1: Awareness of feelings and emotions in self and others.

1. Welcome.
2. Introduction of the six sessions of EI training in class.
3. Introduction of "Three Activities" in the diary after class.
4. EI training.
   (1) Introduction of the definition, importance, malleability and training of EI in the context of L2 learning.
   (2) Introduction of the ARGUER model.
   (3) Dimension 1: A = Awareness of feelings and emotions in self and others.
   Inductive approach: Students' reflection, discussion and sharing followed by the trainer's (the first author) comments and summary supported by cases and examples.
   (4) Summary and homework (Reflection on Dimension 1 and diary based on "Three Activities").

Session 2: Recognizing emotions in self and others.

1. Review of previous session.
2. EI training.

Dimension 2: R = Recognizing emotions in self and others.

   (1) Improving students' awareness to recognize the trainer's emotions and emotion changes.
   (2) Identifying and recognizing the trainer's emotions with verbal and non-verbal cues.

3. Summary and homework (Reflection on Dimension 2 and diary based on "Three Activities").

Session 3: Generating positive emotions that facilitate thinking.

1. Review of previous session.
2. Dimension 3: G = Generating positive emotions that facilitate thinking.
   (1) Students' reflection on their experiences of positive emotions in English learning and the benefits and frequencies of these experiences.
   (2) Students' reflection on their awareness and competence of generating and keeping these positive emotions.
   (3) Case analysis.
   (4) Practice of positive thinking in some difficult situations in English learning.
3. Summary and homework (Reflection on Dimension 3 and diary based on "Three Activities").

Session 4: Understanding causes and consequences of emotions in self and others.

1. Review of previous session.
2. Dimension 4: U = Understanding causes and consequences of emotions in self and others
   (1) Cases analyses.
   (2) Role play in given English teaching situations.

Summary and homework (Reflection on Dimension 4 and diary based on "Three Activities").

Session 5: Expressing emotions appropriately.

1. Review of previous session.
2. Dimension 5: U = Expressing emotions appropriately.
   (1). Introduction of different ways of emotion expressions.
   (2). Case analysis.
   (3). Students' anticipation of their emotion expression in future.
3. Summary and homework (Reflection on Dimension 5 and diary based on "Three Activities").

Session 6: Regulating emotions in self and others effectively.

1. Review of previous session.
2. Dimension 6: R = Regulating emotions in self and others effectively.
   (1) Case analysis
   (2) Practice of positive thinking in some difficult situations in English learning.
   (3) Anxiety reduction practice.
   (4) Regulation of teachers' emotion.
      Improving students' awareness of noticing teachers' emotions.
      Improving students' awareness of being empathetic by analyzing the causes and consequences of teacher's emotions.
3. Summary and homework (Reflection on Dimension 6 and the whole ARGUER model, and diary based on "Three Activities").

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Pre-post Changes in Implicit Theories of Second Language Acquisition After a Successful Learning Experience

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Students enrolled in language classes often report believing that natural talent is necessary to acquire a second language in adulthood, and this belief can reduce motivation and learning. The purpose of this research was to test if a positive experience promotes the belief that language learning is an ability that can be developed through persistence and effort (i.e., an incremental implicit theory, or growth mindset). We hypothesized that participants would endorse an incremental implicit theory more after using effective study strategies to successfully learn characters in another language. In this study, participants were taught how to read 20 Japanese characters, and their implicit theories of second language acquisition were measured at three time points: days before the learning experience, immediately after, and 2 weeks after the learning experience. Results showed that this brief episode of success in language learning increased an incremental implicit theory of second language acquisition, and this change persisted 2 weeks later.

Keywords: implicit theories, second language acquisition, growth mindset, motivation, language education

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INTRODUCTION

Learners' motivation to acquire a second language (L2) is critical to eventual success in second language acquisition (SLA), but motivation is a complex mental process that extends from a multiplicity of both internal (e.g., enjoyment, interest) and external (e.g., social support, potential rewards) factors (Dörnyei, 2005). From this perspective, learners who have a positive attitude toward the target language and the learning situation will experience the greatest motivation and thereby learn the most (Gardner, 2010). Although some of the factors that determine positive attitudes can be idiosyncratic to the learner and outside of the teacher's control (e.g., inherent interest in and enjoyment of a particular language), experiences that occur within the learning situation can also foster positive attitudes (MacIntyre and Mercer, 2014).

In this research, we focused on learners' beliefs about the attainability of SLA through effort vs. natural talent, known as their *implicit theory* of SLA (Mercer and Ryan, 2010).

Implicit theories are beliefs about the malleability of various skills (Dweck et al., 1995). People with an entity theory believe certain skills—e.g., intelligence, mathematics, music—are determined by natural talent and are resistant to change, whereas those with an incremental theory believe effort and practice can improve these skills. These beliefs are also known as fixed vs. growth mindsets, respectively (Yeager and Dweck, 2012).

The purpose of this research was to test if a brief positive experience of successful learning can promote an incremental theory of language acquisition that is sustained over time. Decades of research on implicit theories, pioneered by Dweck et al. (1995), have shown that people who adopt an incremental theory of ability are more successful in that performance domain. In academics, students with an incremental theory of intelligence attribute their grades to their own efforts, so they are more likely to persist in the face of setbacks and to respond to challenges by changing their approach (e.g., Dweck and Leggett, 1988). For example, in a longitudinal study by Shively and Ryan (2013), students who came to endorse a stronger entity theory of math over time (i.e., believing people either do or do not have a capacity for math) also earned lower math grades, while students who maintained an incremental theory about math were more likely to seek tutoring or other forms of help and subsequently earned higher math grades.

IMPLICIT THEORIES AND SECOND LANGUAGE ACQUISITION

In the U.S., where the current research was conducted, attitudes toward language learning often start positive but become more negative as schooling continues over the years (Heining-Boynton and Haitema, 2007). There are numerous obstacles for SLA in the U.S., such as English's status as a global language reducing the perceived value of learning an L2 (Crystal, 2003), which is a problem in other English-speaking countries as well (Graham, 2004). However, implicit theories of SLA may be one contributing factor, and this psychological factor can influence motivation in learners around the world. We speculate that many learners have experienced failure to learn an L2 in the past simply because they used ineffective learning strategies. Operating under this assumption that beliefs originate in past experiences, in the current research we sought to facilitate positive beliefs about SLA (specifically, an incremental implicit theory) by providing learners with a positive experience of language learning.

When language learners have struggled in the past, there is an incentive to believe in the notion of "language giftedness": past failure or poor performance can be blamed on not having an aptitude for language, rather than on insufficient or ineffective practice (Horwitz, 1988; Dörnyei, 2003; Graham, 2004; Hsieh and Schallert, 2008; Mercer and Ryan, 2010). Beginning learners may be especially vulnerable to this process. For example, in a study of secondary students learning French in the U.K., beginning students said ability—the presence or lack thereof—was the number one reason for their success or failure, whereas advanced learners rated effort as most important (Graham, 2004). When learners decide they do not possess a talent for languages, their self-efficacy for SLA decreases as does their motivation to persist (Graham, 2004; Hsieh and Schallert, 2008).

Learners' implicit theories of language also predict how they think SLA occurs, with potentially destructive consequences. For example, learners with an entity (i.e., fixed) theory of language learning think they can acquire an L2 while studying abroad simply through exposure and absorption, and that explicit, effortful learning is unnecessary (Mercer and Ryan, 2010). In reality, SLA in adulthood requires considerable time, sustained study, and active engagement with the material (e.g., Seliger, 1977; Ortega, 2009). These beliefs are particularly important when language learners experience failure or setbacks. Lou and Noels (2016) primed either an incremental or entity mindset of language in university students by having them read a bogus news article endorsing one of the two mindsets. They found that learners who were primed with an incremental language theory more strongly endorsed learning goals and exhibited mastery responses in failure situation, compared to learners who had been primed with an entity language theory. Lou and Noels (2017) additionally proposed and tested a Mindsets-Goals-Responses model of SLA, finding that participants' implicit theories determined their goal orientations, which in turn sheds light on their reactions to setbacks. Their research did not test actual learning outcomes, however. There are strong associations between using better study strategies, self-efficacy, and attained proficiency (Oxford and Nyikos, 1989), yet many learners report believing that people who "have" to study must not be gifted at languages (Mercer and Ryan, 2010). Although individual differences can affect SLA, SLA is achieved through various abilities, some of which can develop through the learners' efforts (Mercer, 2012).

Implicit Theory Interventions

Experimental interventions designed to change students' implicit theories provide support for a causal relationship between these beliefs and performance. Middle school students who were taught to have an incremental theory earned higher math grades than those who were only taught about study strategies (Blackwell et al., 2007). Similarly, university students who were taught that the brain grows new connections when they learn (i.e., an incremental theory) received higher grades over the course of a year than students in a control condition (Aronson et al., 2002). In both Noels and Lou (2015) and Lou and Noels (2016), university students enrolled in language courses who were primed with incremental language beliefs had less negative reactions to setbacks and greater intentions to continue with language study. Several implicit theory interventions have been found to produce sustained changes, with the positive effects still apparent 6 (Heslin et al., 2005) and 9 (Aronson et al., 2002) weeks later.

However, a recent meta-analysis revealed that the effect sizes of growth mindset interventions are small at best (Sisk et al., 2018). A growth mindset involves focusing on effort rather than ability, but emphasizing effort can backfire if students do not use effective learning strategies (Dweck, 2015). In fact, students who study or practice intensely with the wrong strategies and fail to improve may become even more certain that they lack ability. In a way, people can feel relieved when lack of progress can be blamed on lack of natural ability; it becomes a rational excuse to try less and reduces motivation for that task or learning domain (Rattan et al., 2012). Implicit theories are related to essentialism, which is the pervasive belief that people and things have unchanging natural essences (Bastian and Haslam, 2006). In the U.S. people show a preference for a person who has always

possessed a positive trait compared to someone who acquired that trait over time (Lockhart et al., 2013), and students are most attracted to peers who earn high grades with little effort (Juvonen and Murdock, 1995). Although success without effort is attractive, even when talent is never mentioned, people assume that a performer who supposedly achieved success through hard work must have natural talent as well (Brown et al., 2018). Many students report believing that learning will occur either quickly or not at all, and this belief predicts worse academic performance (Schommer, 1994). In fact, continued effort could indeed become wasted effort for the many students who use ineffective study strategies and have mistaken beliefs about how learning occurs (Kornell, 2009).

With this in mind, the goal of the current research was to use a firsthand experience of language learning success to change students' implicit theories of SLA. A key distinction between this study and past research is that we did not prime implicit theories using readings, lectures, or instructions that make statements in support of one of the two mindsets. Instead, we sought to change participants' beliefs using a firsthand experience of success in an early stage of language learning. This change is valuable for several reasons: Manipulations that involve exposing learners to statements in favor of a growth mindset may be overly transparent, which could elicit reactance in some learners (Brehm and Jack, 1981). Second, experiencing a personal success may be more powerful and longer-lasting than being told, in the abstract, that a particular ability can be changed.

Overview of the Current Research

In this study, English-speaking students at a university in the U.S. reported their implicit theories of SLA prior to an experimental training that was administered in a laboratory. During the laboratory visit, they successfully learned how to read 20 Japanese characters. Their implicit theories were measured at the end of the session as well as 2 weeks later to assess immediate and sustained change in beliefs.

We hypothesized that a firsthand experience of successful learning would cause participants to adopt a more incremental theory of SLA. We randomly assigned participants to one of three learning tasks that were supposed to vary in effectiveness. Past research shows that recalling previously-read material causes better retention than simply re-reading that material, a phenomenon known as the testing effect (Roediger and Karpicke, 2006). Two of our conditions involved learning through quizzing, and we predicted that both performance and incremental beliefs would be highest in these conditions. Unexpectedly, however, participants in the control condition also performed very well on the learning task, so all participants ultimately experienced success in an early phase of language learning. Therefore, the effect of this positive experience was assessed by comparing changes in implicit theories over time across all participants. We also measured participants' implicit theory of intelligence and their beliefs about the nature of learning to assess if change in beliefs about language would transfer to other domains.

METHODS

Participants

The population of learners we were interested in was university students. Our research objective was to test the effectiveness of a learning experience with learners who are *not* already intrinsically motivated to study an L2 and whose past experiences may have led to maladaptive beliefs about SLA. Most college students have already had years of L2 education (i.e., high school and middle school classes), making this an ideal group to receive our planned positive learning experience to change beliefs. College may also be the last opportunity to use external incentives (e.g., required classes) to stimulate interest in learning an L2. However, recruiting from and administering surveys in language classes would create demand characteristics, so we carried out the experience in a context not obviously connected to language education. Most of the student population had previously studied Spanish or French, so we chose Japanese as the target language to ensure that participants would be complete beginners. As described below, four participants with some knowledge of Japanese were excluded.

At the beginning of the academic semester, a short online survey (Time 1 session) was made available to students enrolled in psychology courses with a research participation requirement. Completing this survey made them eligible to sign up for the laboratory session (Time 2). Of the 72 participants who completed the Time 1 survey, 55 (45 women, 10 men; age $M = 19.95$, $SD = 3.03$) chose to sign up for the laboratory session. Seventy-one percent of these participants (32 women, 7 men; age $M = 20.05$, $SD = 3.52$) also completed the Time 3 follow-up survey. The decision about when to terminate data collection was not based on predetermined sample size. Instead, because we knew that attrition across sessions would naturally limit sample size, we decided *a priori* to run the experiment for the entire duration of the semester in order to recruit as many participants as possible.

Errors during the Time 2 laboratory procedure (e.g., frozen computer) necessitated the exclusion of data from two participants. An additional four participants were excluded because they reported having studied Japanese in the past. The final sample for the laboratory session was 49 participants (40 women, 9 men; $M = 20.02$, $SD = 3.20$). The sample of participants who completed all three sessions was 36 (30 women; 6 men; $M = 20.14$, $SD = 3.64$), and the comparison between Time 2 and Time 3 responses is limited to these participants. However, the analyses of performance on the laboratory learning tasks and change in beliefs from Time 1 to Time 2 include all 49 participants present at Time 2, but the results remain the same when participants who did not complete Time 3 are excluded.

Time 2 implicit theories of SLA did not differ between participants who did and did not complete the final Time 3 follow-up survey [$F_{(1,47)} = 0.04$, $p = 0.846$, $d = 0.07$]. Attrition for Time 3 also did not vary by Time 2 condition, as each of the three conditions lost either 4 or 5 participants. Retention was excellent during the first month of the experiment (97% retention). Immediately after spring break, retention dropped to 33%. By this point most students had already completed their

required research credits so they lacked incentive to complete the final survey.

Materials

Implicit Theory of SLA

We adapted a preexisting domain-specific measure of implicit theories, Biddle et al.'s (2003) short version of the Conceptions of the Nature of Athletic Ability scale (Sarrazin et al., 1996), to apply to second language acquisition. The instructions read, "The following statements are about learning a new language. Please indicate how much you agree with each statement." Participants responded to 11 questions on a scale of 1 (*strongly disagree*) to 6 (*strongly agree*). Sample statements include, "How good you are at using another language will always improve if you work at it," and "To be good at a new language, you need to be naturally gifted" (Time 1, 2, and 3 αs = 0.84, 0.90, 0.93).

After these statements, participants were asked to complete the following equation such that it totaled 100%: "Learning a new language = __% effort + __% ability." Below this were two boxes, "% ability" and "% effort." The survey program alerted participants if the sum of their answers was not 100.

Implicit Theory of Intelligence

We used the three-item measure of implicit theory of intelligence from Dweck et al. (1995). Participants indicated their agreement to statements such as, "You can learn new things, but you can't really change your basic intelligence," on a 6-point agreement scale (Time 1, 2, and 3 αs = 0.92, 0.93, 0.91). Participants also completed the effort vs. ability equation for intelligence, assigning a percentage of 0–100 for each.

Quick-Learning Beliefs

Using the same 6-point scale, participants rated their agreement with three statements from Mori (1997); adapted from Schommer (1990): "If I cannot understand something quickly, it usually means I will never understand it," "If I am ever going to be able to understand something, it will make sense to me the first time I hear it," and "Successful students understand things quickly" (Time 1, 2, and 3 αs = 0.61, 0.76, 0.74).

Procedure

The study took place over three sessions. Participants provided informed consent during each session and received research credit compensation immediately after each session. The first session was an online survey, containing the measures as well as questions about demographic variables, languages they knew or had studied, and their general study habits.

When participants arrived for the laboratory session, they were told,

> "This study is about how people learn. We're testing different strategies for learning how to read characters in another language to see which strategy is most effective. A computer will teach you how to pronounce 20 foreign characters. The first 10 characters will be taught in a slightly different way than the next 10, and you'll take a test after each round of learning."

All participants began with a round of learning by re-reading, administered via computer. They saw 10 Japanese characters, each followed by its English pronunciation (e.g., け is *ke*) and an audio clip of its pronunciation. Participants encountered each character a total of five times. We chose to teach participants 10 characters because pilot data suggested learning 20 characters was too difficult. Immediately after the first learning phase, participants took a multiple-choice test of the 10 characters. The characters were tested in the same order in which they had been learned, and the computer displayed the participant's score and the correct answers at the end of the test.

Next, participants were randomly assigned to one of three conditions for learning a new set of 10 Japanese characters:

(1) Control: Participants completed a second round of "learning by reading" for the new characters, but with seven exposures per character instead of five.
(2) Quizzing Condition A: Participants were exposed to each character seven times, but after the first exposure they were asked to *recall* the character's pronunciation before the computer showed the correct pronunciation again. Reading and quizzing were interspersed to help participants recall the characters better. For example, the sequence looked something like this:
    See か; recall か; see か; see さ; recall さ; see さ; recall か see か; see た; recall た; see た; recall か; see か; recall さ; see さ; recall た; see た; etc.
(3) Quizzing Condition B: Participants read the list of characters once, and then they practiced recalling them using a flashcard program called Anki (http://ankisrs.net), which has been found to improve learning outcomes in SLA (Seibert Hanson and Brown, 2019). For each flashcard, participants evaluated their own performance by selecting one of three options: Incorrect, Hard, or Good. Anki keeps track of participants' performance on each flashcard and repeats cards in a mixed order until the participant indicates "Good" for that card.

There were two key differences between Quizzing Conditions A and B. First, Quizzing Condition A quizzed participants on each character a fixed number of times, whereas Quizzing Condition B continued quizzing participants on a character until the participant self-rated their performance as good. Second, participants in Quizzing Condition A had to type their answer whereas participants in Intervention B answered in their heads. However, as explained below, all three conditions produced similarly high performance.

Participants then took a multiple-choice test of their memory for the new set of 10 characters. The computer displayed their score immediately afterward. Next, they completed the implicit theories and quick-learning measures, answered questions about their study habits, and reported if they had already known any of the Japanese characters. Before leaving the laboratory, participants in the two quizzing conditions also read a brief description of the testing effect, which we intended to further motivate them to change their study strategies when they left the lab.

Two weeks after the laboratory session, participants received an email inviting them to complete another web survey (Time 3) for research credit. The Time 3 survey contained all of the implicit theories and quick-learning beliefs measures, as well as questions about study habits. If participants did not complete the survey within a few days of the first email, a second email was sent. Participants received no more than three email invitations total.

RESULTS

Test Performance and Task Difficulty

Re-reading generally produces low memory retention (Roediger and Karpicke, 2006), so we expected participants to perform somewhat poorly on Test 1. However, the mean score on Test 1 was near ceiling: 9.47 out of 10 ($SD = 0.68$) correct.

The three conditions were meant to produce different firsthand experiences in the effectiveness of certain study strategies, with the two quizzing conditions intended to improve retention over the re-reading control condition. Instead, the near-ceiling performance on Test 1 meant all participants experienced the initial strategy—which was supposed to be ineffective—as effective, and it also allowed no room for improvement with a different study strategy. The mean score on Test 2 was similarly high, at 9.57 ($SD = 0.87$) out of 10 correct. Participants' performance from Test 1 to Test 2 did not vary by condition, as shown by a non-significant Test (1, 2) × Condition (Control, Quizzing Condition A, Quizzing Condition B) interaction, $F_{(2, 46)} = 1.80$, $p = 0.177$, $\eta_p^2 = 0.07$.

Because the laboratory session became an experience of successful language learning for all participants, we collapsed across conditions when analyzing change in participants' beliefs over time. We applied a Bonferroni correction when comparing the same measure at each of the three time points, resulting in a new significance threshold of $p < 0.017$ for comparisons between Time 1, 2, and 3 responses (0.05 divided by 3 comparisons).

Implicit Theory of SLA

Scores on the implicit theory of SLA scale were coded such that higher scores represent believing language learning requires natural talent (i.e., an entity theory, or fixed mindset). Scores decreased from Time 1 ($M = 2.29$, $SD = 0.67$) to Time 2 ($M = 2.12$, $SD = 0.71$), $t_{(48)} = 3.21$, $p = 0.002$, $d_z = 0.46$, representing greater endorsement of a growth mindset after the experience in the lab. This change persisted across time, as Time 3 responses ($M = 2.06$, $SD = 0.75$) were still significantly lower than Time 1, $t_{(35)} = 3.23$, $p = 0.003$, $d_z = 0.54$. Time 2 and 3 did not differ, $t_{(35)} = 1.39$, $p = 0.172$, $d_z = 0.23$.

Participants also said that a higher percentage of language learning ability comes from effort immediately after the Time 2 laboratory tasks ($M = 74.86$, $SD = 12.55$) compared to Time 1 ($M = 70.51$, $SD = 16.50$), $t_{(48)} = -2.34$, $p = 0.024$, $d_z = -0.33$. However, this difference did not persist over time, as participants' Time 3 percentage ($M = 72.36$, $SD = 16.23$) fell non-significantly in between their answers at Time 1, $t_{(35)} = -0.97$, $p = 0.339$, $d_z = -0.16$, and Time 2, $t_{(35)} = 0.66$, $p = 0.512$, $d_z = 0.11$.

TABLE 1 | Correlations between the belief measures at each time point.

	Implicit theory of SLA	Implicit theory of intelligence	Quick-learning beliefs
		Time 1	
Implicit theory of SLA	–	0.68**	0.49**
Implicit theory of intelligence	–	–	0.58**
Quick-learning beliefs	–	–	–
		Time 2	
Implicit theory of SLA	–	0.65**	0.48**
Implicit theory of intelligence	–	–	0.53**
Quick-learning beliefs	–	–	–
		Time 3	
Implicit theory of SLA	–	0.63**	0.55**
Implicit theory of intelligence	–	–	0.61**
Quick-learning beliefs	–	–	–

**$p < 0.001$.

Implicit Theory of Intelligence

Responses on the implicit theory of intelligence measure correlated with the other belief measures at each time point (see **Table 1**). Responses were coded such that higher scores represent believing intelligence is a fixed trait. Time 1 scores ($M = 2.53$, $SD = 1.15$) were not significantly different from scores at Time 2 ($M = 2.70$, $SD = 1.27$), $t_{(48)} = -1.30$, $p = 0.199$, $d_z = -0.19$, or Time 3 ($M = 2.68$, $SD = 1.23$), $t_{(35)} = -0.57$, $p = 0.571$, $d_z = -0.10$. There was a non-significant increase in the percentage of intelligence attributed to effort from Time 1 ($M = 57.35$, $SD = 22.46$) to Time 2 ($M = 61.75$, $SD = 21.01$), $t_{(48)} = -1.68$, $p = 0.100$, $d_z = -0.24$, and from Time 1 to Time 3 ($M = 62.36$, $SD = 22.85$), $t_{(35)} = -1.88$, $p = 0.068$, $d_z = -0.31$. Collectively, however, these results show that the decrease in participants' belief that language learning ability is fixed did not transfer to beliefs about intelligence more generally.

Quick-Learning Beliefs

Responses on the quick-learning beliefs measure correlated with the other belief measures at each time point (see **Table 1**). Responses were coded such that higher scores represent believing learning occurs either quickly or not at all. Time 1 scores ($M = 2.08$, $SD = 0.77$) were marginally lower than Time 2 ($M = 2.29$, $SD = 0.86$), $t_{(48)} = -2.39$, $p = 0.021$, $d_z = -0.34$, suggesting that participants tended to have *stronger* quick-learning beliefs at the end of the laboratory session. The brief experience of effectively learning 20 Japanese characters seems to have heightened participants' confidence that successful learning occurs quickly. However, this did not last, as Time 3 scores ($M = 2.33$, $SD = 0.87$) were not significantly different from Time 1, $t_{(35)} = -1.52$, $p = 0.136$, $d_z = -0.25$.

The Role of Prior Language Learning Experience

During the Time 1 baseline survey, participants were asked how many languages (including English) they were fluent in, as well as what languages they studied in the past. Of the 49 participants who completed the laboratory session, 36 (74%) reported being fluent in only one language, eight reported fluency in two, and five reported fluency in three. Most participants reported having studied one ($n = 16$), two ($n = 19$), or three ($n = 13$) languages, with one participant reporting five or more.

Because participants with fluency in two or more languages may have learned those languages as children, we focused on participants' experience *studying* second languages. A repeated measures ANOVA of Time (1 vs. 2) on implicit theory of SLA with number of languages studied as a covariate revealed a significant interaction between time and languages studied, $F_{(1,47)} = 4.96$, $p = 0.031$, $\eta_p^2 = 0.10$. The difference between Time 2 and Time 1 scores was positively correlated with number of languages studied, $r_{(49)} = 0.31$, $p = 0.03$, meaning participants were *more* likely to benefit from the experience (i.e., to show an increase in their belief that language learning is not based on talent) when they had studied fewer languages in the past.

DISCUSSION

Participants who experienced a single episode of success at learning characters in another language developed more incremental theories of second language acquisition, and this change was still present 2 weeks later. We originally predicted that this pattern would only be observed among participants who used the effective learning strategy of repeated recall testing (i.e., self-quizzing), but the design of our task led all participants to learn the Japanese characters quite well.

The persistence in more incremental beliefs at the final Time 3 survey was observed on the implicit theories of SLA measure, whereas the specific percentage of SLA that students attributed to effort vs. ability at Time 3 fell in between their responses at Time 1 and Time 2. Beliefs about whether language learning is a fixed or stable trait also did not transfer to beliefs about intelligence more generally. However, immediately after learning the 20 characters, participants reported somewhat greater endorsement of the idea of quick, all-or-none learning. This is an interesting outcome because this belief is usually negatively correlated with an incremental implicit theory and predicts worse academic outcomes (Schommer, 1994). Our participants did learn many new characters in a short period of time, so it is easy to see how this would boost confidence in their own ability to learn fast. Learning fast does not necessarily contradict incremental beliefs; a student can believe their own learning efforts will pay off quickly. As mentioned previously, however, such beliefs may backfire and reduce motivation if students' efforts are made with ineffective strategies.

In the domain of language acquisition, it is true that individual differences in cognitive skills, motivation, affect, and aptitude do affect proficiency outcomes (Ortega, 2009). However, language talent *per se* is not solely responsible for successful SLA, and there are multiple routes for effective SLA (Mercer, 2012). Motivation appears to be the most critical factor (Dörnyei, 2005; Gardner, 2007), and frequent use of strategies that target various language modalities (e.g., Oxford and Nyikos, 1989; Uhl Chamot, 2005) is related to both motivation and proficiency. However, students enrolled in language classes often use strategies that are sufficient to get good grades but insufficient to develop true proficiency, an experience that is demotivating and creates doubts about their own language ability (Graham, 2004). Believing that language acquisition in adulthood is attainable through strategic efforts should be more productive and beneficial to motivation (Mercer and Ryan, 2010).

LIMITATIONS

We used a novel measure of implicit theory of SLA (adapted from Biddle et al.'s, 2003, implicit theory of athletic ability measure), without first assessing its construct validity. However, the measure exhibited adequate internal reliability at all three time points, and it significantly correlated with the other two belief measures in the conceptually appropriate direction (i.e., concurrent validity). Scores on the measure changed from Time 1 to Time 2 in response to the experience of success in the laboratory, but this across-individual change was also accompanied by within-participant stability: Time 1 and Time 2 scores were strongly correlated, $r = 0.86$ ($p < 0.001$), which is similar to the two-week test-retest reliability of 0.80 reported by Dweck et al. (1995) for their implicit theory of intelligence measure.

We measured participants' beliefs prior to the laboratory experience instead of using a no-experience control condition for comparison, but it is possible that participants' scores may have changed over time due to practice effects or natural development of a growth mindset as life experience continues[1]. However, these explanations can be refuted by comparing the pattern of changes in our three different dependent measures: implicit theory of SLA, implicit theory of intelligence, and quick-learning beliefs.

Specifically, implicit theory of SLA—our primary variable of interest—was the only measure on which scores became more positive (i.e., increased incremental theory) at Time 2, with this change remaining stable at Time 3. Scores did not continue to increase as time passed, which is what we would expect if repetition (practice effect) or the passage of time alone changed participants' scores.

Even more important, if there was a practice effect or a natural increase in growth beliefs with time, then we would expect similar patterns with implicit theory of intelligence and quick-learning beliefs. Instead, scores on the implicit theory of intelligence scale did not change at all across all three measures, and the quick-learning measure exhibited a marginally significant increase in a *fixed* mindset from Time 1 to Time 2.

In other words, if practice or the passage of time alone was responsible for participants adopting a more incremental theory of SLA, then we should see a similar pattern of change in the other two measures, which were conceptually—and

[1]We thank an anonymous reviewer for this suggestion.

statistically—related (i.e., they all measured some form of a growth mindset). Yet the only belief that changed was the one that our experimental procedure directly targeted: Beliefs about acquiring a second language.

Of course, it would be ideal to compare the positive change in incremental theories against a control group that lacked a recent episode of successful learning. However, our conclusion is strengthened by each participant serving as their own control and by the unique pattern of change in implicit theory of SLA (compared to the other two beliefs).

Two additional limitations are the somewhat small sample size and the relatively positive implicit theories the students held prior to the laboratory experience. Initial scores on the implicit theory of SLA measure were below the midpoint, indicating that students tended to endorse an incremental theory at baseline. It remains to be seen if these results would hold in other samples characterized by a more negative and fixed implicit theory of SLA.

CONSIDERATIONS FOR FUTURE RESEARCH

We observed a provocative interaction between language education and time: Participants who had more past experience (i.e., had studied more languages) were less likely to change their beliefs. It may be that individuals with fewer language learning experiences are better able to internalize the episode of success in the lab. In contrast, those who studied more languages may also have more experiences of *failing* to become proficient in a language, hence making it more difficult for one positive experience to change their beliefs.

An alternate, more positive explanation is that participants who reported having studied more than one language showed little change in their implicit beliefs based on the successful laboratory learning experience precisely because they have more experience with languages, which in itself has been shown to be a positive contributing factor to subsequent language (specifically script) acquisition (e.g., Abu-Rabia and Sanitsky, 2010).

It is also possible that students' lack of experience with and assumptions about their ability to learn Japanese played a key part in the success of the learning experience. Most of our participants had studied European languages previously, and their success at a novel language like Japanese may have led them to make external attributions for previous struggles (e.g., if they can learn Japanese so easily, then perhaps those previous difficulties were the result of that particular language, how it was taught, etc.). It would be enlightening to compare beliefs about the targeted language (Japanese) vs. a language participants had previously studied, but it remains important to note that the change we observed was for implicit theories of SLA overall. Therefore, it is not simply the case that participants developed an incremental theory for learning Japanese specifically.

We did not measure self-efficacy in this study, but we speculate that the episode of successful learning increased participants' self-efficacy for language learning, which is also an important variable in both SLA motivation and proficiency (e.g., Hsieh and Schallert, 2008). A critical part of the current experiment was that students *successfully* learned Japanese characters. The recent finding that growth mindset interventions have small effect sizes (Sisk et al., 2018) could be because telling learners to focus on effort will not help unless learners are also expending effort with the right tools (i.e., effective study strategies; Dweck, 2015). Likewise, simply boosting self-efficacy may backfire if that confidence is unfounded.

A final anecdotal but important cautionary note is that even some expert language learners exhibit beliefs that resemble a fixed mindset (Mercer, 2011), although experts' historical behavior is characterized by concentrated and sustained effort in that domain (Mercer, 2012). If mindset does influence SLA success, the association may not be direct and it might be moderated by other factors, such as learner characteristics and contexts. These remaining questions highlight the need for additional research on the potentially complex role of mindset and SLA outcomes.

CONCLUSIONS

To foster positive attitudes toward language learning and the learning situation, it is valuable to consider the learners' beliefs about the relative importance of giftedness vs. effort. These beliefs may originate in past experiences, which unfortunately are often negative. In the case of the U.S., students are required to take years of language classes, yet few learners develop proficiency in a second language as a result of this formal schooling (Devlin, 2015; Commission on Language Learning, 2017). The use of ineffective study strategies and subsequent repeated failures to develop L2 proficiency may contribute to the maladaptive belief that natural talent is necessary to learn a language in adulthood (Graham, 2004; Mercer and Ryan, 2010). If this is the case, then we can similarly take advantage of actual learning experiences to transform this belief into one that is more positive and motivating.

The current research shows that beliefs about SLA can be changed after a brief, successful experience of learning how to read characters in an unfamiliar language, and this change remains present 2 weeks later. This has important implications for education in other subjects and domains, especially in light of the small effect sizes observed for growth mindset interventions (Sisk et al., 2018). Additionally, this is a significant departure from previous work that employed explicit instruction about implicit theories in order to produce change (e.g., Noels and Lou, 2015; Lou and Noels, 2016). We propose that psychological interventions should also equip learners with tools for effective learning and provide an experience of improvement achieved through those tools.

DATA AVAILABILITY STATEMENT

Data are available at: http://dx.doi.org/10.17632/t8z7z8zt9r.1.

ETHICS STATEMENT

This study was carried out in accordance with the recommendations of the American Psychological Association's

Ethical Guidelines. All subjects gave written informed consent in accordance with the Declaration of Helsinki. The protocol was approved by Arcadia University's Institutional Review Board.

AUTHOR CONTRIBUTIONS

CB conducted the study and analyzed the data. CB and AS co-wrote the paper.

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Sustained Flow: Affective Obsession in Second Language Learning

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A *directed motivational current* (DMC) or *sustained flow* (SF; Ibrahim and Al-Hoorie, 2019) is a motivational phenomenon characterized by intensity of engagement and sustainability of effort in which individuals display highly motivated goal-governed behavior and achieve outcomes exceeding expectations set at the outset (Dörnyei et al., 2014, 2015). This paper presents an empirical investigation into what fuels the intense and sustained motivated behavior which distinguishes the phenomenon from other types of high motivated engagement such as the ones maintained by volitional, self-regulatory measures. The qualitative (phenomenological) analysis of interview data collected from a number of subjects who had experienced SF reports two main findings. First, high motivation and intense engagement in SF are primarily the function of affective obsession with the SF experience. Once in SF, people will be mentally and affectively consumed by their experiences even at times when they are involved in other daily activities. Second, as a result of one's affective appraisal of SF experience, one's perception toward effort will change from viewing learning tasks as homework to perceiving engagement as one's preferred activity conducted at one's free time. In SF, engagement is probably considered as too emotionally satisfying and meaningful insomuch as one prefers to maintain a strong and constant sense of relatedness. As a result, effort loses its traditional connotation and therefore self-regulatory measures become unnecessary; hereby one might invest the maximum amount of effort toward learning. Theoretical implications of these two main findings are then discussed in relation to the motivational power of positive affect in directing second language learning behavior.

Keywords: second language motivation, positive affect, directed motivational currents, sustained flow, affective obsession

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INTRODUCTION

Positive psychology is concerned with valued subjective experiences such as well-being, contentment, hope, satisfaction, flow, and happiness (Seligman and Csikszentmihalyi, 2000). Among the elements that positive psychology aims to foster are positive emotions because they partially represent people's subjective well-being and happiness (Kahneman, 1999; Oxford, 2016). Not all positive emotions are of equal interest, however. In the positive psychology literature, a distinction is made between pleasure and enjoyment. The former is the result of satisfying homeostatic needs while the latter is "the good feelings people experience when they break through the limits of homeostasis – when they do something that stretches them beyond what they are";

(Seligman and Csikszentmihalyi, 2000, p. 12). Positive psychology intends to promote enjoyment or a "mature form of happiness" which is the result of genuine engagement as in eudaimonia or flow (MacIntyre and Gregersen, 2012, p. 208). While pleasure may bring short-lived feelings of joy, enjoyment leads to "personal growth and long-term happiness" (Seligman and Csikszentmihalyi, 2000, p. 12).

Enjoyment was discussed by Aristotle as being of two different types: eudaimonia and hedonic enjoyment (Waterman, 1993). Whereas the latter is concerned with the gratification of basic human needs, the former is engagement in activities featuring "an intellectual focus, heightened attention, and optimal challenge" (Boudreau et al., 2018, p. 153). Eudaimonia is "an ideal in the sense of being an excellence, a perfection toward which one strives and, hence, it can give meaning and direction to one's life" (Waterman, 1993, p. 678). It is assumed that hedonic happiness or pleasure is achieved when physical needs such as anger and sex are met, eudaimonic happiness is related to leading "quality of life derived from the development of a person's best potentials and their application in the fulfillment of personally expressive, self-concordant goals" (Waterman et al., 2010, p. 41). From a positive psychology perspective, true happiness is not satisfying physiological needs, but engagement in activities which generate eudaimonia and wellbeing although they might seem as not so pleasant, such as a "mathematician solving equations, a composer working hard on the notes in a melody, a scholar pouring over reams of data, an exhausted marathon runner approaching the finish line" (MacIntyre and Gregersen, 2012, p. 208), forms of engagement which typically lead to *flow* experiences (Czikszentmihalyi, 1990).

Flow has also been referred to as optimal experience marked by focused concentration, full engagement, intrinsic motivation, control over task at hand, and enjoyment. Such experiences are also greatly linked to a better quality of life to such an extent that even people with disabilities or poor health conditions can use them for improved coping strategies and positive changes in personality and social relationships (Fave et al., 2011).

In translating enjoyment to experienced positive affect, it is assumed that positive emotions do not only bring about happiness, but they also motivate the individual experiencing them to display certain tendencies. According to the Broaden-and-Build Theory of Positive Emotions conceptualized by Fredrickson (2001), "experiences of positive emotions broaden people's momentary thought–action repertoires, which in turn serves to build their enduring personal resources, ranging from physical and intellectual resources to social and psychological resources" (p. 218). Thus, experiences of positive emotions such as joy, interest, contentment, pride, and love create the urge to play, explore, develop self, share achievements, and connect to people.

Flow theory has rarely been applied in the L2 settings. In a pioneering study, Egbert (2004) conducted a field study involving 13 secondary school Spanish learners performing language tasks on seven separate occasions. The findings suggested the occurrence of flow and that, more importantly, teachers could "theoretically" facilitate flow in L2 learners through assigning tasks that lead to flow (p. 513). Recently, Dewaele and MacIntyre (unpublished) conducted a study to examine the frequency of flow and anti-flow experiences of 232 Spanish learners from around the world using an online questionnaire. They found that participants experienced more flow than anti-flow, and that flow was positively related to a higher skill in languages, higher standing among peers, and years of study. Importantly, the authors postulated that based on Fredrickson's (2001) broaden and build theory of positive emotions, experiences of flow could have long-lasting consequences beyond the task engagement because accumulated experiences of these positive emotions build people's enduring personal, physical, social, and psychological resources (Fredrickson, 2001).

Despite the assumed long-lasting influence of positive emotions and enjoyment, both flow and foreign language enjoyment (Li et al., 2018) have focused on engagement in single-learning tasks. Therefore, it is still unclear how enjoyment beyond the learning task might lead to motivated behavior for an extended period of time, which is typically required for second language learning (MacIntyre and Gregersen, 2012). To fill this gap, it is necessary to study enjoyment in long-term forms of engagement, especially to see if and how the long-term tendencies of positive affect including positive mood and happiness beyond task engagement might help sustained motivation.

MATERIALS AND METHODS

Flow and Sustained Flow

To understand the relationship between positive affect and motivated behavior, it is important to study phenomena in which people experience long-term motivation and sustained or prolonged positive mood – rather than short-lived emotions only. *Sustained flow* (SF) or *directed motivational current* (DMC), that is "the occurrence of flow in a series of tasks aimed at achieving a certain outcome (for example improving proficiency in a second language)" (Ibrahim and Al-Hoorie, 2019, p. 51), might be an appropriate tool to provide the opportunity to study positive affect in both single tasks and throughout "a prolonged process of engagement in a *series* of tasks" (Dörnyei et al., 2015, p. 5, original emphasis).

Sustained flow or as originally termed, DMC, is a motivational phenomenon characterized by a state of intense engagement in a goal-governed activity for an extended period of time (Dörnyei et al., 2014; Ibrahim and Al-Hoorie, 2019). It is believed that while in SF, people exert an unprecedented amount of effort toward a specific goal through utilizing a facilitative structural pathway which directs the effort and helps in routinizing recurring tasks throughout the entire experience. Although not frequently occurring in people's lives, SF is a strong burst of motivation which leads to outcomes beyond one's expectations mainly as a result of steadily high motivation, uninterrupted engagement for an extended period of time, and constant refueling of energy through visualizing the final goal and upon passing each step along the way to the final objective.

Generally speaking, both flow and SF share the basic characteristic through which they are distinguished from other motivational phenomena: A motivational surge for a period of time which is characterized by directed concentration, full engagement, high interest, and goal orientation. However, flow

theory is concerned with short-term tasks such as painting, reading, music, etc., or a series of short-term repeated identical episodes, while SF usually continues for a long period such as a few weeks, month, or even years.

Moreover, SF is an entirely goal-oriented motivational surge, while in flow the goal is important only to provide a clear structure. When studying a group of artists, Csikszentmihalyi (1988) noticed that "it was quite typical for an artist to lose all interest in the painting he had spent so much time and effort working on as soon as it was finished" (p. 3). SF is mainly triggered by a personalized goal or vision which also plays an important role in its sustainability. Relatedly, whereas flow is involvement in a task that is rewarding in itself (autotelic), but SF is concerned with engagement which leads to reaching a goal that is of more importance than the enjoyment stemming from just practicing the activity (Ibrahim Z.I., 2016).

Sustained flow is thought to have three main characteristics: a final goal or vision, a salient facilitative structure, and positive emotionality (Dörnyei et al., 2014, 2015). Early conceptualizations of the SF theory consider positive emotional loading as the third component or characteristic of any SF or DMC experience which refers to "the emotional loading of the vision which is at the heart of the DMC: anything which helps to approach the goal feels rewarding and takes on some of the positive affect associated with the outcome" (Dörnyei et al., 2014, p. 16). In describing the type of emotionality experienced in DMCs, Dörnyei et al. (2016) stressed on the difference between the autotelic enjoyment experienced in *flow* and the eudaimonic enjoyment of a DMC; whereas the former is concerned with the intrinsic joy of performing an activity for its experience only, "the 'peak experiences' in DMCs are derived through the energy expended on moving ever closer toward a long-term goal or vision," and therefore, "each step along the way reproduces part of the joy that is linked to the overall journey in a fractal manner, regardless of whether or not the particular activity in question is, in and of itself, particularly enjoyable" (Dörnyei et al., 2016, p. 104). Eudaimonia is postulated to explain not only the nature of positive affect in SF, but also how it might contribute to the intense and sustained motivational behavior characteristic of all SF experiences (Henry et al., 2015).

However, little, if any, empirical investigation has been conducted on how positive emotionality experienced in SF might contribute to the unique nature of heightened and sustained motivation in SF; if and to what extend eudaimonic happiness is related and experienced in relation to the final SF goal/vision; and more importantly, what fuels the long-term motivated engagement of SF experiences. This study aims to investigate parts of these lines of inquiry, and more specifically these research questions:

(1) What is the dominant type of affect experienced while one is experiencing SF?
(2) What is the nature of positive affect in SF?
(3) Does positive affect have any impact on motivated behavior in SF? How?
(4) What is the possible role of positive affect in fueling long-term engagement of SF?

It is hoped that answering these questions might assist in understanding the motivational role of positive affect in not only SF cases but also other types of long-term engagement.

Methodology

Sustained flow or DMC is a newly conceptualized phenomenon both in mainstream psychology and L2 motivation literature. As such, the initial stages of SF research intuitively concern understanding the phenomenon in its depth through investigating its main features, different aspects, and its motivational properties and sources. Accordingly, this research program adopted an exploratory approach through studying a number of SF cases to find common patterns among them. In order to obtain rich and detailed data of the SF phenomenon by a number of individuals and groups who experienced or were involved in at least one SF experience, a qualitative research methodology (Silverman, 2013) was seen as most appropriate to achieve the aims and answer the research questions. A qualitative research paradigm was seen as particularly useful to obtain thick and exhaustive descriptions of the phenomenon of interest, especially with regard to a newly conceptualized construct for which reaching empirical understanding and discovery is essential (Streubert, 2011). Additionally and with two participants, a quantitative affect measuring scale was used, and they rated their emotionality using their best prediction.

Sampling

This paper reports results collected from a major and pioneering study on SF which constituted the Ph.D. project by the researcher at the University of Nottingham (Ibrahim Z.I., 2016). Recruitment started with asking adult learners and users of second languages (L2) both in the researcher's country, Kurdistan, and in the United Kingdom to reflect back on their L2 experiences to identify any periods of extraordinary intense engagement. The main initial challenge was to capture actual SF experiences in participants who would not have any knowledge of the concept. Yet, in order to maintain validity and avoid the risk of leading participants to fit their narratives to what the researcher wanted, no details of what SF entailed were given to potential participants although enough information about the research was provided.

Upon collecting the initial responses, a screening procedure was conducted to assess whether the narratives were SF, SF-like, or merely high motivation cases. The criteria used to make this judgment were based on the theoretical foundations outlined by Dörnyei et al. (2014, 2015), focusing on goal-oriented experiences described as uniquely intense in comparison to one's previous types of long-term engagement. The theoretical descriptions of what a SF entailed was the only criterion to recruit the sample for this study. Respondents whose initial L2 experience resembled what a SF was were considered to be appropriate participants for this study. Participants had to have experienced an extended period of uniquely intense and extraordinarily motivated behavior in pursuit of learning a second language (**Table 1**). A number of cases were rejected that did not meet the SF criteria especially if the experience seemed to be no-goal directed (such as the joy of watching movies in L2), or self

TABLE 1 | Background overview of the retrospective participants.

Participant	Gender	Age when experienced SF (years)	Age at the time of interview (years)	How long their SF lasted	SF goal	L2 past and current experiences
Suzan	Female	16–18	26	1.5–2 years	To prove to brother and uncle that she could also understand L2.	Was high school student at the time of SF experience. Was not engaged in intentional L2 experience at the time of interview.
Sahar	Female	18–20	25	About 2 years	To understand media content in L2.	Was university student majoring in English while experienced SF for learning Japanese. Was not engaged in intentional L2 experience at the time of interview.
Shirin	Female	25–27	27	About 2 years	To use L2 for research and teaching career.	Was engaged in pre-sessional English preparation course at the time of SF. Was not engaged in intentional L2 experience at the time of interview.
Umed	Male	28–33	37	About 3 years	To use L2 for work-related communication.	Was on a self-study L2 learning process at the time of SF. Was not engaged in any intentional L2 experience at the time of interview.
Ali	Male	29–31	34	About 1.5 years	To be successful at job interviews in L2.	Was on a self-study L2 learning process at the time of SF. Was not engaged in any intentional L2 experience at the time of interview
Kardo	Male	18–20	23	About 2 years	To prove that he is talented in L2 use.	Was in an L2-medium instruction university at the time of SF. Was not engaged in any intentional L2 experience at the time of interview
Louise	Female	23	26	3 months	To prepare for studying a post-graduate degree involving L2.	Was on a self-study L2 learning process aiming at winning a university scholarship. Was not engaged in any intentional L2 experience at the time of interview.

or other-imposed highly motivated but unpleasant experiences (such as studying L2 for a national exam). The data presented in this research include data collected from seven participants via face-to-face and phone interviews and email correspondence.

Moreover and in order to capture SF experiences as they occur, two individuals believed to be in SF were studied. As SF experiences are believed to be long-term engagement, it is necessary to incorporate a longitudinal aspect in studying them (Ruspini, 2002). The two individuals (Helen and Adam) were full-time post-graduate students studying English Studies at a British university (**Table 2**). They were interviewed about once a month for 8 months, and they were asked to rate their emotionality using a chart.

Data Collection and Analysis

In-depth structured and unstructured interview, seen as useful to study motivational experiences (Gillham, 2000; Silverman, 2013), was utilized to collect most of the data presented in this research. Initially, the interviewees were asked to describe and narrate their experiences in their own choosing. The respondents were asked to describe their L2 experiences during the intense motivational engagement and how their overall feelings were like throughout. The participants whose cases were deemed SF were invited to take part in the second or third rounds of interviews and asked more specific questions such as what triggered their motivational experience, what were their goals, how they studied on a daily basis, how they felt about their experience and throughout their engagement in single learning tasks and throughout the period, and why. As the participants did not have a conceptual basis to embed their experiences in, the use of unstructured interviews was viewed as particularly useful in enabling the participants to discuss "experienced but not necessarily previously reflected-on thought processes" (Henry, 2011, p. 244). A number of participants, who were not available for direct or interactive interviews, were given the option to provide a written account or protocol describing their experience in detail (Finlay, 2011).

For the two longitudinal cases, charts were also used to enable them to draw their affective states using a quantitative scale. The charts were used to measure their emotionality for a 2-week period and while in a typical single study session. Over the 2-week period, they were both interviewed three times each and asked questions about how they felt each day along with a number of other questions about their general feelings. Moreover, in each of the interview sessions, they were asked to chart their affective state and rate their emotionality from (−100 to 100) with −100 being the highest in negative emotionality and 100 the highest in positive emotionality.

Upon transcribing all the interviews and incorporating the written accounts, a phenomenological approach was deployed for the data analysis in order to capture the "universal essence" and meaning of the phenomenon in question as lived and experienced by the participants (Creswell, 2007, p. 58). This method was seen as particularly useful in understanding SF as a new phenomenon and with regard to what the participants experienced, and how and why they experienced them (Moustakas, 1994). A modified (a combination of descriptive and hermeneutic-interpretive) approach as described by Colaizzi (1978) and Moustakas (1994) was used as below:

(1) First, all the interviews and written accounts were merged together and both individual transcriptions and the whole data-set were read several times to obtain a general feel for it.
(2) Then, the researcher went through the entire data-set and extracted a non-overlapping list of the significant phrases and statements, treating them as of equal worth.
(3) Formulated meanings, that is, interpretive meanings, were produced for each statement.
(4) Clusters of themes (Colaizzi, 1978) were developed from the combination of similar formulated meanings. In developing clusters of themes, the researcher made efforts to "stay as true to the phenomenon as possible" and to "bracket" his presuppositions about the phenomenon (Hycner, 1985, p. 287, 281).
(5) Independent themes were produced from similar theme clusters (for more detail on this approach see Sanders, 2003).
(6) In parallel to this process of developing the raw data into common patterns and themes, a descriptive account was produced for each participant's narrative reflecting "what" happened (i.e., textual description) and "how" the experience happened (i.e., structural description). Both of these descriptions were combined in a single composite description reflecting the "essence" of the experience (Creswell, 2007, p. 60).
(7) The final stage of the analysis included elements of interpretive phenomenology also in order to gain a joint understanding from what the participants and the researcher make of the experienced phenomenon (Wojnar and Swanson, 2007). The researcher reflected on the descriptive analysis "trying to make sense of the

TABLE 2 | Background overview of the follow-up participants.

Participant	Gender	Age at time of data collection (years)	How long into SF	SF goal	L2 past and current experiences
Helen	Female	27	10 months	To upgrade teaching skills in "meaningful" field of choice.	Was engaged in full-time postgraduate studies at the time of experiencing SF and at the time of interviews.
Adam	Male	31	2.5 years	To acquire research skills to better pursue an academic career.	Was engaged in full-time postgraduate studies at the time of experiencing SF and at the time of interviews.

participants trying to make sense of their world," guided by these two questions: "what is the person trying to achieve here?," and "Do I have a sense of something going on here that maybe the participants themselves are less aware of?" (Smith and Osborn, 2003, p. 53). As with most qualitative research, however, the role of flexibility (Malterud, 2001) needs to be acknowledged here. The researcher's presumptive conceptualization of SF might have had an impact in the overall interpretation and hence analysis of the data.

The entire data analysis was an iterative process, and the theme clusters and themes were worked through and re-examined numerous times to achieve scrutiny and scientific rigor (Fereday and Muir-Cochrane, 2006; Finlay, 2012). Close attention was paid to ensure that the final themes represent what was dominant in the data, so the final presentation describes the bulk of the data rather than deliberately selecting extracts to support specific claims (Joffe, 2004).

This research utilized a number of strategies to achieve validity. In addition to descriptive accounts as narrated by the participants, the analysis deployed a hermeneutic approach which produced scrutinized interpretations of the experiences rather than relying extensively on the participants' perceived reasons for their experiences. Moreover, in consonance with the phenomenological approach's "validity check" measures (Hycner, 1985, p. 291), descriptive written summaries (i.e., vignettes) were produced for each participant's overall narrative. These summaries and a number of emergent themes were then given to a number of available participants to check whether they reflected an accurate account of their experiences.

This study was approved by the English Department's Ethics Committee at the University of Nottingham. All the participants filled out and signed a written and informed research consent form indicating the purpose of the study, that answering to each question was voluntary, and they could withdraw from the interview at any time if they wished. To protect the identity of the participants, all the names used here in reporting and presenting the results are pseudonyms (to see a more detailed account of the methodology used, see Ibrahim Z.I., 2016).

RESULTS

The data collected from all the *nine* participants were analyzed deploying a phenomenological approach which resulted in *five* themes and a number of subthemes. In the data analysis process and producing themes, rather than generating statements that explicitly expressed an emotion or affective state, attempts were made to develop themes that could best reflect the data and hence explain why the participants experienced the emotionality they reported.

Theme 1: Positive Affect

Throughout all the codes and formulated meanings related to emotionality in the analysis, positive affect emerged as the most dominant theme and was reported by all the participants. The participants used a variety of terms to describe their feelings while in their SF experiences such as "happy," "enjoyable," and "excited," and their entire experience as "good," "positive," "pleasurable and also enjoyable," "amazing," and "interesting." Among the statements used to describe their affect was "hard to describe" because it was "more than happiness" (Suzan, Q1, 2), and "a paradise-living feeling" (Kardo, Q1). Three main types of positive affect were identified as common among all or most of the participants, as below.

Enjoyment/Happiness

Enjoyment was reported by all nine participants. The analysis identified enjoyment at two main levels: the overall SF experience (including the mood level) and during engagement in single tasks (emotions level).

Overall Experience Level

The participants described the overall SF periods as enjoyable experiences. Helen, for example, thought that "*life is in general good*" (Q1), and Adam rated his overall experience as "*generally positive.*" (Q1)

A number of reasons were identified to be contributing to this feeling of positivity and enjoyment. To Adam, the source of his enjoyment was that he was making meaningful progress toward approaching his goal: "*I am achieving goals now toward the end of the second year, finished some projects, starting new projects, new developments. So it is exciting day by day*." (Q2)

In addition to making progress toward a valuable goal, overall happiness was due to an altered perception in regard to three main aspects: altered perception toward the L2, toward oneself, and toward life in general. Shirin felt happy that she had a changed view toward the L2 while in her SF: "*It also created self-confidence in me that what appeared to be so difficult and challenging, I was about to achieve it almost easily*." (Shirin, Q1)

Ali had acquired a new perception about his personal ability as a result of his SF and that led to happiness and further motivational tendency: "*So to be honest, this feeling of being capable made me push even further, to continue learning on a daily basis, and at the same time feel great about it*." (Ali, Q1). Moreover and as a result of this transformation in perception about L2 learning and their abilities, the participants felt happy about the changes occurring in their entire life, as Ali further explained:

> *When people were talking about the need for growth and development, I actually felt that growth in that one or one and a half years period. I could see that development in myself. I could see that on a daily basis* . . . . (Ali, Q2)

As can be seen from these extracts above, these changes in perception had led to changes in the participants' motivational tendencies. Due to experiencing a sense of change in his abilities and his life after SF, Ali for example felt more encouraged to expend more effort and "*feel great about it*"; he seemed to have had an increased tendency toward continued engagement.

To many of them, the SF experience led to not only more hopes in their life and future, but also a sense of direction and meaning. Adam for example described the SF he was in as an "*eye-opening*" experience and even a mechanism whereby his life questions made more sense and acquired a sense of purpose which made his quality of life better. Therefore, he thought he

was to choose this engagement regardless of his financial status: "*. . .So even if I was so rich that I didn't have to work, I'd still do this*." (Adam, Q3)

Task Level

At the single task level, the analysis revealed that enjoyment was the dominant type of affect as all the participants reported experiencing it most of the time while engaged in single SF tasks. For Helen, regardless of her intrinsic interest in the material, she found engagement in single tasks enjoyable because it would lead to her learning goal. As a result, even challenging tasks were experienced as interesting without causing boredom:

> *It is all interesting because it contributes to the end, of the end goal, even if it is something that is really dry like for example I am not a big fan of statistics, it is a massive challenge for me, but because it contributes to the end goal. . . So there is still the interest there.* (Helen, Q2)

However, intrinsic interest in the L2 tasks, however, was reported by four participants: Suzan, Sahar, Umed, and Louise. Suzan had a pre-existing interest in watching TV shows in English prior to her SF; however, once in her SF, she changed her habit from watching TV randomly and for pleasure into watching specific shows with specific focus on learning certain aspects of the L2. She differed in how she engaged in watching TV; previously, it did not matter if she had missed a show or what type of TV program she watched, whereas while in SF she ensured she watched the episodes that improved her communicative skills, and she watched the same episodes twice – motivated primarily by the goal of learning versus intrinsic enjoyment.

Sahar also discussed how engagement in L2 tasks was perceived as interesting and fun time. Yet, it seemed that this was in part the result of her intrinsic interest in the Japanese language and culture. Therefore, she found engagement as "*interesting past time*" and a "*hobby*" initially, but later and as she encountered more challenging parts of the L2, her engagement became more goal-driven: "*it was kind of as a hobby and a past time but at the same time improving myself so, it was it was an interesting time for me yeah.*" (Sahar, Q1)

Similarly, Louise's SF was based on learning Old Norse mainly because she was interested in reading literature produced in that language. Therefore, engagement was both intrinsically pleasurable and learning as the same time as learning to understand poetry in Old Norse was both a mechanism and a goal:

> *I think it was completely hedonistic aesthetic pleasure like when you understand some part of a poetry like. . . much better than the translation, and you think about those bright images that are about it and you feel happy because you are a part of it, because this is a part of your life.* (Louise, Q1)

Some participants experienced repeated episodes of *flow* (see below). For all the participants, engagement in SF activities seemed to be one of the most, or the most, enjoyable undertaking compared to other daily involvements. For many of them, engagement in L2 learning was the first priority, not necessarily in terms of urgency, but mainly in how they affectively rated the L2 engagement, as evident from this excerpt from Helen:

> Interviewer: *Would you not rather think about something else other than your study?*
>
> Helen: *What else is there to think about? Right now that interests me nothing really. . . .* (Helen, Q3)

Satisfaction

In addition to enjoyment and happiness, the majority of the participants referred to a strong feeling of satisfaction while in their SF. Being satisfied emerged as a dominant emotional pattern reported mainly to describe the whole experience as evident from this example by Suzan:

> [T]*his two years was from the happiest days in whole my life actually, I am, when I think about it, I think I relate it to satisfaction because I am satisfied with what I am doing and succeeding in what I am doing. . . .* (Suzan, Q3)

Contentment was not specific to the time the participants were engaged in L2 learning activities nor because of learning an L2 only. This is evident from this extract by Kardo:

> *Honestly, I was listening to English podcasts 5–8 hours a day. It looks a bit of hyperbole, but this is a reality. Beside this, I was reading interesting novels, articles surfing on YouTube watching motivational and inspirational videos made me on cloud nine and I was enjoying every second of my life that time.* (Kardo, Q2)

From Kardo's description, it is clear that in addition to spending time on learning specific L2 skills, Kardo also watched "*motivational and inspirational videos*" which did not seem to be part of the linguistic aspects of the L2 learning, but perhaps one way of making sense of his unexpected, "*crazy*" transformation which seemed "*hyperbole*" to him.

Theme 2: Emotional Fluctuations

Although enjoyment seemed to be the dominant affective state for all the participants while in their SF, affect was not unchanging throughout. The majority of the participants referred to some instances of fluctuations in their emotionality. Since the emotionality charts were particularly utilized to collect data on these fluctuations, I report the results through the charts and in regard to fluctuations in moods (several days) and in daily emotional fluctuations (single sessions).

Mood-Level Fluctuations

Helen described the whole SF period (her MA studies) as being positive with regular fluctuations, but little negative affect: "*. . .* [T]*here are some periods of my time here that were definitely more happy than some others. . .. But it doesn't go too far from that mean of happiness, you know what I mean?*" (Helen, Q4)

At the time of interview (three interviews within 2 weeks), despite variations, she was maintaining positive emotionality: "*Some days are better, some days are a little bit more difficult, but overall they are still pretty much constant. . . .*" (Helen, Q5). As such, she rated her emotionality level on the developmental chart as around +80 to over +90 on average which suggested exceptionally high levels of positive emotionality

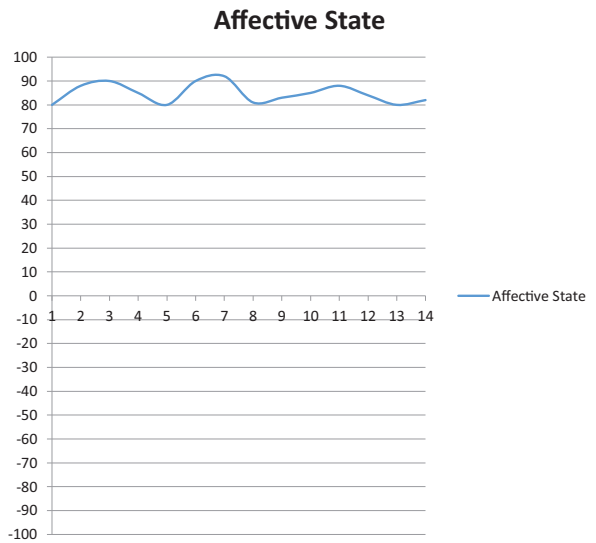

FIGURE 1 | Helen's general affective state over 14 days.

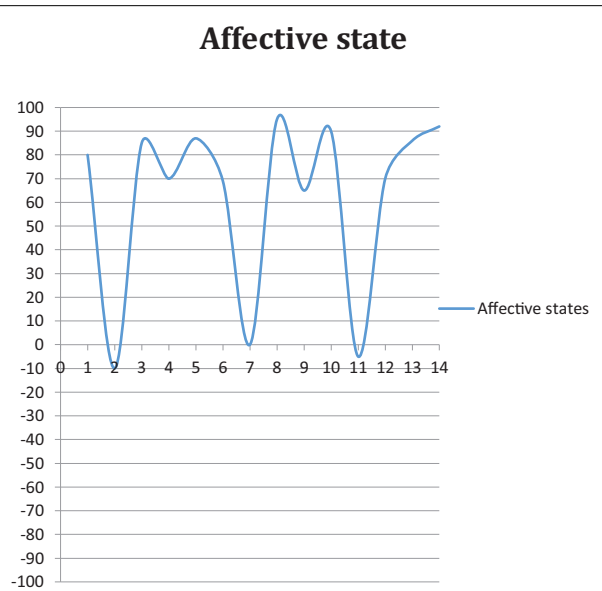

FIGURE 2 | Adam's general affective state over 14 days.

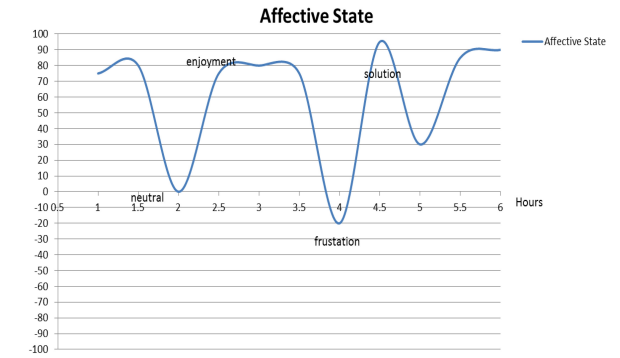

FIGURE 3 | Helen's typical affective state in a single learning session.

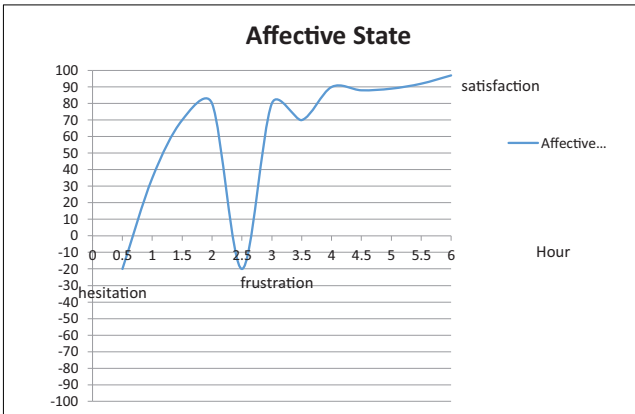

FIGURE 4 | Adam's typical affective state in a single session.

(**Figure 1**). One possible reason for this rating was that she was engaged in autonomous writing tasks that allowed for making tangible progress.

Although Adam seemed to be experiencing a somewhat similar kind of trend, he differed from Helen in how he drew his emotionality on the chart. In general, he felt he was experiencing "*excitement*" on a daily basis as he was making progress in his studies as discussed above (Q2). Nevertheless, having neutral or low-mood days was a consistent, although not frequent, pattern in his experience. When I asked him if he had any low-mood days, he described how he felt bored when he needed to spend many hours in collecting data for his studies, especially when data collection spanned extended periods or if it involved hours of waiting. Adam perceived data collection as not "*academic*" progress, but a "*technicality*" chore he needed to do, and based on this judgment he rated 3 days in the 2-weeks period as neutral or low in mood (**Figure 2**).

For him, judging on whether he had a positive or negative day depended on his perceived achievement in measurable terms: "*Yesterday, Sunday, was 5.25 hours. So I give myself 90% of satisfaction, because I feel I achieved something.*" (Adam, Q4). When he was studying for <3 h, he would feel less positive compared to 3 h or more.

Emotion-Level Fluctuations

For Helen, enjoyment was usually the norm while engaged in a typical study session. However, moments of negative emotionality did occur. She drew on the emotionality chart that she would feel frustrated when she faced a challenge only to be followed by a sudden hike in positive affect once she found a solution (**Figure 3**).

Adam stated that he would usually spend around seven consecutive (with short breaks in between) hours a day on learning. In drawing his single-session emotionality chart (**Figure 4**), Adam rated his sessions to be mostly positive with instances of frustration in between especially when he would

not make progress due to, for example, not finding the right sources of a citation.

Upon an initial hesitation, Adam would engage in intense study sessions. As a result, not only would his sessions end with a sense of satisfaction, but he would also experience a sense of achievement and productivity: "*I have high productivity, reasonably high… several hours, five, six hours a day… This is pure productivity, not standing time.*" (Adam, Q5)

Theme 3: Unremitting, Subdued Happiness

In general, the positive affect mostly experienced while in a SF was qualitatively different from the common usage of happiness. As described above, satisfaction was a main theme in the dataset and although the participants experienced momentary positive emotions of joy and excitement, the dominant form of happiness was rather in reference to positive mood or happiness all or most of the time – not while engaged in a learning session only. As such, a deeper form of happiness was experienced that went beyond instances of short-lived emotions.

Although Helen reported positive affect especially as a result of envisioning her final goal, it was mainly constant satisfaction rather than momentary excitement:

> *It is not excitement, it is satisfaction, it is there always at the back of my head, but it is not something that I will consciously go and dig around my brain to go and find it, you know. It is there at the back of my head, I know it is there, it is present.* (Helen, Q6)

Here, it is clear that Helen felt happy beyond the times of task engagement and due to reasons beyond simply adding words to her dissertation. As a result, she had the sense that her happiness is incomparable to the overt joy of socializing or laughter:

> *[I]t is not the kind of laughter and joy kind of like you would at a barbeque or a party. But it is kind of more, how do I say it, it more, I don't really wanna use this word, but a more subdued kind of happiness.* (Helen, Q7)

As this form of happiness seemed to be unique or probably unprecedented, the participants found it difficult to share it with others.

Theme 4: Intense Mental/Affective Preoccupation

Perhaps as a consequence of experiencing this unusual form of happiness, the participants made attempts to make sense of their experience. To do so, the participants developed an unceasing affective connection to their SF. A holistic analysis of the data revealed that engagement – or thinking about the SF – was not always restricted to a specific time. The analysis also identified that, for most of the participants, learning did not depend on a single activity such as reading in the L2. **Table 3** illustrates that the participants made use of a combination of learning resources. The participants also varied in how much time they devoted to the L2 learning on a daily basis.

As can be noticed from **Table 3**, while a number of participants did spend a relatively high number of hours on their learning, for at least some of them the number was low (e.g., 1 h), and for a number of participants the average was around 2–3 h a day. Nevertheless, a holistic analysis of the dataset indicated that the number of hours spent on learning might have had little relevance to the motivational intensity of the SF.

An example on the extreme side of this table was Kardo who, on some days, spent 13 h studying English and reported his daily engagement in L2 learning as follows: "*… Describing my routine in this two years, it would be speaking in English, dreaming in English, eating in English, reading in English, watching English televisions… all those are a great part of my life that time.*" (Kardo, Q3)

It is clear that learning had become a considerably major, if not the most significant, part of his daily occupation. However, it is important to note that this preoccupation was not always restricted to studying the L2, but also and perhaps more importantly a mental/affective obsession. An example of such an attachment to SF experience can be seen in Kardo (see Quote 2 above). Apparently, watching "*motivational and inspirational videos*" on the Internet was not aimed at learning any aspects of the target language. Rather, it indicates his mental and emotional involvement in his SF and an expression of his excitement – as also reflected in his feeling of enjoyment in his "*every second*" of his life.

Kardo's experience was a typical example of a SF displaying intensity of cognitive, physical, and emotional engagement. Engagement in SF behavior had become the norm and exceeded his and others' expectations.

As for the participants who did not spend as much time on learning, their experiences were still recognized for being intense, overwhelming, and obsessive. First, it is necessary to point out that the participants who spent less time on learning were virtually too busy to devote more time to studying. Louise, for example, whose SF occurred in a single summer, was meanwhile busy with a number of other responsibilities, and was only able to engage in the L2 learning in her free time. Despite the relatively little amount of time she devoted to learning, she nevertheless thought of learning Old Norse "*all the time*" and "*even in the background*": "*Well, to tell the truth, I was not really pushing myself. Well, when you think about something all the time… and I think that is what helped me to do it all the time.*" (Louise, Q2). As such, because she was mentally and emotionally preoccupied with her L2 learning, she did not perceive engagement in learning as being homework performed at and for a certain time a day.

These examples suggested that all the SF experiences were considered as intense. However, this intensity of engagement was not measured by the number of hours the participants had spent on learning, but by the degree of mental, emotional, cognitive, and physical preoccupation with their SF.

Theme 5: Constant Tendency Toward Engagement

All the participants expressed a strong desire toward engagement in SF activities, and this tendency was an always-present mental and affective orientation. The participants reported their inclination toward engagement in large part due to the prospect

TABLE 3 | Participants' structure and daily time spent on learning.

Participant	Main learning method (SF structure)	How much time spent daily on learning
Ali	Used radio and TV programs, read L2 materials, spoke to foreigners in L2, attended learning sessions	Around 3–6 h
Umed	Read and translated L2 stories and newspapers, used email correspondence in L2	Around 4–6 h
Kardo	Read, watched, and listened to L2 material, attended university course in L2, spoke to people in L2	Over 10 h
Sahar	Watched L2 anime and other L2 materials, studied with a group of friends	1–3 h
Suzan	Watched TV shows and movies in L2	Around 3–4 h
Shirin	Studied at an L2 learning center, read papers, and watched TV in L2	About 6–8 h
Louise	Used vocabulary flashcards and read poetry in L2	1–5 h

of experiencing positive affect upon making meaningful progress; as a result, more engagement was interpreted as the potential for more positive affect. The analysis identified the following aspects as the mechanisms by which positive emotionality led or contributed to increased tendency toward engagement.

SF as the Most Preferred Engagement

The participants seemed to have developed a strong emotional link to their SF insomuch that they preferred SF engagement to other undertakings. Helen for example discussed how she was obsessed with her studies and wished to devote more time to studying, sometimes leading to physical exhaustion: "*When I am not working, I feel that I should work. . . Some days, it is not funny, it is not really not funny, but I am so tired, I am absolutely drained, but even then my brain won't stop*." (Helen, Q8)

Here, it seemed that Helen's preoccupation was beyond the requirements of the task (finishing her M.A. dissertation). Moreover, she reported rejecting social events and invitations such as invitations to movies, barbeques, and picnics.

Since engagement in SF behavior was perceived as emotionally satisfying, the participants strived to continue this engagement and its resulting positive affect in two main ways. First, the participants maintained an unceasing affective link to their SF even while they were not physically engaged in learning activities (i.e., in the background) as evident from this statement by Sahar: "[I]*t was definitely something that was constantly on my mind so even during lectures I would find myself scribbling in the margins of the page like in Japanese*." (Sahar, Q2)

The second way that was used by many participants was studying in free time. This strategy was especially used by the participants who were too occupied to integrate their SF routines to their daily lifestyle. Louise, who was too busy with other ongoing commitments, made use of her free time to study Old Norse: "*Well I had to do a lot of other things. . . I had to graduate from my home university and finish my dissertation. . . But I used my free time for that, so whenever I was alone in my room. . . .*" (Louise, Q3)

Personal, Me-Time

In addition to performing SF tasks in their free time, the participants believed that engagement was in main part about oneself and therefore the most enjoyable engagement. Sahar considered learning Japanese as "*time for myself*": "*When time allowed I think, so it was like I go to for free time and as soon as like the more important things are out the way then I could just have that time for myself and learn.*" (Q3)

In all the cases, the participants had developed a personal association with their SF. Suzan for example considered her SF time as her personal time: "*Actually it was my time. I feel that it is for me only. It is like my leisure time or free time, yeah.*" (Q4). Moreover, engagement was seen as originated from one's own decision rather than to meet any external expectations. Consequently, positive affect resulting from perceiving engagement as about one's personal goals and benefits seemed to have led to motivation from within, as evident from this comparison Kardo put forth: "*during my holistic learning of English, no one could oblige me to study or to get ready because I was staying ready for everything all the times.*" (Kardo, Q5)

Flow

Many of the participants reported repeated occurrences of flow as discussed above. As a result, in addition to the belief that engagement was necessary to make progress toward a SF goal, undertaking SF activities had sometimes become enjoyable for its own sake. Sahar for example described how engagement in L2 learning sessions was her "*me-time*" in which she would immerse in the L2:

> [I]*t was kind of like my personal me-time so it would be just time for me to focus on one thing and I could just shut my door in my room and just really immerse myself in the language and try to learn it.* (Sahar, Q4)

As this seemed to have become a consistent pattern throughout her SF, engagement in the L2 task was seen not only as enjoyable, but, as Sahar said, a "*treat for myself*" and "*Japanese was something that would keep me happy even if I was down so. . . .*" (Sahar, Q5)

Regardless of whether the task at hand was intrinsically interesting, some of the participants had developed an emotional link to the media and materials they used for their learning as discussed above. As such, intrinsic enjoyment and a sense of progress/learning seemed to have functioned jointly to make engagement emotionally rewarding. Consequently, engagement was looked forward to as exemplified in this excerpt from Suzan: "[A]*ctually I was waiting, I was holding my watch.*" (Suzan, Q5)

DISCUSSION

The findings of this research suggest that positive emotionality is the dominant type of affect experienced in SF. Positive affect is experienced while the participants were in SF, both in single learning episodes (positive emotions) or over extended periods (positive mood). Nonetheless, in addition to this dominance, the experience of positive affect seemed to be qualitatively different from experiencing positive emotions at most other times. In describing their SF as unique experiences, the participants in large part made this judgment in affective terms. In this regard, they particularly emphasized experiencing subdued happiness, long-lasting positive mood, and satisfaction – as opposed to merely short-lived emotions of excitement or the prospect of merely reaching a new level in learning or improving a second language.

The findings suggest that the underlying reasons behind these emotional patterns are based on two different, yet complementary appraisals: making tangible progress toward a personally valuable learning goal, and a perception of productivity, skill acquisition, personal development, and transformation. These two processes seemed to have given rise to two types of positive emotionality: *anticipatory* positive emotions (current experience of an emotion because of an event in the future; Baumgartner et al., 2008) in respect of an important future goal, and *eudaimonic happiness* in regard to a sense of self-actualization and growth (Ryan and Deci, 2001). Whereas the former led to short-lived emotions of pleasure and joy, the latter was associated with unremitting long-term positive mood and satisfaction.

Importantly, the results of this research imply that the uniquely high motivational intensity of SF is perhaps fueled by positive affect and utilizing its motivating force more than by a valuable final goal/vision or a salient structure as theorized earlier by Dörnyei et al. (2014; 2015; 2016). Motivational intensity seems to be measured by one's affective connection to their SF rather than by how much time they devote to individual learning tasks. In this study, although the participants varied in how much time they had spent on learning, they seemed to maintain a conscious mental relationship with their SF experiences. Kardo's spending time on "*motivational and inspirational videos*" and Ali's discussion of his happiness and progress at gatherings with friends, for example, probably mean that one appreciates and is therefore motivated by one's emotional appraisal of the experience rather than simply on-the-task engagement. The participants varied in how much time they had devoted to learning; yet, all the experiences were considered as uniquely intense, mainly because the intensity of engagement was perceived and interpreted in light of its status as one's most preferred or valued engagement – evident from engagement in learning in one's free time. As a result, the participants were preoccupied with their experiences beyond the time and contexts of engagement in SF tasks. As reported in the themes, regardless of how much time one spent on L2 learning, the SF engagement was an-always-present preoccupation. Therefore, although engagement in study sessions was not always taking the participants' greatest time, the participants were mentally and affectively consumed by their SF even at times when they were involved in other daily activities.

This preoccupation seemed vital for supporting the continuation of SF routines and also for altering the perception of effort. Relatedly, studying in one's free time was a dominant practice among the participants suggesting that engagement in SF is not seen as homework: Engagement is probably too emotionally satisfying and meaningful insomuch as one prefers to maintain a strong and constant sense of *relatedness*. In SF, the perception of engagement changes from *a task one needs to do* to *a task one wishes to do* (Waterman, 2005). As a result, in SF, effort loses its traditional connotation and therefore self-regulatory measures become unnecessary; hereby one might invest the maximum amount of effort toward learning.

The findings provide some evidence for the impact of positive emotionality on motivated behavior. Whereas this impact has previously been assumed to be the function of both envisioning a learning goal and eudaimonia (Dörnyei et al., 2016; Ibrahim Z., 2016), the current findings suggest that the role of eudaimonic happiness might be more central than previously thought in engendering a long-lasting motivational tendency toward engagement. Therefore, the recently proposed term *SF* (Ibrahim and Al-Hoorie, 2019) in place of the original term *DMCs* might be more appropriate in describing the SF experience as it amplifies the role of positive emotionality in such experiences.

Nonetheless, eudaimonia can perhaps explain why people in SF experience the type of happiness related to positive emotions but more so to long-lasting positive mood. Yet, it is unclear if it is also behind the affective obsession people in SF usually experience which this study has found to be the primary force of motivated behavior and the alteration of effort. From the positive psychology perspective, this new conceptualization of SF as *intense motivational forms of engagement fueled primarily by positive affective obsession* has significant implications in at least two respects. First, while experiencing anticipated and anticipatory emotions (MacIntyre and Gregersen, 2012) can broaden people's momentary and enduring resources (Fredrickson, 2001, 2009), long-lasting positive affect is perhaps more important in sustaining motivated behavior. Secondly, positive mood and positive affection beyond the immediate task engagement might be more or as paramount in inducing long-term positivity, subjective wellbeing, and happiness. More research into SF experiences is obviously necessary to further investigate these two matters.

It is noteworthy to mention a major limitation of this research. Due to the fact that the majority of the participants provided accounts of their experiences in retrospect and mostly after a number of years from the experience, it is likely that

they had been biased in describing their experiences especially their emotions. That is, they were probably under the effect of remembering self rather than the experiencing self (Kahneman, 2011). Hence, they were at least partially influenced by how their experiences ended and how they recalled its details at the time of this research. Moreover, the two participants who were studied longitudinally were engaged in full-time postgraduate studies in L2 studies rather than in L2 itself. Although it has been proposed that SF is barely domain-specific, more research in participants who are engaged in L2 learning will be superior.

CONCLUSION

In conclusion, the findings of this research imply that while in SF, people might approach engagement in affective terms. That is, they are motivated by the prospect of enjoyment from personal growth and eudaimonia. Therefore, we might assume that SF is primarily an affective experience fueled by long-term enjoyment and subdued happiness. Consequently, engagement in learning activities is satisfying in part because of a sense of positive change and personal development. Little is thus necessary to constantly activate self-regulatory strategies. This new conceptualization of SF has important implications for long-term motivation and the role of enjoyment in sustaining motivated behavior. In the growing field of positive psychology within second language learning, SF can have a unique contribution in increasing our understanding of the role of positive affect and enjoyment in L2 learning (Dewaele et al., 2019).

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the University of Nottingham – English Department. The patients/participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this manuscript.

AUTHOR CONTRIBUTIONS

The author confirms being the sole contributor of this work and has approved it for publication.

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The research presented in this manuscript including the data presented here has been derived from a larger study conducted as part of the researcher's Ph.D. project at the University of Nottingham. The Ph.D. thesis is available on request from http://eprints.nottingham.ac.uk/33489/.

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Reading Picture Books With Elements of Positive Psychology for Enhancing the Learning of English as a Second Language in Young Children

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This study aimed to investigate the learning effectiveness of reading picture books with EMPATHICS elements using dialogic reading techniques in enhancing young children's English language learning and creativity. EMPATHICS is an acronym of Emotion and Empathy, Meaning and Motivation, Perseverance, Agency and Autonomy, Time, Habits of Mind, Intelligences, Character Strengths, and Self Factors (Oxford, 2016). It adopted a quasi-experimental design, and 78 kindergarten children aged from 4 to 5 years old in a cluster group were randomly assigned to the experimental and control groups. Both groups read the same four picture books with their homeroom teachers, including two readers suggested in the curriculum and two picture books with enriched elements for 12 sessions over 8 weeks. A doubly multivariate analysis was used to measure the main time and group effects and the interaction effect on the performance of English receptive vocabulary, syntactic complexity, and verbal creativity of the two groups across three different times. There were significant differences only in the interactive effect on syntactic complexity. Children in the experimental condition gave responses with more complex syntactic structures. Significant time effects for receptive vocabulary, syntactic complexity, and verbal creativity were observed in all children. Reading enriched English texts better prepares children to creatively and effectively express themselves. This study extends previous research in two ways. First, this study is one of the few studies on the effectiveness of dialogic reading using EMPATHICS-enriched picture books among young language learners. Second, this study investigates the effects of dialogic teaching on English as a second language development in young children. The educational implications will be discussed.

Keywords: dialogic reading, positive psychology, receptive vocabulary, syntactic complexity, verbal creativity

INTRODUCTION

Reading story books to young children in an interactive way on a daily basis is an indicator of quality early childhood education (Siraj-Blatchford et al., 2008) and a significant predictor of language learning in primary education (van Druten-Frietman et al., 2016) and of language and literacy outcomes in longitudinal studies (Ulferts et al., 2019). Adult–child book reading is a kind of extended intervention technique that enhances children's language skills for reading and written language outcomes when children actively engage in reading (Scarborough and Dobrich, 1994; Swanson et al., 2011). Teachers may use dialogic reading techniques, such as questioning, elaborating information, and initiating discussions, to encourage verbal interaction with children (Zevenbergen et al., 2003; Swanson et al., 2011) and to actively engage children in learning (Seligman et al., 2009).

In dialogic reading, children become a storyteller during book reading. Adults, on the other hand, become an active listener, audience, and questioner. Adults provide appropriate assistance to the child by using an evocative approach when reading a story, such as asking the child about the picture or content of the story, supporting the child in telling the story along with adults (e.g., Haden et al., 1996; Whitehurst and Lonigan, 1998; Swanson et al., 2011; Flack et al., 2018). There are significantly greater language gains than when adults simply read a book to children (Arnold and Whitehurst, 1994; Hargrave and Sénéchal, 2000; Chow and McBride-Chang, 2003). Additionally, children enjoy dialogic reading more than traditional teaching because the addition of prompts during reading together can enable adults to follow children's interests and attention (Valdez-Menchaca and Whitehurst, 1992). The pleasure of reading is beneficial to the child's language development (Zevenbergen et al., 2003). Recent studies found that dialogic reading has a positive effect on language and literacy development for the child, mainly in encouraging receptive vocabulary development and interest in reading, for both Chinese (Chow et al., 2008, 2010), and English language learning in elementary classrooms (Chow et al., 2017). Young children in Hong Kong received formal education in reading and writing, in both Chinese and English languages, at age 3 in Kindergarten, as stipulated in the Kindergarten Education Curriculum Guide (Education Bureau, 2017).

Effects of Dialogic Reading

Swanson et al. (2011) conducted a meta-analysis of reading interventions for children at risk for reading difficulties from preschool to third grade. The dialogic reading approach is one of the frequently used interventions, and outcome measures are mostly expressive vocabulary, receptive vocabulary, word recognition, and semantic complexity (e.g., number of nouns, verbs, modifiers); and of the 27 studies, only one or two studies used syntactic complexity (e.g., mean length of utterance). These authors concluded that extended child–adult dialog and questioning around storybooks can improve literacy outcomes, mainly receptive and expressive vocabulary although fewer studies use syntactic variable.

Verbal creativity is another language outcome examined in studies with young children, schoolchildren, and college students. Smogorzewska (2014) found that both reading stories to young children, and asking them to make stories enhanced creativity as measured by semantic structure (continuous episodes), narration cohesion (time sequence, cause–effect), story complexity (number of connections among characters), story length (number of words), and originality (novel elements). Aerila and Rönkkö (2015) integrated arts, story reading, and telling as a creative learning process. They first read part of a story to a group of young children and they further verbally elaborated the story and made art craft of the characters and episode, then they read about the original ending, their new elaboration, and shared collaboratively about their own artistic products. Creative outcomes included verbal creativity as measured by the new story, and visual creativity as presented by hand drawn pictures and handmade characters.

Flack et al. (2018) conducted another meta-analysis on how children's language acquisition is related to reading picture/story books using 38 studies with 2,455 children. Children learned 3.025 words (raw change) on average, and 46% of the words were included in the reading process. Dialogic reading techniques increase word learning in children by at least one word when adults describe pictures and ask questions during reading, regardless of whether teachers or parents or caregivers serve as the reader. These authors also suggested some new future directions for research. Children aged between 3 and 5 years who are read the same storybooks repeatedly learned more words. Children between 2 and 10 years could learn approximately two to five new words (approximately 2.77 nouns, 3.10 verbs). Reading styles, exposure to the same storybooks, and learning nouns and verbs are all significant moderators when studying the dialogic reading approach with young children.

Of the 38 studies in Flack et al.'s (2018) meta-analysis, four major types of reading stimuli were employed. First, two studies used a wordless picture book (Ard and Beverly, 2004; Abel and Schuele, 2014). Second, approximately 15 studies used author-created picture books embedded with targeted words that were mainly nouns (e.g., Blewitt et al., 2009; Houston-Price et al., 2014; Flack and Horst, 2018). Third, two studies used adapted picture books with target words or grammar structures (McLeod and McDade, 2011; Evans and Saint-Aubin, 2013). The final type of picture books were popular story books in children's literature with no specific target words or structures (Beck and McKeown, 2007; Pullen et al., 2010; Strasser et al., 2013; Chen and Liu, 2014). Commercial picture books differ from wordless, author-created or adapted children's picture books in that the former have significantly more words, more types of words, and more grammar structures. Flack et al. (2018) did not define or observe that type of picture book was a significant moderator. The dialogic reading technique had the greatest effect.

Reading stories with themes on resilience, or enriched with sensory stimuli also enhance creativity among older students. Boytos et al. (2015) discovered that college students scored higher in the Torrance Tests of Creative Thinking after reading an underdog story than those who read a top dog. The underdog displayed resilience when undergoing hardship in life and creativity in problem solving. Bos et al. (2015) found that kindergarten children with higher sensory richness scores

wrote highly original stories with more sensory words and situational words. Webb and Rule (2014) integrated story reading with humor, wisdom, and emotion when learning about health and nutrition in a second grade classroom. Students displayed higher creativity in figural creativity but reported no significant differences on enjoyment of book, enjoyment of making figural transformation, and perceived creativity.

In this study, award-winning commercial picture books written in English for children aged between 3 and 6 years were chosen for three reasons: the narrative level was appropriate for the kindergarten age group, they had appealing illustrations to children, and they had enriched elements of the EMPATHICS model (Oxford, 2016) outlining the psychological dimensions of positive language learning. EMPATHICS is an acronym for Emotion and Empathy, Meaning and Motivation, Perseverance, including Resilience, Agency and Autonomy, Time, Habits of Mind, Intelligences, Character Strengths, and Self Factors, especially self-efficacy. The enriched content provides more interesting elements to enhance vocabulary and syntax compared with traditional reading, which usually focuses on repetitive semantic (e.g., food items) and syntactic elements (e.g., "I like . . ."). To our knowledge, this study is the first study to adopt the EMPATHICS model for studying how beneficial it is for young children's L2 learning. The current study aimed to investigate the effectiveness of reading picture books with EMPATHICS elements using dialogic reading techniques for enhancing young children's English language development and verbal creativity.

MATERIALS AND METHODS

Participants

The study was a quasi-experimental design with three different time points, including a pretest, mid-test, and posttest, to investigate how picture books with EMPHATICS elements and read using dialogic reading techniques help the language and creativity development of young children learning English as a second language. Ethical approval was obtained from the Ethics and Research Committee of the university. Parents provided written and informed consent for their child and themselves to take part in the study. Seventy-eight kindergarten children aged from 4 to 5 years in cluster groups were randomly assigned to the experimental and control groups. Initially, a total of 89 kindergarten children in three K2 classes and three K3 classes (43 in the experimental condition and 46 in the control condition) were included. Only 39 children (19 boys and 20 girls) in the experimental group and 39 (18 boys and 21 girls) in the control group completed the three assessments, yielding an attrition rate of 12.3%, usually due to sick or casual leave during the second or third assessment times.

Procedure

At the baseline measurement, each child was individually tested for approximately 15–20 min in the kindergarten classroom by trained psychology undergraduate and postgraduate students. With a double-blind design, the experimenters and the child participants did not know which children belonged to the experimental or control groups. Children were briefed that they would use English to play all games before the tests. There were three tests for the children: an English receptive vocabulary test, a story-telling task (STT), and free conversation. After all the tests, a cartoon sticker was given to the child as a token of appreciation, and each child was given an English picture book to bring home as another token.

Four classes of kindergarten children from two different age groups (ages 4 and 5) were randomly assigned into two groups: (a) an experimental group with dialogic reading first with ordinary English stories and then with creative English stories or (b) a control group with traditional reading first with ordinary English stories and then with creative English stories. After the baseline measurement, the former 4-week dialogic reading sessions with typical English reading as assigned by the kindergarten were conducted in the experimental group, whereas traditional reading with the same typical English reader was implemented in the control group. There were a total of 12 lessons (240 min) and 20 min for each lesson. Two participating teachers in the dialogic reading group were trained by the researchers in how to use dialogic reading techniques to link creativity and vocabulary learning in the story books. Teaching materials with clear instruction and procedures, i.e., using the Prompt–Evaluate–Expand–Repeat sequence and five types of questions with CROWD as the acronym, namely, Completion, Recall, Open-ended, Wh-words, Distancing, were provided for teachers (please see **Appendix I** for sample questions). There was a classroom observation in the first or second lesson taught by trained teachers to ensure fidelity of implementation. According to a recent review on fidelity of dialogic reading studies in early childhood education of Towson et al. (2019), the fidelity level of the current study can be classified as the highest level when "authors stated training was provided and gave a detailed description of training" (p. 136).

The classes were also recorded to evaluate the whole teaching process. After the 4-week intervention, a mid-test assessment was conducted with the same procedures and assessment materials as those completed at the baseline assessment. The next 4-week dialogic reading sessions with English stories with EMPATHICS elements were implemented in the dialogic group, and four sessions of traditional reading with the same English stories with enriched elements were conducted in the control group. The posttest measurement was completed within 1 month of the reading intervention taking place.

To control for cognitive ability and parental influence, children's non-verbal reasoning ability was assessed by Raven's standard progressive matrices (Raven et al., 1996), and no significant difference was found (t = 0.854, p = 0.397) between the experimental and control groups. The Parent–Child Interaction Questionnaire (Yau and Yang, 2014), and Chinese Early Parental Involvement Scale (Lau et al., 2012) were used to measure psychological and language interaction, and parental involvement in school. No significant differences in parent–child interaction overall mean scores (t = 0.653, p = 0.516), and those of parental involvement (t = 0.487, p = 0.628) were found in between the experimental and control groups.

Materials

Four English story books were used for the 8 weeks of the 12 sessions of dialogic reading lessons, including two typical English readers assigned by the school used in the first six sessions and another two English EMPATHICS picture books in the second six sessions. Features of these readers and picture books are described in great detail in **Table 1**.

Instruments

Receptive Vocabulary in English

The Peabody Picture Vocabulary Test IV (PPVT-IV; Dunn and Dunn, 2007)

This test is an English-graded vocabulary test for children aged between 3 and 6. Children were orally presented a vocabulary item and asked to choose the picture for this item out of a four-picture grid. The four-picture grid included pictures representing a target word, an onset distractor, a rhyming distractor, and an unrelated distractor. For example, in one testing trial, "Cat" was a target word, "Hat" was a rhyming distractor, "Cookie" as an onset distractor, and "Dog" was an unrelated distractor. The Cronbach's alpha was 0.982 for Time 1. The correlation coefficients between Time 1 and the other two time points were Time 2 ($r = 0.679$, $p = 0.000$) and Time 3 ($r = 0.722$, $p = 0.000$), and between Time 2 and Time 3 ($r = 0.741$, $p = 0.000$), indicating satisfactory test and retest reliability.

Syntactic Complexity in English

Edmonton Narrative Norms Instrument (ENNI; Schneider et al., 2002; Schneider and Hayward, 2010)

The story-telling test measures children's syntactic development. In the test, a series of five wordless pictures was shown to participants in an individual session. Each participant was required to tell a story about the pictures on his/her own in English. Before telling the story, the participants were allowed 1 min to look through all pictures, and they were asked and briefed to tell an interesting story later. Five-picture stories in A1 and five-picture stories in B1 were used. In the pilot test, half of the children randomly used the A1 story, and another half used the B1 story. In the baseline measurement and posttest assessment tasks, the B1 story was used while the A1 story was used in the pretest to reduce the effect of time. The Cronbach's alpha value for the following 10 items for Time 1 was 0.709, indicating satisfactory reliability. An overall mean score was computed using the 10 items. All stories were video-recorded and scored in the target items: (a) the amount of words - total number of words (TNW), (b) number of different words (NDW), (c) mean length of communication units (MLCU), (d) included utterance (IU), (e) independent clause (IC), (f)

TABLE 1 | Features of the English readers and picture books.

Title	Author	Year	Publisher	Features
Typical Readers ⟪Farm Animals⟫	Anoynmous	2003	Crystal Education Publication	Repeated sentence structure: I see . . . Vocabulary on farm animals, e.g., cow, pig, chicken, and etc. No elements on EMPATHICS
⟪I like. . .⟫	Jillian Cutting		Sunshine Books	Repeated sentence structure: I like eating . . . Vocabulary on food items, e.g., ice-cream, burgers, spaghetti, and etc. Few elements on EMPATHICS Emotion: favorite food
EMPATHICS Picture Books ⟪Along a long road⟫	Frank Viva	2011	Little, Brown Books for Young Readers	Little repetition of sentence structure Vocabulary on adverbs of position, e.g., on, over, under, and etc. Emotion: Relaxing when cycling along a long road across the city Meaning and Motivation; Perseverance: including resilience and hope; Agency: the cyclist's autonomy to travel along the long road by bike; Time: temporal appraisal of time passing spontaneously as the cyclist passes along the long road; Habits of mind: gathering data through all senses as the cyclist sees, and hears things along the long road; Intelligences: bodily kinestics, intrapersonal, interpersonal, logical, visual–spatial, verbal; Character strengths: curiosity and perseverance in discovering about the city; Self factors: self-efficacy
⟪Grandpa Green⟫	Lane Smith	2011	Roaring Brook Press	Little repetition of sentence structure Vocabulary on life events, e.g., boyhood, wedding, baby, and etc. Emotion: Acceptance as Grandpa grows across the lifespan Meaning: lifespan development of Grandpa from childhood, adolescence, adulthood, older adulthood Perseverance: surviving through the World War II Agency: service in the army and for the family in raising the family Time: time perspectives of past, present and future when listening to grandpa's life story Habits of mind: listening with understanding and empathy, finding humor in grandpa Intelligences: bodily kinestics, intrapersonal, interpersonal, logical, visual-spatial, verbal Character strengths: creative, Self factors: self-efficacy in horticultural arts

dependent clause (DC), (g) clausal units (CU), (h) complexity index [CI = (IC + DC)/IC], (i) story grammar (SG) units to evaluate overall content and marco structure (organization) for characterizing good stories, and (j) first mentions (FM) to measure the referential cohesion using FM of characters and objects first when telling a story. The correlation coefficients between Time 1 and the other two time points were Time 2 (r = 0.386, p = 0.000) and Time 3 (r = 0.470, p = 0.000), and between Time 2 and Time 3 (r = 0.526, p = 0.000), indicating moderate test–retest reliability.

Verbal Creativity in English

Story-telling task (STT; Hennessey and Amabile, 1988; Hui et al., 2013)

The STT was conducted by an experienced researcher and trained research assistants. Each child was presented with an unseen picture and was asked to tell a story about the picture. In this test, child participants were provided 3 min for preview and 5 min to create their story. The participants were allowed to continue until they indicated completion. The storytelling process was digitally recorded and then independently evaluated by two raters for 13 criteria: (1) relevancy to the story, (2) ability to describe the story, (3) ability to organize the story, (4) ability to express, (5) ability to show emotions, (6) ability to speak in an audible tone, (7) ability to add conversations, (8) ability to include humorous elements, (9) ability to include creative elements, (10) ability to identify problems and find relevant solutions, (11) ability to name the story, (12) ability to make story by themselves, and (13) ability to use vocabulary. Each criterion was rated on a five-point scale (from 0, lowest, to 4, highest). A composite score was calculated for each participant. Each story was rated by two trained researchers. There were positive correlations between the composite scores calculated by the two markers for the three tests (r = 0.56 ∼0.73, $p < 0.001$), indicating moderate interrater reliability. The correlation coefficients between Time 1 and the other two time points were Time 2 (r = 0.439, p = 0.000) and Time 3 (r = 0.468, p = 0.000), and between Time 2 and Time 3 (r = 0.545, p = 0.000), indicating moderate test–retest reliability.

RESULTS

Descriptive statistics of the vocabulary, creativity, and syntax scores across three time points are listed in **Table 2**. An independent sample T-test was conducted to examine whether there was any initial difference among the pretest scores and no significant differences were found: receptive vocabulary (t = -0.325, p = 0.746), verbal creativity (t = 1.182, p = 0.241), and syntactic complexity (t = 1.334, p = 0.186).

A two-way (two groups × three times) repeated measured MANOVA was conducted to assess whether there were differences across the three time points and between the DR and TR group. The assumption of sphericity was not violated and thus the sphericity assumed values were used. Statistically significant multivariate effects were found for the main effects of group, Wilks' lambda = 0.781, $F(3,74) = 6.909$, $p < 0.001$, eta^2 = 0.219, and time, Wilks' lambda = 0.340, $F(6,71) = 22.953$, $p < 0.001$, eta^2 = 0.66, but no overall interaction effect between time and group, Wilks' lambda = 0.911, $F(6,71) = 1.151$, p = 0.343.

Within the same group, the time effect showed the difference between reading with typical reader (Time 2) and the enriched EMPHATHICS picture books (Time 3). There was a significant group effect, Wilks' lambda = 0.781, $F(3,74) = 6.909$, $p < 0.001$, eta^2 = 0.219, indicating the difference between the dialogic reading group and the traditional reading group when using the same type of reading materials at the same period. A follow-up ANOVAs revealed that the statistically significant change from Time 1 to Time 3 was only for the syntactic complexity variable, $F(1,76) = 49.956$, $p < 0.001$, eta^2 = 0.397, and that the change was different from the two groups, $F(1,76) = 4.676$, $p < 0.05$, eta^2 = 0.058. The effect size was small. **Table 3** shows the time and group and interaction effects of the variables.

Follow-up ANOVAs show that the means of language and creativity scores suggest that all children had significantly higher across the three time points in receptive vocabulary, $F(2,152) = 16.379$, $p < 0.001$, eta^2 = 0.177, syntactic complexity, $F(2,152) = 57.95$, $p < 0.001$, eta^2 = 0.433, and verbal creativity, $F(2,152) = 23.597$, $p < 0.001$, eta^2 = 0.237. **Figures 1–3** show the increases of the outcomes across the three time points in all participants. All children benefited from reading both typical reader and the enriched picture books; however, more

TABLE 2 | Means and standard deviations of variables.

	Time 1		Time 2		Time 3	
	M	***SD***	***M***	***SD***	***M***	***SD***
Experimental group (*N* = 39)						
Receptive vocabulary	26.53	8.04	27.42	7.87	30.79	9.09
Syntactic complexity	4.84	3.55	7.39	4.12	8.74	4.33
Verbal creativity	14.01	4.48	16.34	4.02	20.47	6.04
Control group (*N* = 39)						
Receptive vocabulary	26.79	8.44	27.82	8.39	30.13	7.93
Syntactic complexity	3.31	2.75	4.61	3.30	5.38	2.92
Verbal creativity	12.33	4.89	13.91	5.03	18.16	4.51

TABLE 3 | Effects of time and group on variables.

	F	**Sig.**	**η^2**
Within group (time effect)			
Receptive vocabulary	31.455***	0.000	0.293
Verbal creativity	101.95***	0.000	0.573
Syntactic complexity	49.96***	0.000	0.397
Between group (group effect)			
Receptive vocabulary	0.005	0.944	0.000
Verbal creativity	6.184*	0.015	0.075
Syntactic complexity	16.94***	0.000	0.182
Interaction effect (time × group)			
Receptive vocabulary	0.419	0.519	0.005
Verbal creativity	0.390	0.534	0.005
Syntactic complexity	4.676*	0.034	0.058

*$p < 0.05$, ***$p < 0.001$.

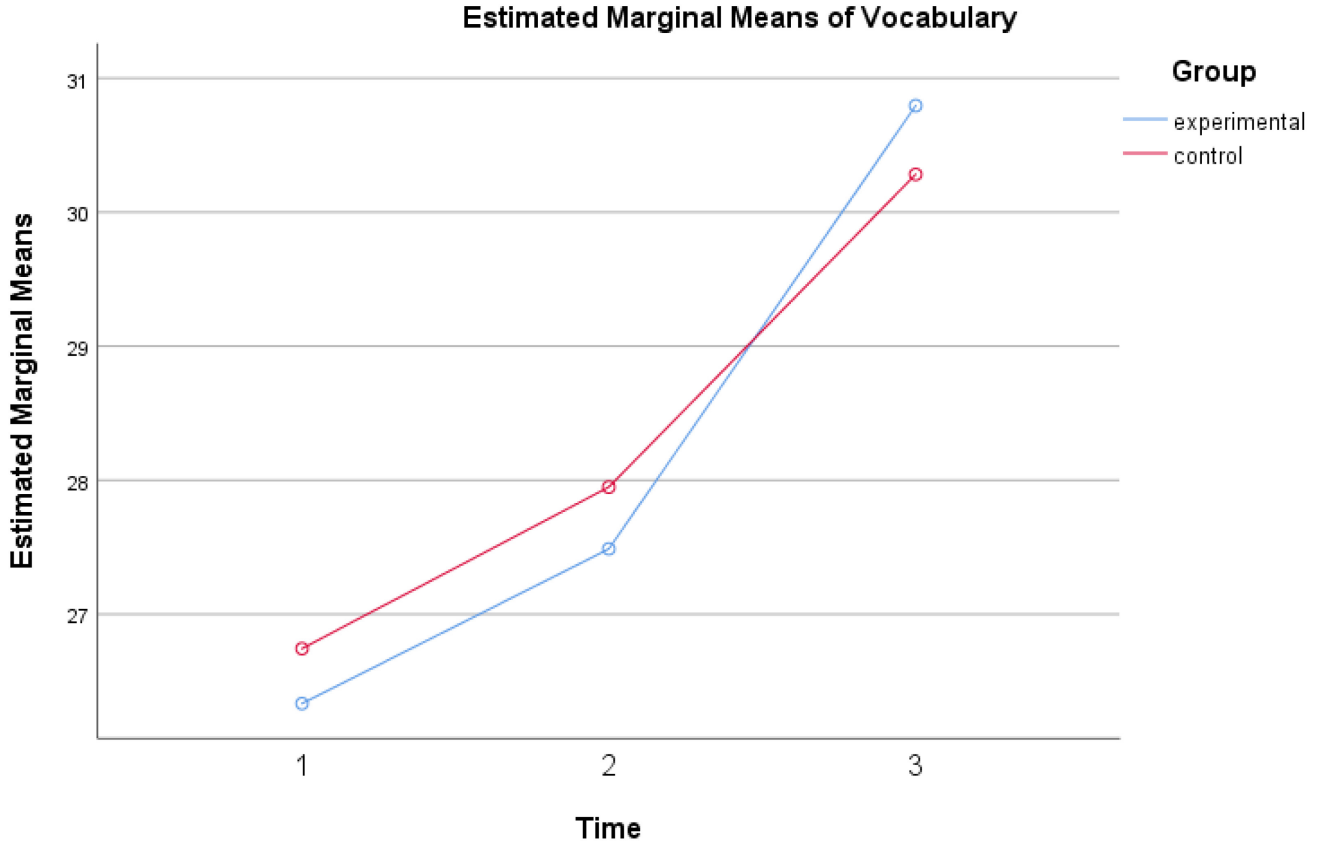

FIGURE 1 | Receptive vocabulary gains of experimental group and control group across three times.

observable gains were found when both groups reading the enriched picture books.

Significant differences were found between the experimental group and the control group in verbal creativity, $F(1,76) = 6.184$, $p < 0.05$, $\text{eta}^2 = 0.075$ and also in syntactic complexity, $F(1,76) = 16.94$, $p < 0.001$, $\text{eta}^2 = 0.182$ but no such difference was reported in vocabulary, $F(1,76) = 0.005$, $p = 0.944$. Inspection of the **Figures 2**, **3** suggested that the dialogic reading group told stories with higher syntactic complexity, and higher creativity than the control group. Both groups gained similarly in receptive vocabulary and thus no significant differences were observed among them.

DISCUSSION

This study investigated the learning effectiveness of reading picture books with EMPATHICS elements (Oxford, 2016) using dialogic reading techniques in enhancing young children's English literacy development as a second language. The findings have showed both groups reported similar pattern of vocabulary, syntactic, and creativity development when reading frequently with teachers after the 12-week intervention. More advanced developments in syntax and creativity are reported when using dialogic reading techniques of dialogic teaching. This study extends previous research by investigating the effectiveness of dialogic reading techniques on English as second language development among kindergarten children using typical school readers and stories enriched with positive psychology elements.

English Receptive Vocabulary

The increase in young children's English vocabulary across the 12 weeks has indeed indicated that reading picture books to children in early childhood classroom frequently brings benefits to their receptive vocabulary, regardless of using traditional or dialogic techniques. These findings are partly consistent with the literature that picture book reading strengthens students' vocabulary knowledge (Flack et al., 2018). Teachers reading to children in a daily basis is an important indicator of quality early childhood environment (Siraj-Blatchford et al., 2008), and serving as a predictor of children's later language outcomes (van Druten-Frietman et al., 2016; Ulferts et al., 2019). The impact of using EMPATHICS enriched storybooks on vocabulary gain is reported when these books are used between Time 2 and Time 3. This finding is consistent with a recent study on reading extensively with different types of books to children in a dialogic method can enhance expressive vocabulary (Wesseling et al., 2017).

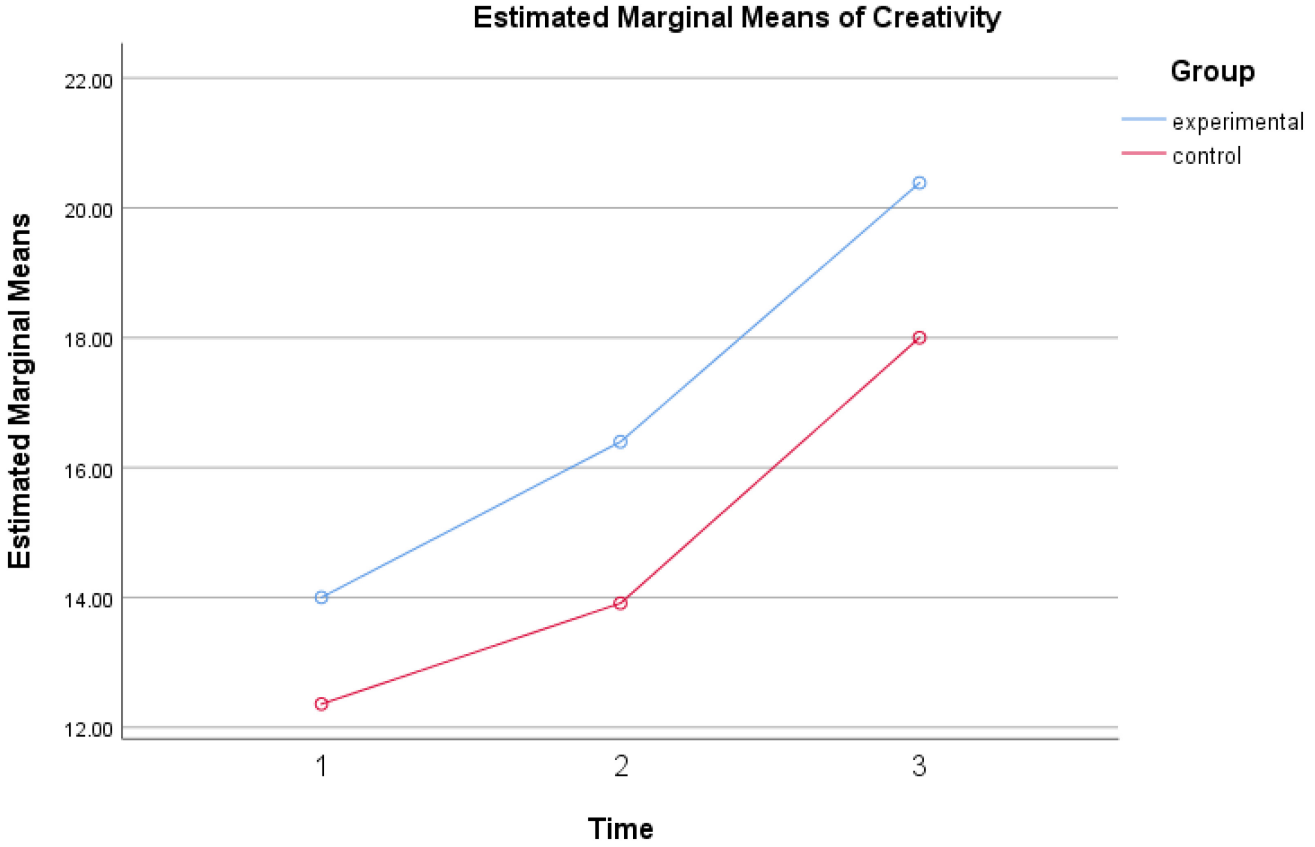

FIGURE 2 | Verbal creativity gains of experimental group and control group across three times.

The lack of significant positive effects of dialogic reading on English vocabulary knowledge may be due to the relatively short implementation period. With a longer implementation time, dialogic reading approach which promotes more interactions might have a beneficial effect on language skills like other interventions of interactions on the first language acquisition, such as extratextual interactions programs of over 30 weeks (Wasik et al., 2006). In some successful studies, vocabulary items related to the picture books have been included as assessment items and expressive vocabulary can serve as alternative vocabulary outcomes (Ong, 2017).

English Syntactic Complexity

Our findings have indicated that reading frequently to children with different types of stories promotes syntactic development in L2 English in young learners, in addition to vocabulary enhancement. This finding is consistent with previous studies (Smogorzewska, 2014; Flack et al., 2018). The type of reader does make a difference to literacy development, and does the reading approach as well. The original books chosen by the kindergarten teachers are written and produced by textbook suppliers. These picture books often focus on one or two repetitive sentence patterns, related vocabulary, and simple illustrations with an intention to use repeated reading and rote learning to foster semantic and syntactic gains. Language acquisition in L2 learners follows a similar developmental theory of an integration of complex syntax, lexical learning, and vocabulary development as suggested by Dye et al. (2019). Story reading is also a good pedagogical strategy to foster syntactic development (Schneider and Hayward, 2010).

The EMPATHICS model enables teachers to take into account the psychological aspects of the language learner. The positive impact of EMPATHICS elements is manifested when enriched storybooks are read between Time 2 and Time 3. To sustain children's reading motivation and support children to be fluent readers, the EMPATHICS elements serve as excellent criteria for teachers and parents to choose books that strengthen both learners' reading behaviors but also agency, autonomy, and self-efficacy of children (MacIntyre, 2016; Oxford, 2016).

Both incorporating extended child–adult dialog by questioning around the stories, and using traditional reading approach encourage children to speak longer and complex sentences, communicate more eagerly, and express themselves more willingly. This finding is consistent with Lonigan and Whitehurst's (1998) study that children produced more lengthy sentences with more different words when reading unfamiliar book with dialogic reading approach. The extended child–adult dialog and questioning techniques with CROWD can help young children read the text creatively and extensively, and encourage

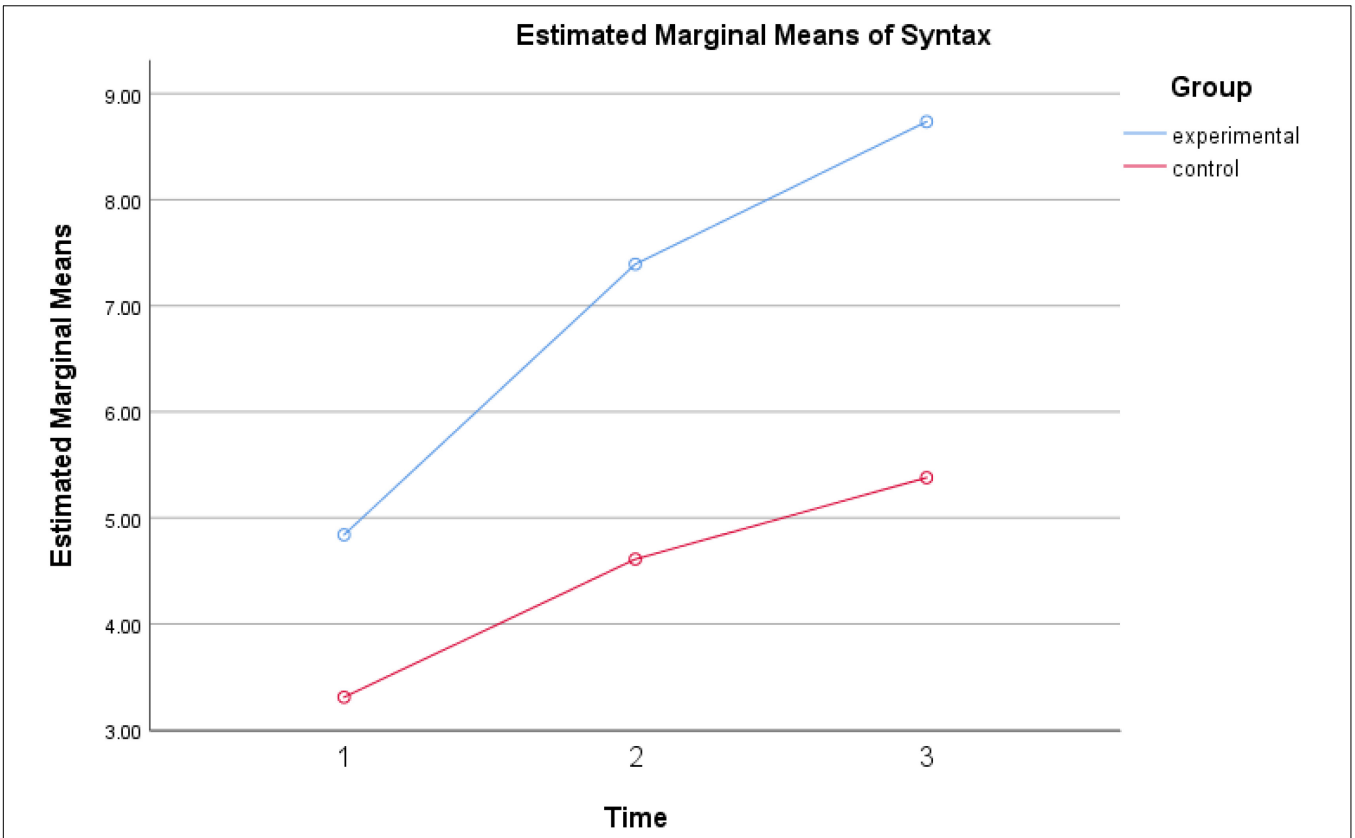

FIGURE 3 | Syntactic complexity gains of experimental group and control group across three times.

them to read with greater intrinsic motivation (Walsh and Blewitt, 2006; Chow et al., 2017).

English Verbal Creativity

Although the increase in young children's verbal creativity in the two groups did not show a significant interaction effect, their verbal creativity increases when reading constantly with both types of readers across the 12 sessions. Children tend to tell more creative stories when they are asked frequently about questions generated from the readers. The EMPATHICS enriched readers serve as interesting stimuli to enhance creativity through cultivating children's imagination (Kohm et al., 2016; Moedt and Holmes, 2018). Kohm et al. (2016) reported teachers observed children actively creating "new adventures based upon the story's content and language" and engaging in more social play with peers and generating positive affect.

Previous studies have also found similar mixed results on older children and in children from other non-Chinese cultures (Fleith et al., 2002; Hommel et al., 2011; Leikin and Tovli, 2014). Leikin and Tovli (2014) examined the creative performance of two groups of kindergarten children under 6 years old who spoke both Russian and Hebrew or only Hebrew. Verbal creativity was assessed by asking children to generate as many responses as possible to three semantic categories (animals, food and things to be taken on a picnic) and generating as many solutions as possible to a problem solving task. Bilingual children outperformed monolingual children in semantic tasks but did not show significant differences in the problem solving task. Fleith et al. (2002) found no significant difference in figural creativity among Grade 5 schoolchildren, half of whom spoke both Brazilian and English, and half of whom were monolingual children, after participating in a 15-week creativity training program. Hommel et al. (2011) studied English vocabulary and two cognitive tests, including a remote associates task and an alternate uses task between two groups of college students who were highly proficient Dutch–English bilingual students living in the Netherlands and low proficiency bilingual students with German origins. The highly proficient group of Dutch–English participants scored higher on English vocabulary and the remote associates task, but the low proficiency group scored higher in fluency and the alternate uses task.

Creativity among young children may vary with the nature of the creativity tasks. Familiar tasks tend to generate more creative responses, e.g., creative artwork (Fleith et al., 2002; Webb and Rule, 2014; Aerila and Rönkkö, 2015). The STT is a familiar activity in early childhood classroom when compared with the remote associates tasks or alternate use tasks (Hommel et al., 2011) or instance tasks (Leikin and Tovli, 2014). In other studies with older students, language proficiency is found to be an important variable in studies showing an advantage in creativity. Given the young age of participants in the current study, their

language proficiency is still developing and of similar level, and it is reasonable to observe that reading both types of readers have enhanced verbal creativity. The lack of significant positive effects of dialogic reading on verbal creativity can be due to the emerging language proficiency in L2 when learning two languages in early childhood (Kharkhurin, 2018).

Limitation and Further Studies

There are three major limitations in this study. First, the dialogic reading approach is implemented for only 12 sessions in this study. Further studies can involve a longer implementation period to provide a clearer picture of its effects on students' language development. Second, the sample size is small which might affect the effect size. Third, this study has demonstrated positive effects of EMPATHIICS-enriched literacy texts on English sentence complexity but does not examine the underlying mechanisms. Future research can include observation of teacher–child interactions to examine factors mediating these causal links. Variables of the children's well-being may also be included and a larger sample may be used to improve the effect size.

CONCLUSION AND IMPLICATIONS

This study has provided evidence for the effectiveness of EMPATHICS-enriched reading on facilitating language development through enhancing syntactic development in young children learning Chinese as a first language and English as a second language. The findings have several major implications for language learning and second language learning. First, the present study has extended the application of positive psychology in language learning and early childhood classroom by demonstrating close links between the EMPATHICS model and English language learning in kindergarten, in addition to direct instruction, on positive psychology as investigated by Kristjánsson (2012) and Shoshani and Slone (2017). This finding stimulates further research in this area, particularly in investigating the underlying mechanisms of these phenomena. Additionally, this study has provided a new direction for educators and parents to design and implement learning activities that enhance positive emotions, character strengths, and joy in learning. It is feasible to integrate positive psychology in language education (Ciarrochi et al., 2016). The findings have demonstrated the importance of providing a stimulating learning environment in language instruction for young children in kindergarten. Future directions include a longitudinal study of how young children further develop their language skills in both Chinese and English from kindergarten to primary school.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by City University of Hong Kong. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

AH served as the principal investigator of the research project described in the manuscript. BC, EC, and M-TL served as co-investigators. All authors conducted the study together, visited the experimental and control classrooms, trained the teachers in the experimental group, and discussed about data analyses.

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APPENDIX I

Dialogic Reading

a) Steps in dialogic reading:

- Prompt—Prompt children to speak by questioning five different types of questions (CROWD):
- Evaluation—Evaluate children's answers
- Expansion—Expand children's answers into complete sentences
- Repetition—Let the children repeat the expanded sentences.

Questions used to prompt children to speak:

1. Completion: Leave the end of a sentence blank for students to fill in
2. Recall: Let students recall some previous content of a story
3. Open-ended: Encourage students to describe pictures in the story book using their own words, and do not have a definite answer
4. Wh-question: Who, What, Where, When, Why, and How
5. Distancing: Relate the content in the story book to daily life of students, ask about their personal experience or feelings, and do not have a definite answer.

School reader:

Book Name: I Like. . . Story by: Jillian Cutting

	Question	Suggested answer	Prompt	Evaluation–expansion–repetition
1	Do you remember what the little boy likes in the story?	Chicken, hamburger, milkshake, apple, ice-cream, pizza	Recall	Yes, he likes chicken. Let's say it together "He likes chicken."
2	Do you know what is ice-cream made of?	Milk, ice, sugar, cream	Wh-question	Correct. Ice-cream is made of milk, ice, sugar and cream. Please repeat "Ice-cream . . ."
3	Where do apples come from?	Apple tree	Wh-question	Right. Apples grow on apple trees.
4	What is/are the food(s) that both you and the little boy like?	Any possible answer	Distancing	Both of you like eating hamburger.
5	What the little boy doesn't like/dislike in the story?	Spinach	Recall	Yes, he doesn't like spinach.
6	Do you like spinach or any other vegetables?	Any possible answer	Distancing	Good. You like tomato.
7	What other foods do you like? Why?	Any possible answer	Distancing	Spaghetti. You like spaghetti because it is yummy.
8	What foods do you like the best/the most? Why?	Any possible answer	Distancing	You like cheese most because it tastes good.
9	What foods do you not like/dislike? Why?	Any possible answer	Distancing	You don't like fish because it has bones.
10	What else do you think the little boy in the story will like?	Any possible answer	Open-ended	Yes, he will like cheese sandwiches.

Reading with EMPATHICS enriched picture book:

Book Name: Along a Long Road Author and Illustrator: Frank Viva

	Question	Suggested answer	Prompt	Evaluation–expansion–repetition
1	Can you ride bicycle?	Any possible answer	Distancing	Yes, I can ride a tricycle. Let's repeat.
2	Where did the boy in the book go to when riding his bicycle?	A small town, a circus	Recall	Yes he went to a small town on his bike.
3	Describe a place you saw in the book that the boy rode by.	In a tunnel, over a bridge, a grocery shop, and etc.	Recall	He went in and through a tunnel.
4	What did he hear when he went near a circus?	Any possible answer	Distancing	When he went near a circus, he heard children laughing.
5	The boy in the book forgot to take precautions when riding a bicycle, what has he forgotten to do?	Wear a helmet	Recall	Yes, for his safety, he has to put on a helmet.
6	Why should we wear a helmet when we ride a bicycle?	For protection	Open-ended	
7	How do you feel about riding bicycles on the streets in Hong Kong?	Teacher may want to talk about countries are more cyclist-friendly (Denmark)	Open-ended	It is too crowded to ride bicycles in HK because there are a lot of cars. In Denmark, people go to work by bike.
8	Why did the cyclist suddenly stop on the road?	He hit a bump/apple	Wh-question	Yes, he stopped when he hit a bump.
9	Why did the boy start all over again?	He likes riding on bicycle.	Open-ended	Yes, he likes cycling and enjoys riding on it again and again.
10	The cyclist rode on a _____ road.	Long	Completion	He rode along a long road.

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Current Research on the Impact of Foreign Language Learning Among Healthy Seniors on Their Cognitive Functions From a Positive Psychology Perspective—A Systematic Review

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The purpose of this review study is to explore the existing research focusing on the impact of foreign language learning among healthy seniors on their cognitive functions from the positive psychology perspective. The methods are based on a literature review of available sources found on the research topic in two acknowledged databases: Web of Science and Scopus. The search period was not limited by any time period since there are not many studies on this topic. Altogether seven original studies were detected. The findings of this review study thus reveal that foreign language learning (FLL) has a positive impact on the maintenance and/or enhancement of cognitive abilities irrespective of age. In addition, the FLL courses seem to offer new opportunities for healthy seniors in the area of socializing and integration into society, which consequently may positively affect their overall well-being. Furthermore, the research shows that it is partly through the stimulation of social well-being that the cognitive effects of FLL might be observed. Cognitive aspects of older age are to be further investigated, including the importance of learning a foreign language, as basically all research conducted proves at least some maintenance or even improvement of cognitive functions of older people when starting intensive language training.

Keywords: aging, older adults, foreign language learning, cognitive functions, positive psychology

INTRODUCTION

The demographic situation of the so-called developed world can be described as a *rapidly aging population*. Consequently, in the coming decades the increase in the number of people in the age-group of older adults will be dramatic and unprecedented (Panitsides, 2014; Klimova, 2018). Additionally, incidences of dementia in developed countries have risen significantly and a similar global rise can be expected in the near future (Wong et al., 2019). In fact, at present, there are about 50 million people living with dementia (Klimova et al., 2019). The estimate for 2030 is 82 million demented people; in 2050, this number should reach 152 million (WHO, 2019).

These facts have motivated researchers to look for ways of improving the quality of life of the older generation and to delay the onset of serious cognitive disorders such as dementia, of which Alzheimer's disease is the most common (Alzheimer's Society, 2019). Both pharmacological and non-pharmacological interventions have been studied with a variety of findings (van de Glind et al., 2013; Klimova et al., 2016). Unfortunately, the pharmacological strategies to treat the decline of cognitive functions have not yet produced satisfactory results (Klimova, 2018).

However, as research findings show (cf. Klimova and Kuca, 2015), there are several promising non-pharmacological strategies that appear to improve and/or maintain cognitive functions. These include physical activities, cognitive training, nutritious diet, as well as interventions for improvement of social interaction (cf. Ballesteros et al., 2015), including the use of modern information and communication technologies (cf. Ballesteros et al., 2014). One such cognitive training strategy seems to be FLL (Antoniou et al., 2013). Research has proved that foreign language training among older adults leads to improvement of cognitive functions (Wong et al., 2019). As Antoniou and Wright (2017) claim, cognitive performance can be boosted even at a later age by activities such as learning a foreign language and playing games. This happens because of the engagement of an extensive network in the human brain that overlaps with those brain parts that are most affected by the negative effects of aging (Antoniou and Wright, 2017). Multilingualism is a predictor of better cognitive abilities even in older generations and can delay the onset of serious mental illnesses, such as dementia, by a few years. This particular fact has been proven by research on bilingualism, which reveals that people who learn a second language in their adulthood may prevent cognitive decline in later life by ∼4.5 years (cf. Bak et al., 2014; Bialystok et al., 2016). In addition, bilingualism represents a beneficial mental exercise for a large set of cognitive functions of the human brain (Bialystok et al., 2016).

Furthermore, it must be highlighted that aging dramatically influences fluid intelligence (i.e., the ability to reason and solve things) but does not affect crystallized intelligence (i.e., the ability to use knowledge and experience) (Klimova, 2018). Findings by Blumenfeld et al. (2017) indicate that older adults have better visual imagery and episodic memory than younger people.

In addition, learning a foreign language is considered to improve the quality of human life because, as proven by research, there is a definite correlation between life-long learning and the general well-being of a person (Pilar et al., 2014). Moreover, life-long learning, especially learning a foreign language, improves a person's social participation. Therefore, after a person's basic needs are covered, his/her general well-being can be improved through education-led personal improvement. Life-long learning, thus, touches upon a very important aspect, something that is inadequately addressed at the undergraduate level: education increases one's positive feelings about the self (Pilar et al., 2014; Narushima et al., 2018).

From a positive psychological perspective, FLL is not restricted to a young age—it is free of age-related constraints (cf. Seligman and Csikszentmihalyi, 2014). Current research into the impacts of bilingualism shows that it can boost a person's cognitive performance. However, bilingualism processes are bidirectional, i.e., language can impact cognitive functions and cognitive functions can impact language learning performance. Moreover, linguistic outcomes of third-age language learning are either not very important or they do not play a role at all (Pot et al., 2019).

Positive psychology holds immense promise for the improvement of positive emotions, well-being, and FLL (MacIntyre and Mercer, 2014). Learning is a process of acquiring new ideas, information, skills, and competencies with the eventual aim of attaining a state of knowledge. In this paper, the learning process focuses mostly on the journey, i.e., the process itself is sufficient when seen from a positive psychological perspective (Pot et al., 2019). The essential, and most positive, thing about the learning process is that the seniors are motivated to study a language for the sheer pleasure of learning (MacIntyre and Mercer, 2014), for the expressed purpose of learning another language and knowing about another culture, and for improving their social status as immigrants (Pot et al., 2018). The crucial point from a positive psychology perspective is that the outcomes of this learning process are significantly different from standard basic school or high school language education because in the older population the focus is on (1) the joy of lifelong learning, (2) their satisfaction with time well-spent in learning a new language, (3) their sense of belonging to a community of learners, and (4) the significant improvement of their cognitive functions, including memory, retention, and an enhanced sense of cognitive control (cf. MacIntyre and Devaele, 2014; Seligman and Csikszentmihalyi, 2014).

There are few studies on the effects of FLL on cognitive functions in old age (Antoniou et al., 2013). The most significant studies on this topic include those by Bak et al. (2016), Ware et al. (2017), Kliesch et al. (2017), and Wong et al. (2019)—the findings, however, are inconclusive. While Ware et al. (2017) claim that their research subjects found the program motivating and pleasant, they also admitted that scores in the Montreal Cognitive Assessment (MoCA)—a test designed to evaluate global cognitive functioning in older adults before and after instruction—did not differ significantly. On the contrary, Wong et al. (2019) proved that their computer-based language training software called Rosetta Stone had contributed to the improved cognitive abilities in healthy older Chinese. Bak et al. (2016) contend that even a short-term intensive language course is beneficial for participants' attentional functions.

The purpose of this review study is to explore the existing research focusing on the impact of FLL among healthy seniors on their cognitive functions from a positive psychology perspective.

METHODS

The method used was the review of literature on the topic available on two acknowledged databases: Web of Science and Scopus. The search period was not restricted because there are not many studies on this topic. The collocated keywords are as follows: *language learning* AND *healthy older people*; *language*

learning AND *healthy seniors*; *language learning* AND *healthy older adults*; *language learning* AND *cognitively unimpaired older people*; *language learning* AND *cognitively unimpaired older adults; language learning* AND *cognitively unimpaired seniors;* and *language learning* AND *cognitively unimpaired elderly*. The keywords were combined and integrated into database and journal searches. The terms were searched using AND to combine the keywords listed and using OR to remove search duplication where possible. A backward search was also conducted, i.e., references of retrieved articles were assessed for relevant articles that authors' searches may have missed.

From the database/journal searches, 69 titles/abstracts were identified on the basis of the keywords: 62 in Web of Science and seven in Scopus. Another two articles were identified from other sources, mostly references of the already detected articles. After removing duplicates and titles/abstracts unrelated to the research topic, 55 studies—all in English— remained. Of these, only 22 articles were relevant to the research topic. These studies were thoroughly investigated and considered against certain inclusion and exclusion criteria.

The inclusion criteria were as follows:

- Only reviewed, full-text English studies in scientific journals were included.
- Only randomized controlled trials and experimental/cross-sectional studies were included.
- The primary outcome focused on the association between FLL in healthy seniors/older people/elderly and improvement and/or maintenance of their cognitive functions.
- The subjects were cognitively unimpaired older individuals of 55+ years.

The exclusion criteria were as follows:

- Descriptive studies (Panitsides, 2014); studies not focusing on the research topic, including the studies on bilingualism (Small et al., 1999; Friebe and Schmidt-Heartha, 2013; Clare et al., 2014; Zahodne et al., 2014; Narushima et al., 2018); studies having different age of the subjects (Schlegel et al., 2012; Bak et al., 2016; Ghazi-Saidi and Ansaldo, 2017); and review studies (Antoniou et al., 2013; Klimova, 2018) were excluded.

Based on these criteria, seven studies were included in the final analysis. **Figure 1** illustrates the selection procedure.

RESULTS

Altogether seven original and relevant studies were detected. Two studies were randomized controlled trials (Bubbico et al., 2019; Wong et al., 2019) and five were experimental studies (Gruneverg and Pascoe, 1996; Kliesch et al., 2017; Ware et al., 2017; Pfenninger and Polz, 2018; Valis et al., 2019). Most of them originated in Europe: Austria, Czechia, France, Great Britain, Italy, and Switzerland (Gruneverg and Pascoe, 1996; Kliesch et al., 2017; Ware et al., 2017; Pfenninger and Polz, 2018; Bubbico et al., 2019; Valis et al., 2019) and one (Wong et al., 2019) was a joint research of China and Australia.

The main aims of these studies were to investigate whether FLL enhances cognitive skills among healthy older individuals; to detect functional changes in the brains of healthy seniors who have learnt a foreign language; to explore the effect of cognitive capacities on learning outcomes when learning a second language (L2); to investigate feasibility of a FLL course among healthy older people; and to test the keyword method for acquiring new L2 vocabulary.

The number of subjects in the above-mentioned studies ranged between 10 and 153 healthy older individuals. Except for one study (Pfenninger and Polz, 2018) where there were six German–Slovenian bilinguals, all subjects were monolingual native speakers. Apart from the study by Gruneverg and Pascoe (1996), whose subjects were studying Spanish, participants were studying English as a foreign language. In three studies (Gruneverg and Pascoe, 1996; Pfenninger and Polz, 2018; Wong et al., 2019) there were active control groups in addition to the experimental intervention groups. Two studies had passive control groups (Bubbico et al., 2019; Valis et al., 2019) and two studies did not have any control group. The intervention period ranged from 1 day to 6 months. All studies, except one (Gruneverg and Pascoe, 1996), were run onsite—most often in classrooms. As far as the teaching methods are concerned, four studies implemented different face-to-face approaches to FLL. Two studies (Ware et al., 2017; Wong et al., 2019) were computer-based and one study (Gruneverg and Pascoe, 1996) used a special self-study keyword method for acquiring new Spanish vocabulary. The key outcome measures usually included a battery of neuropsychological tests, foreign language assessment tests, and statistical analysis.

The findings of these studies revealed that FLL has a positive impact on the maintenance and/or enhancement of cognitive abilities (Gruneverg and Pascoe, 1996; Ware et al., 2017; Pfenninger and Polz, 2018; Bubbico et al., 2019; Valis et al., 2019; Wong et al., 2019), irrespective of age and bilingualism (Pfenninger and Polz, 2018), which is in contrast with another study (Kliesch et al., 2017). However, one has to be slightly critical of these results as some of the studies lacked control groups, some had passive groups, some employed qualitative analysis, and there were significant differences in the length of the intervention period. Despite these shortcomings, FLL courses appeared to be feasible and stimulating for healthy older people (Ware et al., 2017; Pfenninger and Polz, 2018; Valis et al., 2019) and positively affected their overall well-being, including their emotional well-being. Results showed that they felt optimistic and self-confident (Ware et al., 2017; Pfenninger and Polz, 2018; Valis et al., 2019). The participants also reported that they were proud of their families that supported them in their studies (Pfenninger and Polz, 2018; Valis et al., 2019). Furthermore, the research indicates that teaching methods such as group discussions, reading, playing games, watching YouTube videos, or singing in a foreign language can stimulate older adults learning a foreign language (Gruneverg and Pascoe, 1996; Kliesch et al., 2017; Pfenninger and Polz, 2018; Valis et al., 2019). **Table 1** summarizes the key findings of the detected research studies, which are ordered alphabetically according to the surname of their first author.

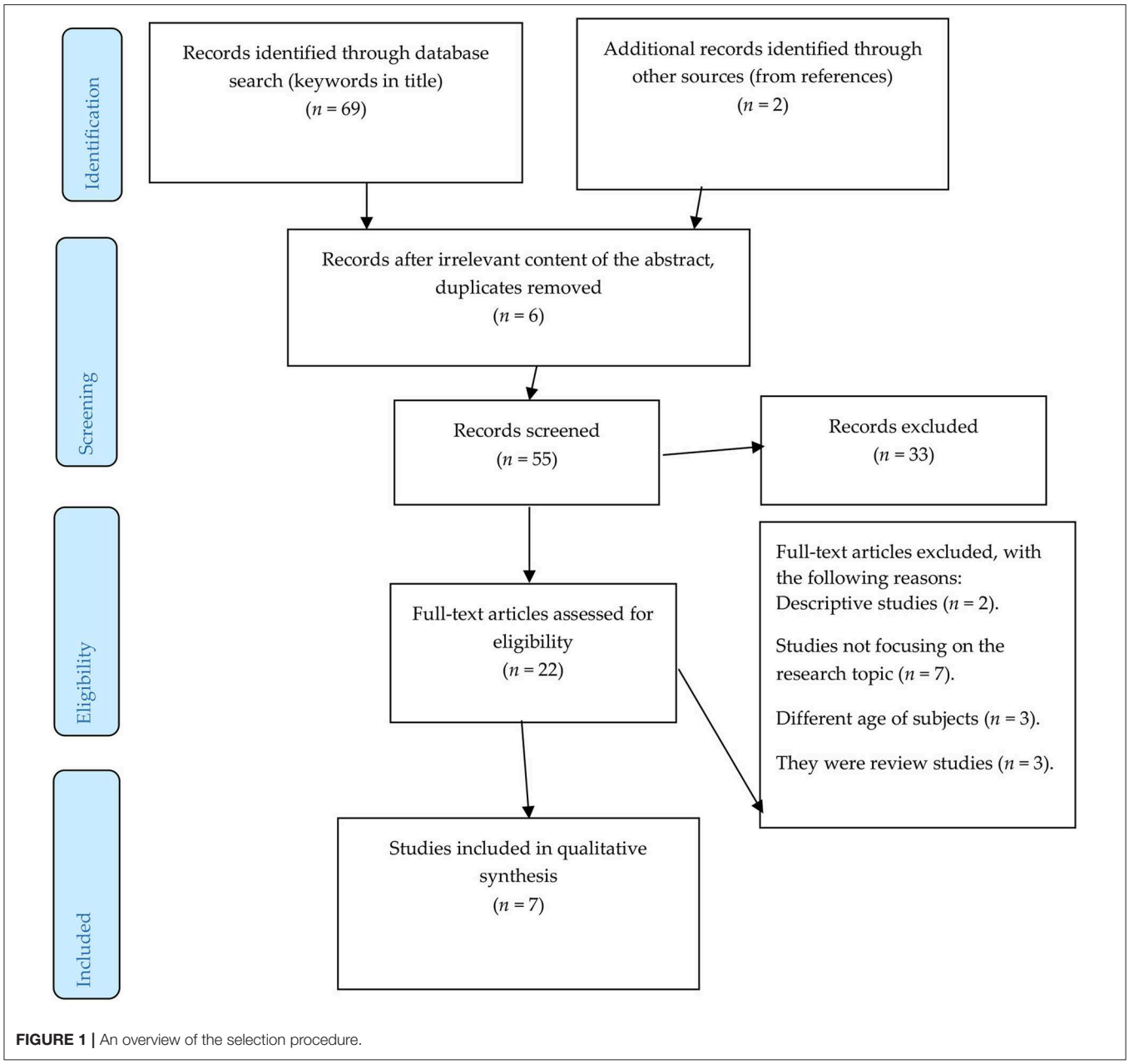

FIGURE 1 | An overview of the selection procedure.

DISCUSSION

As seen in **Table 1**, FLL has a positive effect on the maintenance and/or improvement of cognitive functions in healthy seniors irrespective of their age and bilingualism, although bilingual participants, compared to monolinguals, performed better at task-switching in a color–shape task (i.e., categorization of images by their color and shape). Furthermore, fMRI scans taken during this activity revealed a decreased activity in the bilinguals' left lateral frontal cortex and cingulate cortex—an indication of efficient executive functioning (Antoniou and Wright, 2017).

Wong et al. (2019) conducted the first randomized controlled study on the potential influence of foreign language acquisition in old age on a person's cognitive functions and the study offers crucial empirical findings. After a 6-month period of foreign language training, the authors could measure improved cognitive skills in the test group, and similar improvements in the control group, which focused on participation in games. Particularly, foreign language training resulted in improved working memory; the games, however, improved attention. The preliminary findings—even if the researched sample was relatively small—proved to be significant for further research to show whether FLL has an advantage over other activities connected to the improvement of cognitive skills in elderly people. The results highlight that intensive FLL, even at a later age, can yield statistically relevant results regarding working

TABLE 1 | An overview of the research studies on the intervention of foreign language learning among healthy older individuals.

Study	Objective	Characteristics of subjects (number, groups)	Length of the intervention (foreign language learned, learning settings, and teaching method)	Main outcome measures	Results
Bubbico et al. (2019) RCT (Italy)	To analyse how second language learning program can contribute to functional changes in the brain of healthy older people.	Twenty-six old monolingual Italian native speakers, between 59 and 79 years of age; 14 people in the intervention group and 12 in the passive control group	Four months, 16 × 2 h sessions, the subjects were learning English, all were beginners. They were taught in class by a native speaker who implemented different face-to-face teaching methods to develop all language skills.	A battery of neuropsychological tests, MRI scanning, statistical analysis.	The results showed a significant improvement in global cognition together with an increased functional connectivity in the right inferior frontal gyrus (rIFG), right superior frontal gyrus (rSFG), and left superior parietal lobule (lSPL) among the subjects of the intervention group.
Gruneverg and Pascoe (1996) Experimental study (GB)	To explore the keyword method for both productive and receptive learning of foreign language vocabulary among elderly females.	Forty females speaking only English, divided into experimental and active control groups, age between 60 and 82 years.	Intervention period: one day; all subjects should have recalled individual basic Spanish words through the keyword method. There was no time limit for their recall. This was performed at home by self-studying and immediately after recalling 20 words, they were tested.	Test (productive recall).	The keyword method significantly enhances recall of the English word given its Spanish equivalent (receptive learning) and significantly enhances the learning of Spanish equivalents of English words (productive learning) using a "soft" criterion of correctness, compared to a control group given no instruction on how to learn.
Kliesch et al. (2017) Experimental study (Switzerland, Canada, Austria)	To investigate how general cognitive capacities affect the learning outcome of L2 training in older people.	Ten old monolingual German native speakers, between 65 and 74 years of age. No control group.	Sixty English lessons for beginners in 3 weeks. The subjects were taught in class by different face-to-face teaching methods to develop all language skills.	Language assessment test, cognitive tests, statistical analysis.	Cognitive fitness is an important factor in the variance of foreign language development as a function of L2 training in a school context. Being a bilingual helps in learning L2.
Pfenninger and Polz (2018) Experimental study (Austria)	To investigate cognitive benefits and feasibility of foreign language course among healthy older individuals.	Twelve German-speaking subjects, half of them German–Slovenian bilinguals in the experimental groups and six monolingual German speakers in an active control group, age: 63–90 years.	Four weeks, 2 h three times a week. The subjects were beginners, studying English in classroom setting. Both groups were taught by the same teacher who implemented different face-to-face teaching methods to develop all language skills.	Language assessment tests, cognitive tests, qualitative analysis, statistical analysis.	The learning of an additional language can contribute to healthy and active aging, as it has a positive effect on executive function (linguistic) self-confidence, autonomy, communication skills, and overall well-being, irrespective of age, and prior language knowledge (bilingualism).
Valis et al. (2019) Experimental study (Czechia)	To investigate the extent to which FLL may enhance cognitive functions among healthy older individuals.	Forty-two cognitively unimpaired monolingual Czech native speakers; 20 subjects in the experimental group and 22 in the passive control group; average age: 70.9 years.	Learning English for 12 weeks (three 45-min lessons per week). The participants in the experimental group were divided into a beginner group (9 people) and lower-intermediate group (11 people). They were exposed to different teaching methods in the classroom settings.	Cognitive assessments using standardized tests, intervention through English language teaching and learning, qualitative analysis, and statistical analysis.	The results of the research show that there has been a slight enhancement of cognitive skills in the experimental group. Nevertheless, on the whole, the scores of the experimental and control groups did not considerably differ.
Ware et al. (2017) Experimental study (France)	To examine the effect of teaching English using a computer program on cognitive functions, as well as its feasibility for healthy older people.	Fourteen monolingual French native speakers, average age 75. No control group. The participants had varying levels of English.	Four-month pilot study (16, 2-h sessions). It was an onsite technology-based program for learning English as a foreign language. It was run by an English speaking psychologist with experience in teaching English.	MoCA test, University of California Loneliness Assessment (UCLA), questionnaires, interviews.	The program is feasible, enjoyable, and stimulating, however, pre- and post-intervention scores of the MoCA did not significantly differ.
Wong et al. (2019) RCT (China, Australia)	To explore cognitive enhancing effect of FLL in older adults with no clear signs of cognitive decline.	One hundred fifty-three cognitively unimpaired monolingual Chinese native speakers, between 60 and 85 years of age. They were divided into three groups: two active groups and one passive, (FLL−53, games−51 and listening to music—passive control group−49).	Six months (5 h per week). The subjects participated in individual computer-based cognitively stimulating activities. In addition, each group had regular social activities held twice a months in their community centers.	A battery of cognitive tests, statistical analysis.	Results of FLL and games, but not music appreciation, improved overall cognitive abilities that were maintained.

memory and cognitive function improvement. These findings are in agreement with other studies such as Borella et al. (2013) who claim—on the basis of their verbal working memory training program in old-old individuals aged 75+ years—that there is still room for plasticity in the basic mechanisms of cognition in advance old age. The same is true for the study by Buschkuehl et al. (2008). In addition, Buitenweg et al. (2012) emphasize that for successful brain training among healthy seniors it is important to focus on memory strategy training, important to tailor the training to the needs of each individual, and include flexibility and novelty in the training.

Valis et al. (2019) do not confirm a significant improvement in the cognitive functions in elderly people because of FLL. Instead they confirm the more realistic *maintenance of cognitive skills* rather than their improvement. Intuitively, as well as supported by various studies, we can accept that FLL will have some positive impact on cognitive skills. However, the most important question is that to what extent it will influence the cognitive skills in the older population. The research results do not confirm the hypothesis that the learning of a foreign language will naturally enhance cognitive skills. Nevertheless, they yield significant findings suggesting a possible impact of FLL on the maintenance of cognitive skills, i.e., there was, at least, no observable decline of cognitive functions in the test group. Regular cognitive training, such as FLL, thus, will not function as a way to improve cognitive skills but rather as an efficient tool for their maintenance. Therefore, FLL can sufficiently contribute to a non-pharmacological strategy in preventing the onset of cognitive decline.

Furthermore, short-term language training in healthy seniors can lead to a significant improvement in global cognition with increased functional connectivity in the right inferior frontal gyrus, the right superior frontal gyrus, and the left superior parietal lobule. These findings are part of the current neuroscience breakthroughs that reshape neural networks through foreign language training. Bubbico et al's (2019) recent study indicates that a 4-month language course of English in Italian seniors improves global cognitive functions and reorganizes functional cognitive connectivity. It was only the intervention group that yielded significant improvement results in both functional and behavioral measures after the intervention of the language class. In addition, FLL studies conducted among adult learners show that certain teaching methods, such as repetition, imitation, and drilling, can have a positive impact on higher network configuration (Ghazi-Saidi and Ansaldo, 2017).

The results of this review study also reveal that FLL in older adults contributes to establishing strong social ties between the participants, promoting social interaction and integration. Naturally, most language classes are held in classrooms, facilitating regular physical meetings of participants. This helps to develop social connections among participants and instills in them a sense of participation. The older generation often suffers from social isolation, which can possibly be an important factor of lower level of well-being and a source of depression (Popa-Wagner et al., 2014; Sandu et al., 2015). Therefore, language classes may not just improve or maintain cognitive functions but also create an environment of social meetings and networking (cf. Diaz-Orueta et al., 2012). As Narushima et al. (2018) point out, continuous participation in life-long learning courses, such as foreign language courses, can develop social cohesion and improve the sense of community participation, which may lead to improved social performance and enhanced well-being. Pot et al. (2018) expand that it is partly through the stimulation of social well-being that the cognitive effects of FLL might be observed.

In light of expected global demographic changes, the established cognitive and mental benefits of FLL in old age, and the role of FLL in the improvement of general human well-being, universities should offer relevant courses for the third-age learners. The breakthrough research by Singleton and Pfenninger (2018) moves our attention to the importance of language learning in old age. Their study highlights an abundance of research into second-language education in young people and a dearth research regarding the importance of such education in old people. They also confirm the hypothesis that FLL is a promising way to healthy and active aging because of its many advantages. Moreover, according to them the traditionally accepted approach that early exposure to foreign language necessarily brings better results than late exposure has not been proven. Early beginners did not necessarily outperform late beginners, therefore, this widely and intuitively accepted premise is not necessarily true and needs further investigation. Some research into specific learning needs of elderly students has been conducted and the findings are important. Take for example the research of Gruneverg and Pascoe (1996) into the efficiency of the keyword method for foreign language vocabulary learning in the elderly.

Yi-Yin (2011) researched the motivation paradigms in the older generation and concluded that they are rather different from the younger generation. The most important drives are desire for knowledge, desire for stimulation, desire for self-fulfillment, and desire for generativity. These findings are significant for the creation of curricula of the universities of the third-age creators.

Moreover, there is an emerging trend within learning psychology and related disciplines—the use of mobile technologies in the learning process. Again, there is a plethora of literature on the use of technology in basic, high school, and university education but little on the use of technological tools by older learners. Some introductory experimental findings are, however, described by Ware et al. (2017) and Wong et al. (2019). Additionally, the authors suggest future directions for the use of technology in FLL as a therapeutic and cognitive intervention.

Further pedagogical implementations of the findings will be important. Moreover, pedagogy and psychology of learning ought to try to find new pragmatic approaches and methodologies in the light of both expected global demographic changes and the possible positive outcomes of FLL in old age. There is immense scope for FLL in old age and we need to create courses that will incorporate earlier research findings with anticipated future developments in the field Kliesch et al. (2017).

It is important to highlight that even authoritative textbooks on psycholinguistics such as Traxler's *Introduction to Psycholinguistics. Understanding Language Science* (Traxler, 2012) totally ignore the area of language acquisition in old age, focusing entirely on language development in infancy and early childhood. A similar thing can be observed in *An Introduction*

to Psycholinguistics by Steinberg and Sciarini (2006) where some references to old age and FLL can be found, but it is rather insufficient and unrepresentative of research in the area. Similarly, other authoritative textbooks on cognitive linguistics do not address the aspect of old age and/or do not take it into consideration—or do so only fleetingly (Ungerer and Schmid, 2006). It is for these reasons that this review attempts to bring this matter to the attention of scholars and researchers, so that research effort into the issue could be improved. The authors of this study believe that the findings of this research will expedite the implementation of the results into reality as the way to the sustainability of our society and also our global competitiveness.

The above-mentioned research has several limitations. The findings are usually not very systematic, the author applies different methodologies, and the results are difficult to replicate and difficult to verify by further research (cf. Melby-Lervag and Hulme, 2013). However, the data provided is relevant and presents a significant view of the multifaceted aspects of healthy aging. Naturally, cognitive aspects of old age need to be further investigated—including the importance of learning a foreign language—because almost the entire body of research conducted on the topic shows some degree of maintenance—in certain cases even improvement—of the cognitive functions of older people when they start intensive foreign language training.

CONCLUSION

The findings of this review study thus reveal that FLL has a positive impact on the maintenance and/or enhancement of cognitive abilities irrespective of age. In addition, FLL courses seem to offer opportunities to healthy seniors for socialization and integration into society, which may positively affect their overall well-being. Furthermore, research shows that it is partly through the stimulation of social well-being that the cognitive effects of FLL might be observed.

The topic of FLL in old age has attracted widespread attention of scholars in the past few years. The topic holds great promise for further development especially in the identification, analysis, and development of learning strategies to maintain—or even improve—cognitive and psychological aspects of older people's life. Foreign language education for older generation might offer crucial non-pharmacological strategies for healthy aging—a topic of utmost importance due to the negative demographic trends both in Europe and in the so-called developed world. However, further research is needed.

From a positive psychology perspective, future research should focus on what kind of positive instruction should be given to older adults so that we can understand them in a better way. It is also important to develop methodologies to improve old people's sense of accomplishment in the learning process. Last but not least: investigating how to improve the pleasure of learning in the older generation of learners because it is one of the most important aspects of their language education.

DATA AVAILABILITY STATEMENT

All datasets generated for this study are included in the manuscript.

AUTHOR CONTRIBUTIONS

BK and MP drafted, analyzed, wrote, and read the entire manuscript.

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MINI REVIEW
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Engaging Second Language Learners Using the MUSIC Model of Motivation

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The overall aim of this article is to explain how the MUSIC Model of Motivation can be applied to L2 instruction in a manner that is consistent with positive psychology, which emphasizes individuals' strengths and the conditions in which they thrive. The article begins by describing the MUSIC model, which is a research-based framework that organizes strategies that instructors can use to motivate students to engage in learning. The MUSIC model can be used by L2 instructors to create learning experiences that consider learners' cognition, affect, needs, and desires in order to foster their motivation and engagement in L2 classes. The article also provides teaching strategies related to the MUSIC model and presents an assessment tool (the MUSIC Model of Academic Motivation Inventory) that can be used by L2 instructors to measure students' MUSIC perceptions of their class. The assessment tool provides feedback to instructors that can be used to improve their instruction by incorporating strategies that allow their students to flourish. Examples of how the MUSIC Inventory can be used to assess L2 instruction are provided. Although researchers have examined the use of the MUSIC model in L2 classes, this research is underdeveloped, and many questions related to its use in L2 classes remain. The article concludes by proposing unanswered questions that could lead to more effective uses of the MUSIC model in L2 classes.

Keywords: L2 instruction, foreign language, second language, motivation, engagement, MUSIC Model of Motivation, motivating students, engagement

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INTRODUCTION

Learning a second/foreign language (L2) can be interesting and worthwhile; yet, for some students, their experience in L2 courses can be boring and frustrating (Kruk and Zawodniak, 2018). Therefore, some L2 instructors could benefit from understanding principles related to students' motivation and how to implement motivation strategies in their courses. Researchers have developed several different motivation-related theories over the past few decades that could be useful to instructors (see Dörnyei and Ushioda, 2011; Al-Hoorie, 2017; Al-Hoorie and MacIntyre, 2019; Lamb, 2019). For example, Gardner's (1985, 2019) Socio-educational Model of Second Language Acquisition identifies several different factors that affect students' motivation in the learning context and Dörnyei's (2009) L2 motivational self-system recognizes the importance of the L2 learner's sense of self and the effects of the L2 learning experience on learners' motivation (Hadfield and Dörnyei, 2013).

In addition to these types of L2-specific motivation theories, decades of research in the disciplines of psychology, motivation science, and education have led to broader theories of human

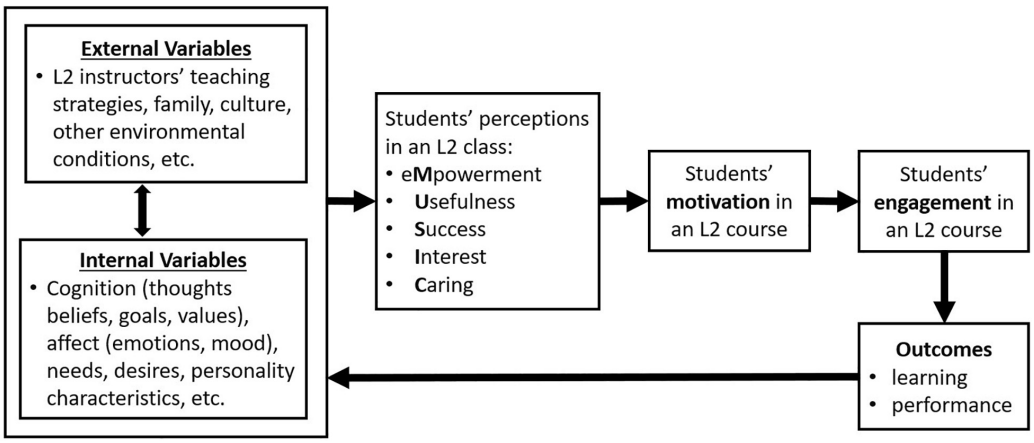

FIGURE 1 | This figure shows a simplified version of how external and internal factors affect L2 students' perceptions of the MUSIC Model of Motivation components, which then affect their motivation, engagement, and learning/performance, which then cycles back and affects the external and internal factors. Adapted from "Motivating Students by Design: Practical Strategies for Professors" by B. D. Jones, 2018, p. 13. Copyright 2018 by Brett D. Jones. Reprinted with permission.

motivation that have been applied to educational settings (see Schunk et al., 2014; Wentzel and Miele, 2016), including, but not limited to, self-efficacy theory (Bandura, 1986), arousal theories (Berlyne, 1960), flow theory (Csikszentmihalyi, 1990), self-determination theory (Deci and Ryan, 1985), self-theories of intelligence (Dweck, 1999), interest theories (Hidi and Renninger, 2006), control-value theory (Pekrun, 2009), attribution theory (Weiner, 2000), and expectancy-value theory (Wigfield and Eccles, 2000). Researchers have applied these theories in L2 settings (e.g., self-determination theory, Jones et al., 2009; Noels et al., 2019), which demonstrates the utility of applying broader motivation theories to L2 education. Researchers have also begun to study the role of positive psychology—the study of the positive aspects of human life—in L2 education (e.g., flow theory, Gregersen, 2019; Piniel and Albert, 2019).

The overall aim of this article is to discuss how a conceptual model of motivation can be applied to L2 instruction in a manner that is consistent with positive psychology, which emphasizes individuals' strengths and the conditions in which they thrive. To achieve this goal, I describe the MUSIC Model of Motivation (Jones, 2009, 2018) and how it can be used by L2 instructors to create learning experiences with a consideration of learners' cognition, affect, needs, and desires in order to foster their motivation and engagement in L2 classes. The MUSIC model does not replace existing L2 motivation theories, but rather, it can be used as a complementary approach that focuses on what Lamb (2019) referred to as "*motivating* learners, as opposed to learner *motivation*" (p. 288).

THE MUSIC MODEL OF MOTIVATION

The MUSIC® Model of Motivation (Jones, 2009, 2018) provides instructors with a research-based framework that summarizes effective motivational strategies for instructors. The key principles of the MUSIC model are that "the instructor needs to ensure that students:

1. Feel empowered by having the ability to make decisions about some aspects of their learning,
2. Understand why what they are learning is useful for their short- or long-term goals,
3. Believe that they can succeed if they put forth the effort required,
4. Are interested in the content and instructional activities, and
5. Believe that others in the learning environment, such as the instructor and other students, care about their learning and about them as a person" (Jones, 2018, p. 9).

The acronym MUSIC is used to help instructors remember the initial sounds of these five groups of strategies: eMpowerment, Usefulness, Success, Interest, and Caring.

In the MUSIC model, motivation is defined as "the extent to which one intends to engage in an activity" (Jones, 2018, p. 5), and thus, it precedes engagement. Engagement is defined as participating in an activity, either behaviorally (e.g., taking notes in a class) or cognitively (e.g., thinking about class ideas) (Jones, 2018, p. 6). Students' motivation and engagement are affected by their perceptions of the class, which are influenced by external variables (i.e., variables that are outside students' bodies, such as teaching strategies, family, culture, etc.) and internal variables (see **Figure 1**). The goal of the instructor is to use teaching strategies that create conditions in the class to motivate students to engage in the learning activities. Through positive engagement in class over time, students are more likely to learn and perform at higher levels and to develop more productive cognition and affect related to the L2 and learning activities (e.g., "I can learn to speak Spanish," "I like learning Spanish"). As a result, students are more likely to meet the course objectives and have a positive experience while doing so. **Figure 1** shows how these variables form a cycle in which the instructor participates by implementing teaching strategies that motivate and engage students in ways that help the students flourish over time. This social, contextual, and dynamic approach to motivation is consistent with approaches

advocated by some L2 researchers (e.g., Dörnyei and Ushioda, 2011; Dörnyei et al., 2015; Yim et al., 2019).

Teaching Strategies Related to the MUSIC Model

In the MUSIC model, the key to motivating students in classes is to positively affect their MUSIC perceptions (i.e., perceptions of empowerment, usefulness, success, interest, and caring). Empowerment strategies include those that give students choices and control in the class. For example, L2 teachers can give students choices among or within assignments and incorporate student-centered approaches that provide students with some autonomy (Jones, 2009, 2016). Usefulness strategies help students to understand the usefulness and benefits of what they are learning, either in the short- or long-term. For instance, L2 teachers can use real-life and practical examples and ask students or others (former students, professionals) to share the reasons they find the course content useful. Success strategies lead students to believe that they can succeed if they put forth effort. Examples include L2 teachers (a) providing regular, specific feedback that can help students to improve; (b) matching the difficulty level of the class assignments with the abilities of the students; and (c) attributing students' struggles to their lack of effort or to their use of ineffective study strategies and then helping them to use more effective strategies (Jones, 2018). Interest strategies are used to engage students cognitively and affectively by creating enjoyable and interesting activities. Teachers can accomplish this by designing activities that grab students' attention, pique their curiosity about the content, and arouse them emotionally. Caring strategies ensure that students believe that their teacher cares about their success and that they are treated with respect by their teacher and classmates. Teachers can foster perceptions of caring by being approachable and relatable to students, as well as by ensuring that students in the class treat each other fairly and with respect.

Although the MUSIC model was designed to be applied by instructors in any discipline, the model is consistent with motivational teaching strategies proposed by L2 researchers. For example, Dörnyei and Ushioda (2011) note that it is important for L2 teachers to create learner autonomy and promote self-motivation (the eMpowerment component in the MUSIC model) and to help students understand the relevance of activities and set goals so they can better understand why what they are learning is important (the Usefulness component). They also recommend increasing learners' expectancy of success and self-confidence as learners (the Success component), getting students curious about and interested in course activities and in foreign languages more generally (the Interest component), and fostering teacher-student relationships and promoting group cohesiveness (the Caring component).

Evidence for the MUSIC Model

Many studies have been conducted to demonstrate that (1) students' MUSIC perceptions of a class (i.e., perceptions of empowerment, usefulness, success, interest, and caring) are related, but distinct (Jones and Wilkins, 2013; Jones and Skaggs, 2016b; Chittum and Jones, 2017); (2) students' MUSIC perceptions are related to their engagement in the class (Jones, 2010, 2019; Jones and Carter, 2019); and (3) teachers and researchers can assess students' MUSIC perceptions in a class and for specific learning activities (Chittum et al., 2017; Jones and Cruz, 2017). The research supporting these findings is quite robust given that studies have been conducted across disciplines and age levels.

Assessment of the MUSIC Model Components

Instructors can assess their motivational strengths and weaknesses in a class in a variety of ways, such as by surveying students, reflecting on their teaching experiences, talking to students, and soliciting feedback from colleagues about their instruction (Jones, 2018). In this section, I focus on assessment using surveys by describing quantitative and qualitative questionnaire items that have been used by teachers and researchers.

A questionnaire, titled the MUSIC® Model of Academic Motivation Inventory (Jones, 2012/2020), is available for free[1] and provides instructors with scores ranging from 1 to 6 on each of the MUSIC model components: eMpowerment, Usefulness, Success, situational Interest, and Caring. The MUSIC Inventory has been shown to produce valid scores with students when considering Cronbach's alpha values (α) and fit indices from factor analyses in samples from elementary school (Jones and Sigmon, 2016a, M α = 0.72, U α = 0.71, S α = 0.65, I α = 0.76, and C α = 0.64), middle and high school (Parkes et al., 2017, M α = 0.73, U α = 0.86, S α = 0.92, I α = 0.91, and C α = 0.92), college (Jones and Skaggs, 2016b, M α = 0.91, U α = 0.96, S α = 0.93, I α = 0.95, and C α = 0.93), and professional schools (Jones et al., 2019, M α = 0.85, U α = 0.88, S α = 0.88, I α = 0.80, and C α = 0.82 for sample 2; Pace et al., 2016, M α = 0.89, U α = 91., S α = 0.92, I α = 0.91, and C α = 0.92) (see Jones, 2012/2020 for more complete validity evidence). The MUSIC Inventory has been translated to a variety of languages and preliminary evidence indicates that it produces valid scores when used in L2 courses in China, Egypt, Iran, and Mexico (Jones et al., under review). Qualitative items have also been used to ask students about their MUSIC perceptions (see Jones, 2012/2020). An example item is: What could be changed in this course to make it more interesting and enjoyable?

An example of the five MUSIC scale scores produced from the MUSIC Inventory is shown in **Figure 2** and instructors can use these scores to identify their motivational strengths and weaknesses. For example, teachers whose students rate them low on success and interest (as shown in **Figure 2**) could consider incorporating strategies that increase students' perceptions of success and interest in the class.

One way to use the MUSIC Inventory is to collect data near the end of a course and then use the results to improve the course in the future. Le et al. (2014) used the MUSIC Inventory in this way to assess the MUSIC perceptions of 197 students in a Medical English course (an English for Specific Purposes course) at a

[1] www.theMUSICmodel.com

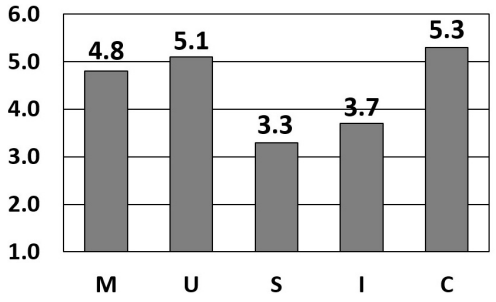

FIGURE 2 | Example scores obtained from using the MUSIC Inventory within a course.

medical university in Vietnam. Some students also participated in focus group interviews after they completed the inventory. Findings indicated that students were generally motivated in the course, but that some aspects of the course could be improved. For instance, student feedback suggested that instructors could empower students more by providing them with more choices related to how to achieve the goals of the course. Overall, they concluded that the "MUSIC Model is also believed to be a practically helpful idea for those delivering ESP courses in non-English major universities" (p. 724).

In another study, Li and her colleagues (Li et al., 2016) used the MUSIC Inventory near the end of a college English class in China to examine the relationships between students' MUSIC perceptions and their engagement. They found that students reported lower scores on the empowerment, success, and interest scales and that all of the MUSIC scales were significantly correlated with students' engagement. They concluded that "it is possible for Chinese college EFL teachers to use the strategies in the MUSIC model to redesign their instruction to motivate and engage their students in the English coursework" (p. 1767).

Another way to use the MUSIC Inventory is to collect data at multiple time points throughout a course. Doing so allows the instructor or researcher to track how students' MUSIC perceptions change over time. It also allows instructors to alter their teaching strategies during a course or to develop an intervention to address weaknesses that may arise before the course is completed. As an example, Li and Jones (2019) implemented an intervention during a course based on the results of the MUSIC Inventory that were obtained early in the course. Three instructors administered the MUSIC Inventory during the second week of one of their L2 classes and students reported lower perceptions of empowerment, success, and interest. To increase these student perceptions, they developed an intervention that used student group presentations and an associated rubric to grade the presentations. After this 10-week intervention, students completed the MUSIC Inventory again and students' ratings on all five MUSIC model components were statistically higher after the intervention than before the intervention.

Furthermore, experimental studies with control groups have been conducted in other disciplines to demonstrate that interventions that focus on one or more MUSIC-related constructs can have a positive effect on students' MUSIC perceptions and engagement (Reeve et al., 2004; McGinley and Jones, 2014; Lin-Siegler et al., 2016). For example, when students in an experimental group were asked to write essays about how the class material was useful to their lives, students with lower expectations were more likely than a control group to increase their success expectations, become more interested in the content, and achieve higher in that class (Hulleman et al., 2017).

DISCUSSION

Designing Instruction Using the MUSIC Model

One purpose of this article was to present the MUSIC model as a framework that can be used by L2 instructors to design learning experiences that motivate and engage students. Consistent with the tenets of positive psychology, the MUSIC model can be used to create conditions in which students can thrive by supporting their cognition (thoughts, beliefs, goals, values), affect (emotions, moods), needs, and desires. Conceptually, the MUSIC model is a promising means to engage students in L2 classes because it is based on well-established motivation theories. Although the MUSIC model has been used in a variety of disciplines and grade levels, many questions remain about how the MUSIC model can be most effectively used in L2 classes, including:

1. Are some MUSIC model components more important than others to engage students? In examining the MUSIC model components in eight different undergraduate courses, Jones (2019) found that the number of MUSIC components that were significantly correlated to effort ranged from two components to all five components, depending upon the course.
2. Is it more difficult to implement some components of the MUSIC model in some cultures than others? For instance, it may be more difficult to give students empowerment in Eastern cultures if they are more likely than Western cultures to rely on traditional lecture approaches (with relatively no empowerment).
3. Do increases in one or more of the MUSIC model components lead to increases in other components? In one study (Hulleman et al., 2017), increasing students' perceptions of usefulness also increased their perceptions of success and interest.

Understanding the answers to these types of questions could help instructors more effectively plan their instruction to target the most important MUSIC strategies.

Assessing Instruction Using the MUSIC Inventory

Another purpose of this article was to describe ways in which the MUSIC Inventory can be used by L2 instructors to measure students' MUSIC perceptions in class. The MUSIC Inventory and other open-ended questions related to the MUSIC model components have been successfully used by L2 instructors to

provide data that can be used to redesign their instruction. However, questions as to how the inventory can be used most effectively in L2 classes remain, such as:

1. Is it important to collect both quantitative MUSIC Inventory data and qualitative open-ended item data or is it sufficient to collect just one of these? Some researchers have administered open-ended items for each of the MUSIC components in order to obtain feedback that can be used to improve instruction (Jones et al., 2012).
2. Can other data be used to complement the MUSIC data? Other possibilities that could help instructors understand students' motivation in a course include students' self-reported effort, cognitive engagement, and identification with a domain (Jones et al., 2016; Jones and Carter, 2019).
3. When is the most effective time within a course to collect MUSIC data? Collecting data in the middle of a course can be useful in predicting students' overall course effort, instructor rating, and course rating at the end of the course (Jones, 2019) and may be used by the instructor to improve the course. However, by also collecting data at the end of the course, instructors can assess *changes* in students' perceptions during the course, especially if data is collected at multiple time points throughout a course.

Answering these types of questions could be helpful to both instructors and researchers as they strive to collect useful data.

CONCLUSION

Using strategies related to each of the MUSIC model components appears to be a promising means to create a class environment that promotes student engagement and allows students to flourish. The MUSIC model provides an organizational framework that teachers can use to design and evaluate their instruction. However, many questions remain about how the MUSIC model can be used most effectively by L2 teachers within different contexts. Through rigorous empirical study, researchers and instructors can answer many of these questions, which will allow instructors to create L2 classes and activities that promote positive student growth and learning.

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Contracting Students for the Reduction of Foreign Language Classroom Anxiety: An Approach Nurturing Positive Mindsets and Behaviors

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The quasi-experimental study reported in this paper investigated whether contracting students' speaking in the foreign language (FL) classroom could effectively mitigate their FL classroom anxiety. It also explored the working mechanisms of this approach to the reduction of classroom anxiety and examined the attitudes FL students had toward it. To these ends, 42 Chinese-as-the-first-language university students learning English as a foreign language (EFL) were recruited and placed into the experimental (n = 20) and comparison groups (n = 22). Both groups were tested for anxiety before and after completing a 1-week contract and a non-contracting treatment, respectively. The experimental group participants' diaries were also collected, and their attitudes toward the intervention were elicited. Results showed that the experimental group's level of anxiety decreased significantly more as compared with that of the comparison group, suggesting the better efficacy of contracting speaking in FL anxiety reduction. Diary analyses also suggested that contracting speaking could increase learners' FL learning engagement; enhance their self-efficacy; facilitate their self-reflection of weaknesses and strengths as an FL learner; cultivate their character strengths and positive emotions; and diminish their fear, nervousness, and worries in class. Furthermore, the experimental group participants generally did not feel uncomfortable with the intervention. These findings were discussed in relation to classroom pedagogy for more effective delivery of FL education.

Keywords: English, Chinese-first-language university students, contracting speaking, foreign language classroom anxiety intervention, positive mindsets and behaviors

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INTRODUCTION

Foreign language (FL) anxiety has taken a central position in studies of emotion in the field of second language or FL teaching and learning. Empirical findings have shown that FL anxiety has the potential to disrupt behavior and interfere with interpersonal communication, cognition, and learning (Dewaele and MacIntyre, 2014; Castillejo, 2019). The adverse effects of anxiety can be damaging to a learner's progress, if not properly handled (Zhang, 2000, 2001). Therefore, there

is a need to explore interventions for anxiety reduction that are effective, easily applied, and psychologically acceptable to students in classroom contexts.

The present study addressed this research gap by using "contracting speaking" (that is, students sign a contract to commit to speaking in FL class) to attempt to reduce FL classroom anxiety. Anxiety can be considered a self-exacerbating syndrome where reactions to anxiety—such as distracting self-focused attention, worrying about making mistakes or appearing nervous to others, and avoiding practice opportunities that come with communication—help to maintain a feedback loop of that anxiety. By contracting speaking, we attempt to break the feedback among the causes and/or symptoms of anxiety. The research project explores what the participants thought about this approach using relevant diary entries. This kind of intervention has not been reported in the second language acquisition (SLA) literature as an anxiety-reducing technique.

A total of 42 Chinese-first-language university students in Year 2 were randomly assigned to an experimental or a comparison group in a 1-week intervention. The experimental group signed a formal contract, and the comparison group received an informal written instruction form. The rationale for this study lies in engagement theory that foregrounds the beneficial interactions among behavioral, cognitive, emotional, and social dimensions of engagement (Philp and Duchesne, 2016). More broadly, Oxford's (2016) positive psychology model emphasizes a multidimensional view of learner well-being under the rubric of nine EMPATHICS dimensions (E = emotion and empathy; M = meaning and motivation; P = perseverance; A = agency and autonomy; T = time; H = hardiness and habits of mind; I = intelligences; C = character strengths; S = self factors such as self-efficacy, self-concept, self-esteem, and self-verification). The major goal of this study is to improve pedagogical practices through reducing learners' negative emotions and boosting positive emotions.

LITERATURE REVIEW

In an early synthesis of the literature on anxiety in language learning, Scovel (1978) revealed a confusing picture regarding the relationship between anxiety and FL achievement. Scovel hinted at a need to specify the anxieties relevant to FL learning and to develop corresponding measures. Horwitz et al. (1986) focused their attention on the construct of FL anxiety by defining it as "a distinct complex of self-perceptions, beliefs, feelings, and behaviors related to classroom language learning arising from the uniqueness of the language learning process" (p. 128). They also developed a 33-item Foreign Language Classroom Anxiety Scale (FLCAS) that has been used in a large number of studies (Horwitz, 2017). With the introduction of the FLCAS and other language-specific measures of anxiety, the literature has flourished and extended the conceptual boundaries of FL anxiety to include language use, processing of language at various stages, and skills-specific anxieties (e.g., MacIntyre and Gardner, 1994; Elkhafaifi, 2005; Gargalianou et al., 2016).

Research has shown that the effects of FL anxiety are pervasive, affecting learners at cognitive, academic, physiological, and social levels (MacIntyre, 2017). More specifically, anxiety arousal leads to increased self-related cognition (e.g., thoughts of failure and worry) and further consumes the cognitive resources needed for each of the three stages of FL learning: input, processing, and output (Eysenck, 1979; MacIntyre and Gardner, 1994). Academically, anxious students tend to perform worse in language proficiency or achievement tests than their more relaxed counterparts in part because anxiety tends to be associated with less effective study strategies, such as memorization (Gregersen et al., 2014). In addition, anxious students are less willing to engage in communication in FL with others, due in part to the self-deprecating worries about being able to communicate authentically and fear of the interlocutors' negative evaluation (Sevinç and Backus, 2017; Dewaele, 2019). The physiological correlates of anxiety, including increased heart rate and skin conductance, suggest that it is a multidimensional experience that is only partially under the control of a learner (Gregersen et al., 2014; Sevinç, 2018). Horwitz et al. (1986) reported that anxious students showed many psycho-physiological symptoms that include tenseness, trembling, perspiring, heart palpitations, and sleep disturbances. When aroused, the physiological correlates of anxiety take time to settle down.

Foreign language anxiety affects learners' verbal and non-verbal behaviors. MacIntyre and Gardner (1994) found that anxious students' oral descriptions were less complex, were less fluent, and showed less of a native accent. Such patterns may be attributed to the reduced complexity and fluency in anxious students' oral output, which may be connected to difficulties encountered in vocabulary learning and retrieval. Kim and Tracy-Ventura's (2011) study showed that high-anxiety learners tended to be less accurate in the use of simple past tense. Thus, anxiety arousal in speaking may degrade three key indices of oral proficiency, that is, fluency, complexity, and accuracy. In addition to the verbal dimension of communication, Gregersen (2005) documented that anxious learners manifested differences in non-verbal behavior, including limited facial actions and brow behaviors but more eye-blink, than their more relaxed counterparts. Furthermore, the anxious learners smiled less often, maintained less eye contact with the teacher, exhibited a more rigid and closed body position, and used their hands less often for illustrative and regulatory speech-related purposes (e.g., adjusting clothing). In general, the findings support that communicative behaviors are restrained and rigid when anxiety arises and that elevated anxiety suppresses facial displays (Gregersen, 2005, p. 393).

If the effects of FL anxiety are complex, so too are its antecedents, which include a myriad of learner-internal and learner-external variables (Dewaele, 2017). MacIntyre (1999) and Dewaele (2013) reported that students who are predisposed to be anxious (i.e., trait anxiety) may transfer more anxiety into FL learning contexts. MacIntyre and Charos (1996) and Dewaele (2002, 2013) revealed that extroverts tend to have lower anxiety than introverts, although both extroverts and introverts have their unique strengths and weaknesses in developing language ability. In addition, dispositional positive orientation also

predicts anxiety levels; students with higher positive orientation tend to hold a more positive conceptualization of self and others, and to perceive more social support, lowering FL anxiety levels (Jin and Dewaele, 2018). The role of positive attitudes toward self and others in lowering FL anxiety was further attested by Dewaele et al. (2018), who found that perceived FL competence and attitudes toward FL and FL teachers significantly negatively predicted students' anxiety levels in learning the FL.

The complexity and pervasiveness of the sources and effects of FL anxiety, along with its rapid onset and marshaling of physiological processes, suggest that rather than eliminating it, the preferred goal of educators might be to ameliorate anxiety and reduce it to manageable levels (Dewaele and Al-Saraj, 2015). Many strategies have been tested by researchers for reducing learners' FL anxiety levels. Nagahashi (2007) found that engaging in pair and group work in 12 classes taught by the researcher significantly decreased Japanese-first-language university students' English classroom anxiety, suggesting that cooperative learning has an affective component (Early and Marshall, 2008). In addition, Dolean (2016) found that teaching songs in the classroom significantly reduced the anxiety level for one of the experimental groups. Galante (2018) reported a decrease of English classroom anxiety in 13 Brazilian adolescents after implementing a 4-month drama program. Thus, interventions that lead learners to approach language tasks in new ways or that produce alternative behavioral responses seem to carry the potential to reduce FL anxiety.

Anxiety reduction studies have also taken a positive psychology approach. Being a new psychological sub-discipline that emerged at the turn of this century, positive psychology concentrates on what makes people develop, flourish, and thrive, instead of zooming in on damages and pathologies (Seligman and Csikszentmihalyi, 2000). It has positive subjective experiences, positive individual traits, and positive institution as its three main pillars (Seligman and Csikszentmihalyi, 2000; Dewaele et al., 2019). Since positive psychology was introduced into SLA a few years ago (MacIntyre and Mercer, 2014), it has instigated a number of studies on positive emotions in SLA, particularly enjoyment (e.g., Jin and Zhang, 2018, 2019; Resnik and Schallmoser, 2019; Dewaele and Dewaele, 2020). More recently, researchers have attempted to investigate ways of anxiety reduction from a positive psychology perspective. Two such studies have been conducted to date, one by Gregersen et al. (unpublished) and the other by Jin et al. (unpublished).

Gregersen et al. (unpublished) tested the efficacy of using signature strengths in new ways for reducing writing anxiety in English as an FL. The participants were 45 Arabic-first-language university students, of whom 31 formed the experimental group and 13 the control group. The 31 experimental group students used their signature strengths in new ways while being involved in writing assignments nine times in a time frame of 3 weeks (three times per week), but the control group students remained untreated. The results showed that the two groups did not significantly differ in changes in writing anxiety, but the effect of the targeted intervention showed at the individual level. The researchers reported that anxiety in a female participant, Noor, decreased by nearly 30% after she applied her signature strengths of creativity, honesty, zest, and spirituality in English writing practices in new ways. She revealed in her self-narratives that participating in this study made her like her writing and feel optimistic, knowledgeable, and satisfied, contributing to her reduced anxiety.

Jin et al. (unpublished) found that reminiscing about English proficiency development significantly reduced Chinese-first-language university students' anxiety in English class. Qualitative analysis into the reminiscing process showed that the participants reminisced about multiple linguistic and non-linguistic development and reported experiencing many positive emotions, outnumbering the negative ones approximately 3:1 in frequency, during the reminiscing process. The most prominent positive emotions were happiness, confidence, contentment, sense of accomplishment, pride, and enjoyment, but no negative emotion took precedence. Jin et al. (unpublished) claimed that it was the positive emotions and their savoring-generating functions that partially buffered the participants' anxiety levels in English over time.

The present study tested the effectiveness of a type of anxiety reduction intervention—contracting speaking in FL class—originally suggested by Horwitz et al. (1986) but not tested in the FL anxiety literature. In this approach, students sign a contract to commit to speaking in FL class. Speaking is one of the key causes of anxiety, and lower willingness to communicate, one of its main effects (Horwitz et al., 1986; MacIntyre, 2017). The approach we took seamlessly dovetails with engagement theory that highlights the beneficial interaction between behavioral and emotional engagement (Philp and Duchesne, 2016). Speaking with another learner integrates the multiple dimensions of engagement, with particular focus on the social aspect of listening to each other. However, speaking implicates more than just learner engagement. Oxford's (2016) EMPATHICS framework highlights a diverse collection of processes within its nine dimensions. EMPATHICS is a model for language learners' psychological well-being in which Oxford emphasizes that negative emotions such as anxiety fit within a larger, dynamic system reflecting the psychology of the learner. Perhaps the key implication of this framework is that engaging with activities that target one part of the system, as we are proposing here with contracting speaking as anxiety reduction, will draw upon and potentially affect resources in other parts of the system (e.g., positive emotion, motivation, and the self). By willingly signing a contract to speak more often in the classroom, and abiding by its terms, learners simultaneously are expressing their motivation, perseverance, sense of agency, autonomy, and responsibility to their classmates, who are doing the same. Empirical studies showed that interventions that facilitate oral use of language led to lower FL anxiety in the classroom (e.g., Dolean, 2016; Galante, 2018). EMPATHICS emphasizes that contracting speaking will draw upon learners' psychological resources and, if it works, carry implications beyond the task at hand, such as reducing anxiety and promoting a greater sense of well-being.

Specifically, this study aimed to answer the following questions:

1. Does contracting speaking in FL class significantly reduce learners' FL classroom anxiety levels?
2. What do students say about this behavioral approach and its effects?

METHODOLOGY

Research Design

This study adopted a 2 × 2 study design, with an experimental group and a comparison group, each being tested for FL anxiety levels before and after the intervention. With this research design, we are able to investigate contracting speaking as an alternative approach to FL anxiety reduction.

This study also elicited the experimental group participants' attitudes toward the intervention. The rationale resides in our intention to assess its acceptance by learners and possible unintended side effects. Moreover, these students' diary entries recorded on each intervention day were collected to take advantage of the student as ". . .a crucial witness of his or her own learning process" (Dewaele, 2005, p. 369). These diary entries thus provided detailed accounts of the students' responses to the intervention.

Participants

Forty-eight university-level English major students in Year 2 who were recruited from a public university in South China formed the initial sample pool (24 participants in both experimental and comparison groups). The final sample size constituted 20 students for the experimental group and 22 for the comparison group because three individuals dropped out and three were disqualified for failing to implement the intervention. All the remaining 42 students were young women, reflecting the fact that the majority of students in Chinese universities' English programs are female. The average age was 19.68 years ($SD = 2.39$) for the experimental group and 19.94 years ($SD = 0.77$) for the comparison group. Most of the participants started learning English in primary school, with few students beginning during junior high school.

Generally, students in both groups had learned English for close to 10 years by the time of data collection: $M = 10.15$ years, $SD = 2.10$ for the experimental group; $M = 10.07$ years, $SD = 1.62$ for the comparison group. All the participants were considered at an intermediate level in English proficiency. As required by their program, these students were taking several English courses such as *Integrated English, British Literature*, *English Writing,* and *English–Chinese Translation*, taught by different teachers. They were also learning one of German, Japanese, Spanish, or Korean as a third FL.

Instruments

The English Classroom Anxiety Scale

The English Classroom Anxiety Scale (ECAS) is a five-point Likert scale in Chinese developed from Horwitz et al.'s (1986) FLCAS through exploratory and confirmatory factor analysis (Jin et al., unpublished) and contains seven positively worded items and four negatively worded items rated on: *strongly disagree* (1), *disagree* (2), *neither agree nor disagree* (3), *agree* (4), and *strongly agree* (5). The negatively worded items were reversed-scored. The total obtainable scores on the ECAS range from 11 to 55, with higher scores representing higher levels of English classroom anxiety.

Jin et al. (unpublished) reported a Cronbach's alpha of 0.84 and 0.86 at two time points over 1 month for the ECAS, almost the same as the present study (0.83 and 0.86). The test–retest reliability coefficients in the two studies for the scale were also similar: $r = 0.82$ $p < 0.001$ in the control group in Jin et al. (unpublished) and $r = 0.76$ in the comparison group of this study. In addition, Jin et al. (unpublished) found that the ECAS had satisfying criterion validity. It was more closely related to FL anxiety scales (correlation ranged from 0.59 to 0.73, all $p < 0.001$, with FL reading, listening, writing, and speaking anxiety scales) but less related to trait anxiety measures: $r_s = 0.49$, $p < 0.005$, with a test anxiety scale, and $r = 0.09$, $p = 0.59$, with a trait anxiety scale.

Attitude Check Toward Contracting Speaking

This attitude check consisted of one item asking about the participants' degree of comfort toward the contracting intervention. The anchors for this item were *strongly disagree* (1), *disagree* (2), *neither agree nor disagree* (3), *agree* (4), and *strongly agree* (5). The more a student agreed to this item, the more comfortable she or he felt about the contracting intervention.

The Contract for the Experimental Group

The contract for the experimental group contained two parts. The first part (**Appendix A**) spelt out who would carry out the contract in which English courses and what the contract conditions were. The period of time when the contract was in force was also specified. The second part (**Appendix B**) was a procedural checklist through which the participants reported their contract compliance, allowing self-monitoring and self-management (Hawkins et al., 2011).

The Informal Written Form for the Comparison Group

The students in the comparison group received a written form with instructions requesting these students to volunteer speaking in English class and try to freely, clearly, and comprehensively express themselves with no worries about others' negative evaluation when being called on by teachers. This written form was not signed by any party and was not provided with a procedural checklist.

Procedures

The first author called for volunteers for this study in his teaching sessions by explaining to the targeted students that this study was concerned with English learning emotion and that participating in the study would benefit their English learning. One hundred and eight students responded positively. These students filled out the EACS and then listed three class activities about which they felt fairly anxious. In the end, 48 students who reported that speaking in English was a great concern were enrolled. To

subgroup the participants, we asked a non-English-major student who was totally blind to the research purpose to randomly choose 24 numbers from 48 numbers representing all the participants in this study. The 24 students chosen formed the experimental group, who were contracted to speak in any English classes during the intervention period, and the remaining 24 students, the comparison group.

The first author met both groups separately in two sessions a few days after the participation invitation procedure. In Session 1, the first author met the experimental group students, who were first required to write down a number indicating the maximum number of times they could volunteer speaking in English class each day in the coming week. The contract was then distributed and explained. After that, the participants registered the number they just wrote down in the contract with no changes being allowed. They were also reminded to keep diaries each day to record the changes that they thought implementing the contract brought about. In the end, the contract was signed and fingerprinted by the researcher and the participants because "using a formal looking contract form adds to the student's perception of the importance of the contract" (Strahun et al., 2013, p. 4). The participants kept their contracts until the intervention was over. Immediately following Session 1, the first author met the comparison group students, and the written form was distributed. No diary recording was required from these students. The researchers did not divulge one group's intervention to the other. No students out of this study were informed of the intervention for either group, and neither were teachers besides the first author.

Seven working days later, the researcher met the two groups separately and consecutively again. Both groups filled out the ECAS for a second time. The experimental group students also returned their contracts and handed in their diaries.

Data Analysis

Major data analyses proceeded in three steps. The first step was to investigate the changes in anxiety for both the experimental and comparison groups (Question 1), using a mixed ANOVA. The second step was a descriptive analysis conducted on the single-item attitude scale data to see whether the participants felt comfortable about the contracting intervention (Question 2).

The third step was to sort the diary materials into themes to provide insights into the ways in which contracting speaking affected the students (Question 2), referring to the grounded theory method (Charmaz, 2006). More specifically, we first coded line by line the participants' responses to contracting speaking, during which we accepted the participants' terms as "vivo codes" (Charmaz, 2006, p. 55) to preserve the participants' voices, and more often, we created terms to code the participants' responses to best represent their meaning. Following that, the codes with the same properties were integrated into categories. For instance, actively preparing for class and in-class involvement were merged into increased engagement in FL learning because both of them featured an increased focus on language learning.

The categorization process was iterative, including coding and recoding responses as well as merging and dismantling categories as a result of constantly comparing codes and categories. Once this process came to an end, the findings and raw materials were given to a Chinese researcher with a Master's degree in applied linguistics to ensure that no relevant responses were missed and that responses were sorted into proper categories, which in turn were integrated appropriately. The first author discussed with this researcher to resolve any discrepancies that occurred between them.

RESULTS

Overall Anxiety Changes Over Time

Within a week, one student implemented the contract 3 times, two students, 4 times, and the remaining students, 5 to 11 times, suggesting that the contracts were taken seriously by the learners. Scores on the attitude check item indicated that most students expressed some degree of comfort with the contracting process; only 4 of the 24 learners (<17%) in the experimental group found the intervention uncomfortable. A 2 × 2 mixed model ANOVA was performed to evaluate overall anxiety changes over the week for the between-groups factor (experimental versus comparison groups). Time was the within-subjects variable, with two levels (pre- and posttests). Exploring the data showed that the ECAS scores for both groups at two time points were normally distributed as suggested by non-significant Shapiro–Wilk tests. Levene's test for homogeneity of variances showed that the experimental and comparison groups had similar levels of variability for both the pretest [Levene's F (1, 40) = 0.36, p = 0.55] and posttest [Levene's F (1, 40) = 0.16, p = 0.69]. Mauchly's test of sphericity for the repeated measures factor could not be computed, as there were only two testing occasions.

The results showed that there was a non-significant main effect for group F (1, 40) = 0.25, p = 0.62, but a significant main effect of time on anxiety levels, F (1, 40) = 28.92, $p < 0.001$. More importantly, the main effects were superseded by a significant time × group interaction effect, F (1, 40) = 5.23, p = 0.03. Although anxiety level decreased in both the experimental and comparison groups over the intervention period, the amount of change significantly differed in the two groups. The experimental group (Time 1: M = 35.40, SD = 5.89; Time 2: M = 29.20, SD = 6.74) showed more of a decline in anxiety than the comparison group (Time 1: M = 34.41, SD = 6.44; Time 2: M = 31.91, SD = 5.44). This interaction effect is plotted in **Figure 1**.

Findings of Diary Analyses

The diaries contained insightful contents to understand how the contract executed in this study functioned in FL anxiety. These contents were sorted into themes reported in this section. Diary excerpts were provided (see the italicized text with the initials of the diarists) as a support to the themes. A total of five inter-related themes were identified, suggesting that the contracting process created a complex set of adaptations by the learners, many of which are typically associated with enhanced learning outcomes and reduced anxieties. The specific themes include increased engagement, self-efficacy, self-reflection, reduced fear, and cultivating both character strengths and positive emotions.

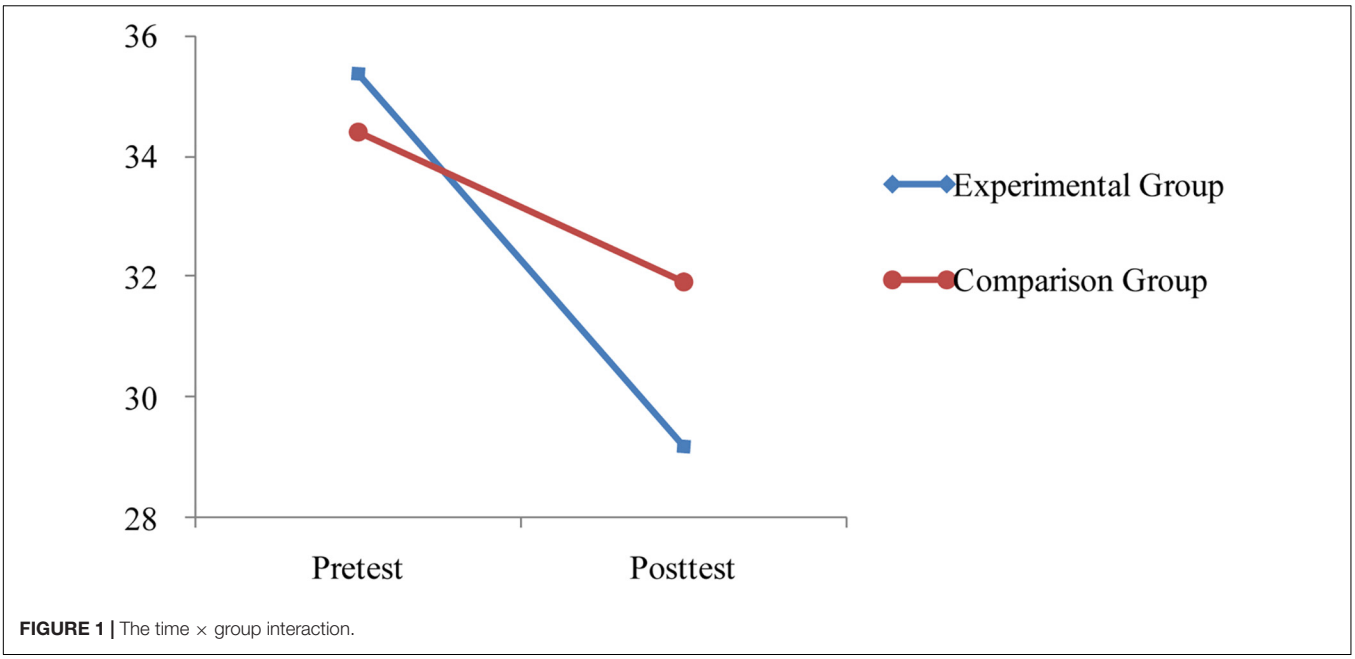

FIGURE 1 | The time × group interaction.

Increasing Engagement in FL Learning

The increased engagement in FL learning occurred both inside and outside classroom time. Students tried to prepare for class well before it started and carried on learning tasks that were performed in class. The in-class behaviors included: thinking hard, volunteering to answer questions, competing with classmates for a chance to speak, and concentrating on what was taught. Representative diary excerpts are as follows:

> *In order to perform the contract well, I was more attentive in class than ever before. In the first dozens of seconds when the teacher set out to explain a translation, I thought hard the correct answer and would raise my hand, provided I was sure about the answer* (QYH).

> *As the class just started, I raised my hand to answer the teacher's first question because I was eager to finish the contracted tasks* (LY).

> *Implementing contract made me more serious-minded and less distracted in class* (WJ).

Enhancing Self-Efficacy

The diaries witnessed a growth of self-efficacy in some students. That was attributed to factors like voluntarily making an oral report, practicing speaking frequently, obtaining opportunities to show oneself in the presence of others, gaining new knowledge, receiving useful advice from the teacher, wining teacher recognition, and encountering unexpected success and making a breakthrough in English learning. Two factors were referred to more often, which were successfully performing a speaking task and teacher recognition. The excerpt below was adopted from QYH's Day 3 diary.

> *. . . I did not feel nervous any more owing to speaking frequently these days. I also did not care about what other people thought of me and did not fear to lose face. I felt that I was no longer a silent student and that I won my teacher's recognition.*

Enhancing Self-Reflection

Being involved in the survey created opportunities for students to reflect on their weaknesses as FL learners, particularly insufficient English skills and inappropriate English learning strategies. For example, QYH noted that her English pronunciation was not good. LY realized that unwillingness to answer questions slowed down her progress in English learning and did not help her to know which aspects of her English should be improved. GSS believed that the lack of listening training partially led to her poor speaking ability. For the reasons why she had no confidence in class and why she was not able to answer questions, GSS concluded: *"The reasons might be that I did not have solid basic knowledge and did not contemplate the teacher's question."*

Students also noticed their strengths and proposed adequate learning strategies. Several individuals felt that they were capable English learners. LY thought that preparing for English class sufficiently and thinking carefully about the teacher's questions even when not being called on would help with anxiety reduction. She also agreed that students should make peace with imperfect answers. WM revealed that voluntary answering led to improvement of oral ability, built a deeper impression on the issues addressed, helped to win the teacher's and classmates' recognition, fueled learning enthusiasm, and forged courage and confidence. GMM reflected that slowing down speech rate would contribute to fluency.

Diminishing Fear, Nervousness, and Worry

Students' fear and nervousness were alleviated once they prepared for class in advance, actively sought

chances of speaking in class, got accustomed to speaking, received others' acknowledgments, and gained self-efficacy. Further, fear or nervousness was shared by class members when they jointly created an atmosphere featuring deep engagement. Two example excerpts are shown below:

> *I spoke more naturally in class over a week and thus did not feel as tense as before. I noticed that a majority of students who participated in the survey talked actively, fluently, and naturally. It meant that we all made progress.*

> *Fortunately, the presentation was good. My teacher highly appreciated it. I felt all my efforts that had been taken were worthwhile. With this experience of presenting alone, I thought I would not be nervous any more. I had been fearful of this teacher before because I did not know what she thought of me. Due to this experience, my fear was relieved.*

> Worry about others' evaluation causes anxiety, especially when students think that their performance would be judged as poor. However, a student, CJW, noted that she would not worry about what peer classmates think of her answer after a successful voluntary attempt to answer a question that led to the teacher's affirmation. After multiple practices in class, LY expressed, *"My heart did not beat as fast as before and I did not consider all kinds of consequences now when raising hand to answer questions."*

Cultivating Character Strengths and Positive Emotions

Students developed hope in the process of implementing their contract. They wished that they would become more active in English class (LY), improve their English proficiency (SN), and overcome psychological barriers (SN). Being hopeful, students were more loyal to FL class (YXL and GSS).

The diary materials also showed that contracting speaking cultivated courage. As aforementioned, students became less afraid of speaking and/or less worried about others' judgment. Several reported that they made a breakthrough in English class. As the intervention was coming to a close, WLQ, for whom voluntarily answering questions was quite difficult, nevertheless stood up, responding to her teacher's question, and WJ did her first voluntary speaking in translation class.

Positive emotions about English learning were forged. Owing to the teacher's compliments arising from their successfully performing a speaking task, WJ and GSS felt happy or more enthusiastic about English learning. CX and WLQ developed interest in or enjoyment of English class. In addition, students also might have felt proud when they successfully responded to a question or won others' admiration.

DISCUSSION

The frequently reported negative effects of FL anxiety on FL learning in the literature call for studies of FL anxiety reduction. The present study explored the efficacy of contracting speaking in FL class in reducing learners' FL classroom anxiety. Evidence from the results of the mixed ANOVA revealed a significant interaction between time and group. The experimental group demonstrated significantly more anxiety reduction than the comparison group. This finding confirmed Horwitz et al.'s (1986) hypothesis that contracting interventions might be useful in anxiety reduction.

The procedures used in this study seemed to generate the desired commitment from the students through implicit reinforcements. First, signing and fingerprinting of the speaking contract by the researcher and the participants created a sense of importance of the contract, increasing the participants' commitment to it. Second, asking the participants to fill in the procedural checklist to record their contract compliance and to write in a diary pushed these students to stick to the contract terms. Nevertheless, we suggest that teaching practitioners should be cautious in using any types of reinforcements when they aim at managing their students' emotions, because reinforcements may add to the students' emotional loads, affecting the power of an intervention.

An attitude check score showed that the experimental group participants as a whole felt comfortable with the intervention. We must take note, however, of the four students who reported that they did not like the contract. Such interventions are unlikely to produce uniform reactions across a group of learners—some students welcome it, but some others do not like it. The findings also remind researchers to focus their attention on not only average scores but also on individuals' responses, because individual differences disappear in group means (Dewaele, 2005). Combining the findings of the mixed ANOVA and attitudes toward the intervention suggests that contracting speaking is feasible and, on balance, reduces FL anxiety more than not having the intervention, though not every student embraces the approach.

Diary entries provided useful information to understand the processes by which the contracting intervention affected the participants' anxiety levels. The contracting intervention was shown to have the potential to cultivate learners' character strengths and positive emotions such as hope, courage, enjoyment, interest, and pride. These findings reflect the existing theoretical or empirical research into the effect of motivation (Piniel and Csizér, 2015), self-efficacy (Dewaele et al., 2019), knowledge of learning strategies (Tran and Moni, 2015), character strengths (Jin and Dewaele, 2018), and positive emotions (Dewaele and MacIntyre, 2014) on FL anxiety. In addition, diary keeping itself gave the participants a second chance to reflect on their linguistic and non-linguistic gains during the process of performing intervention tasks, strengthening their positive experiences associated with this process, which led to positive self-cognition and, in turn, the decrease of anxiety. The finding supports MacIntyre and Gardner's (1991), Jin et al's. (unpublished), and Gregersen et al. (unpublished) findings that a focused essay on positive experiences could lead to the reduction of FL anxiety.

The diaries suggested that contracting speaking produced complex effects that extended to multiple parts of the learners' psychological systems. Learners reported increased behavioral engagement with FL learning, which was associated with increased positive emotional engagement (enthusiasm,

enjoyment, interest, and pride) and decreased negative emotional engagement (anxiety, fear, worry, and nervousness), contributing to the learners' overall emotional well-being (Oxford, 2016; Philp and Duchesne, 2016). Many of the dimensions in Oxford's EMPATHICS framework were activated by the contract as well. Due to the binding power of the contract, the participants persisted through the initial difficulties in implementing the contract, building their perseverance, which Oxford (2016) says is one of the key elements in language learning motivation. The character strengths of courage and hope grew in the participants when they became less afraid of FL class or made a breakthrough in FL class. The self-related dimensions of EMPATHICS also became more salient to the learners as they increased in self-efficacy with successful speaking opportunities and positive reactions from the teacher (better relationships) and self-verification through reflecting on their own strengths.

It must be emphasized that the intervention produced these effects over a short time in a well-established system. Particularly at the initial stage of contract implementation, some students felt pressure to change from a silent student to an active player in the classroom. Classroom behaviors that are long-term habits may be linked to one's personality and cultural background. Consequently, some students might feel anxious for not immediately plunging into contract implementation, be worried about completely failing to fulfill the contract in the end, or be scared of being criticized by the researcher, who was also their teacher. At the end of the contract term, one student expressed regret that she did not follow the contract instructions well. This sense of failure might result in unintended feelings of shame or regret. Yet the majority of learners reported some degree of comfort with the contracting intervention agreed to in a social setting, possibly because it took the focus away from the self as the origin of speaking in class and put the emphasis on fulfilling the obligations of a contract. The contract appeared to increase cognitive, emotional, behavioral, and social forms of engagement among the study participants (Philp and Duchesne, 2016).

The limitations of the study must be noted. First, the participants were English majors who were internally motivated to perform the interventions. It is unknown whether the interventions, particularly the non-contracting intervention, would work well among non-English-major students. Secondly, we did not systematically observe the English classes that the experimental group students attended, which restricted a deeper understanding of the changes that the targeted intervention brought about for the participants. Third, all participants were females. The little available evidence shows that gender does not necessarily affect results of behaviorally contracting interventions (Bowman-Perrott et al., 2015). Yet the effectiveness of the current interventions on male students remains a question. Fourth, the contract period only lasted for 1 week, which is a short time span, so it might be that the experimental group students' anxiety was suspended only for the intervention time. However, the pretest–posttest study design did not allow us to address longer-term patterns of anxiety change, or possible rebound. Thus, this study cannot tell how long the effect of the intervention of interest on FL anxiety levels might last.

CONCLUSION

This study provides evidence that contracting speaking is a feasible approach to FL anxiety reduction over a short period of time and that students generally feel positively toward the approach. Future research is needed to test the effectiveness of this technique in other contexts, including contracts that can be used to deal with skills-specific FL anxiety (such as writing and listening anxiety). In addition, the roles of contracting interventions in nurturing FL learning-related character strengths and positive emotions also deserve an explicit investigation, given the findings regarding hope, courage, enjoyment, and interest in this study. A great body of evidence has suggested the importance of positive emotions for learning and living. Thus, seeking ways to enhance students' positive emotions in FL learning is an essential part of second language acquisition research.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

This study involving human participants was reviewed and approved by an ethics committee organized by the School of Foreign Languages, Hainan Normal University, China. All the participants voluntarily took part in this study. The experimental group students provided their written informed consent to participate in intervention by signing and fingerprinting the contract.

AUTHOR CONTRIBUTIONS

YJ and LZ discussed and designed the study. YJ collected the data and drafted the manuscript. YJ, LZ, and PM revised it for submission. All authors contributed to the article and approved the submitted version.

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

APPENDIX A

THE CONTRACT FOR THE EXPERIMENTAL GROUP

Contract

The Parties to the Contract

Party A: *Teacher Name*

Party B: *Student Name*

Contract Terms

As negotiated with Party A, Party B is committed to performing the tasks that are described in Terms 1 and 2 in English classes for courses as listed below from _____ to _____ (time range) as well as those tasks in Terms 3 and 4:

1. _____ times of voluntary speaking in Chinese or English each day.
2. In the case of being called on by teachers, Party B will try his or her best to freely, clearly, and comprehensively express his or her own views with no worries about whether peer classmates or teachers would negatively evaluate his or her speaking.
3. Filling in the *Procedural Checklist for Contract Compliance* on Page 2 every day to document how well Terms 1 and 2 are followed.
4. Keeping a diary every day to elaborately record the consequences of performing Terms 1 and 2 (e.g., the perceived changes in self-efficacy, teacher or peer students' attitudes toward oneself, oral ability, and English learning enthusiasm).

English Courses

Signature and Fingerprint
(Party A)
Date

Signature and Fingerprint
(Party B)
Date

APPENDIX B

SAMPLE PROCEDURAL CHECKLIST FOR CONTRACT COMPLIANCE

Date	Compliance
Nov. 28 (Monday)	Please check (√) appropriate ☐ to indicate how many times you complied with Terms 1 & 2. **Term 1 Compliance**:0☐; 1☐; 2☐; 3☐ Time 1: Course:_____; What did you say?_____ Time 2: Course:_____; What did you say?_____ **Term 2 Compliance**:0☐; 1☐; 2☐; 3☐ Time 1: Course:_____; What did you say?_____ Time 2: Course:_____; What did you say?_____

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The Dynamics of Foreign Language Enjoyment: An Ecological Momentary Assessment

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Following the recent shift from negative psychology to positive psychology, interest in foreign language enjoyment (FLE) has grown noticeably in second language acquisition. Given the fact that learners are "persons-in-context" and are not "ergodic ensembles," the particular learner-context ecosystem goes through ongoing momentary changes with respect to individual differences like FLE. Ecological momentary assessment (EMA) contributes to our understanding of the dynamics of this ecosystem in terms of the interaction between individual learners and their learning environments. In this study, using a time-based sampling scheme of EMA, we explored the dynamism of different facets of FLE across different timescales including seconds, minutes, weeks, and months in a course of intermediate English as a foreign language. To do this, we applied open-ended interviews with two intermediate English language learners in a private English language institute across months, journals across weeks, enjoymeters across minutes, and the idiodynamic approach across seconds. Findings indicated that enjoyment in foreign language fluctuates in terms of a hierarchy of temporal scales, from moment-to-moment changes to the ones over months. The emerging patterns of enjoyment across different timescales in terms of the tenets of complex dynamic systems theory are discussed.

Keywords: foreign language enjoyment, ecological momentary assessment, dynamics, enjoymeter, ecological sampling scheme

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INTRODUCTION

How emotions affect language learning has been highlighted more than ever before in recent years. Attention has also been drawn to what affects different learners experience in learning the language (Berdal-Masuy and Pairon, 2019; Dewaele, 2019; Dewaele et al., 2019b; MacIntyre et al., 2019). For long, copious attention has been drawn to learners' negative emotions and attempts have been made to resist them. With the recent expansion of positive psychology in second language acquisition (SLA), it is increasingly known that resisting negative emotions is no guarantee for the replacement of positive emotions. Actually, recent advancement in emotion theory has shown that positive emotions such as enjoyment along with negative emotions including anxiety serve a variety of functions and stem from different kinds of experiences (MacIntyre and Gregersen, 2012; Fredrickson, 2013).

The significance of this changing trend lies in the fact that language learners experience negative emotions as well as positive emotions, including enjoyment, satisfaction, and perceived

achievement to name but a few (Gkonou et al., 2017; MacIntyre and Vincze, 2017). Moreover, as described in the Broaden-and-Build Theory (Fredrickson, 2001, 2013), positive emotions would extend an individual's thought-action resource and construct the social, physical, psychological, and intellectual base required for one's current as well as prospective achievement. Therefore, showing positive emotions in second or foreign language learning might increase students' awareness of linguistic input and understanding of language forms and enhance employment of different techniques for solving problems (Piechurska-Kuciel, 2017; Boudreau et al., 2018), which help to expand learners' foreign or second language competence. Moreover, positive emotions can reduce the influence of negative emotions arising from problems of language learning, add to the flexibility from setbacks, and form social connections in class by running active approaches among other language learners and teachers (Dewaele and Alfawzan, 2018). This would further validate the change to positive emotions in SLA.

A quite relevant positive emotion in this respect is foreign language enjoyment (FLE). So far, this concept has been approached in research from different perspectives (Dewaele and MacIntyre, 2016; Li et al., 2018), including engagement with its origins and effects (Dewaele and Alfawzan, 2018; Dewaele et al., 2018) and how it correlates with anxiety in language learning (Dewaele and MacIntyre, 2014, 2016). In a recent critical review, Dewaele and Li (2020) invited researchers to investigate emotions involved in foreign language learning by developing original research designs in the light of their field as well as concepts and approaches adopted from similar disciplines. The present research, inspired by Dewaele and Li (2020), aimed to enrich the conceptualization and understanding of FLE system, and intended to shed light on the dynamics of FLE over time in the Iranian context, following an ecological momentary assessment (EMA).

Ecological momentary assessment has been primarily applied in clinical psychology and aimed to advance clinical psychology as a science and practice by illuminating the dynamics of behavior in authentic contexts (Shiffman et al., 2008). Ecological momentary assessment deals with the recurrent sampling of participants' current experiences and behaviors in the real world and, thus, in their natural surroundings (Shiffman et al., 2008). In particular, EMA aims to reduce recall bias as far as possible, maximize ecological validity, and facilitate exploration of micro-processes that affect behavior in lifelike contexts. In fact, EMA studies address special events in subjects' lives or evaluate individuals within intervals, often through random time sampling, with the help of technologies such as written diaries, phone calls, electronic diaries, and physiological sensors (Carson et al., 2010). The findings of this study can further our understanding of the structural constituents of FLE and reveal factors that contribute to the situated dynamic patterns of FLE. Considering this, the following research question was proposed in this study:

How do moments of FLE change under the influence of ecological factors in different timescales?

LITERATURE REVIEW

Foreign Language Enjoyment

Positive psychology emerged at the turning point of the present era as an independent discipline for research, marked by a refusal of a prevailing disease model of individuals' performance in the field of psychology. It emphasizes mental problems and treatments, and it hopes to make sense of factors contributing to individuals' psychological health and to help people and communities to develop successfully (Seligman and Csikszentmihalyi, 2000; Fredrickson, 2001). Positive psychology consists of three core ideas: positive institutions, positive individual traits, and positive subjective experience (Seligman and Csikszentmihalyi, 2000).

In 2014, the journal of Studies in Second Language Learning and Teaching published a special issue through which positive psychology entered SLA. In this journal, language experts such as Jean-Marc Dewaele, Sarah Mercer, and Peter MacIntyre recommended a change of research stream to positive emotions in the domain of SLA. This trend in the body of research on emotion is marked by a shift from a language anxiety-based trend in SLA research, in light of the Broaden-and-Build Theory of positive emotions (Li et al., 2018), and involves hints of the holistic perspective of negative and positive emotions together (Oxford, 2016). Ever since, copious research has addressed positive emotions in learning a second or a foreign language. The main positive emotions addressed have been enjoyment, love, flow, and pride (MacIntyre and Mercer, 2014; Pavelescu and Petric, 2018). Yet, enjoyment showed to be the most interesting to researchers in general and more recently in SLA in particular.

The simplest definition of FLE is marked by first highlighting how enjoyment differs from pleasure (Dewaele and MacIntyre, 2014). Enjoyment is defined as the pleasant feelings that originate from going beyond homeostatic boundaries as well as extending oneself to gain new experiences particularly when one encounters challenging tasks. On the contrary, pleasure is defined only as the pleasant feeling one develops when the homeostatic requirements (such as bodily comfort, sex, and hunger) are met hedonically (Dewaele and MacIntyre, 2016). In other words, enjoyment is described as "a sense of novelty and accomplishment" (Seligman and Csikszentmihalyi, 2000, p. 46) that facilitates long-lasting health and individual development (Seligman and Csikszentmihalyi, 2000).

Recent research in the FLE domain has shown an interest in dynamic mechanisms of the construct and its change within an individual or inside a group to gain a deeper understanding and to contribute to foreign language teaching and learning as well as assessment (e.g., Dewaele and Dewaele, 2017; Boudreau et al., 2018; Elahi Shirvan and Taherian, 2018). Such investigations have been enlightened by the dynamic system theory (DST), which has enriched second language acquisition, and have increasingly brought evidence that learner and teacher emotions change consistently and dynamically as a function of the interacting internal and external factors that might cause changes in the long run.

Along with the dynamic shift in second/foreign language learning, in light of DST, individual differences have been explored and emotions have been perceived as dynamic, dependent on context, and emergent (Ushioda, 2015; Larsen-Freeman, 2016). This emphasis on individual differences in SLA has been strengthened by the fact that language learners are not ergodic ensembles; that is, group statistics cannot be generalized to the individual (Lowie and Verspoor, 2019). Recent FLE research has thus been influenced by and enriched with the emerging research methods in DST (for a review of these methods see Hiver and Al-Hoorie, 2019). That is, via these methods, several studies have attempted to explore the dynamic aspects of FLE (e.g., Dewaele and Dewaele, 2017, 2020; Boudreau et al., 2018; Elahi Shirvan and Taherian, 2018; Elahi Shirvan and Talebzadeh, 2018a,b, 2020; De Ruiter et al., 2019; Talebzadeh et al., 2019).

Following a pseudo-longitudinal design, Dewaele and Dewaele (2017) addressed changes in FLE through time. To this aim, they adopted a dynamic approach. These researchers observed that learner-based and teacher-based variables minimally predicted FLE at the beginning and end of secondary education as compared to the middle phase. Elahi Shirvan and Taherian (2018) used a latent growth curve modeling approach to explore the growth and changing trends in 367 undergraduates' FLE during a semester in a general English course. This research showed that, though the subjects' FLE increased significantly within the semester, the significance of the intercept and slope variances for FLE showed heterogeneity of subjects' growth in FLE during the study time. Besides, the initial level FLE did not manage to predict its growth within the semester.

Boudreau et al. (2018) employed an idiodynamic method to assess fluctuations in FLE and foreign language classroom anxiety (FLCA) in 10 Anglo-Canadian students in a second-by-second trend within 1 min. The values of the multiple FLE and FLCA correlation analyses in each subject showed a variation from positive to negative values. Moreover, high levels of FLE showed a momentary coincidence with low levels of FLCA. Yet, this association could entirely change a few seconds later. This could actually confirm the independence of FLE and FLCA dimensions. Similarly, Li et al. (2018) observed that FLE and FLCA both fluctuated severely, second by second, during Anglo-Canadian learners' production of speech in French as their L2.

In a similar attempt, Elahi Shirvan and Talebzadeh (2018a) employed an idiodynamic method to see how enjoyment might fluctuate in conversations. To this aim, their research participants were provided with seven various topics graded in difficulty level. They were supposed to talk about these topics. The findings revealed intra- and inter-individual variation of enjoyment during the target conversations. Moreover, the participants talked about each topic and reported different levels of enjoyment. For example, while one topic may create a sense of enjoyment for one learner, the same topic might be less enjoyable for another learner.

Elahi Shirvan and Talebzadeh (2018b) also employed the idiodynamic method in another work of research on the non-verbal aspects of enjoyment. The aim was to see whether the possibility of enjoyment transfer in class ecology was true or not. This research revealed that on certain occasions enjoyment existed but was not perceivable, and, on other occasions, the non-verbal communication cues revealed enjoyment.

Still influenced by emotion contagion in psychology in another study, Talebzadeh et al. (2019) employed the idiodynamic method to investigate the dynamics and mechanisms of enjoyment contagion in five dyadic teacher–student interactions in a foreign language-learning course. This research concluded that automatic mimicry is the primary mechanism of enjoyment contagion involved in these interactions. Mimicry consists of facial expressions and gestures/postures including nodding, laughter, smiling, vocalic expressions, or leaning forward.

With a mixed-methods approach, Dewaele and MacIntyre (2019) looked into how learner-external and learner-internal variables affected FLE. Their research indicated that teacher-centered variables including teacher friendliness, attitudes toward teachers, and joking predicted FLE significantly.

Recently, De Ruiter et al. (2019) used Kohonen's Self-Organizing technique to investigate the intra-individual FLE and FLCA process along with teachers' degree of emotional support within the interactions of a teacher and two of his students in two pairs. This research revealed recurrent signs of teacher support as well as student anxiety and enjoyment. These signs would point to the self-organizing state of teacher–student interactions and the perception of students and teachers as dynamic systems in general. More recently, Elahi Shirvan and Talebzadeh (2020) applied a retrodictive qualitative modeling approach to explore the FLE signature dynamics. After identifying the learner archetypes of FLE through focus-group interviews with teachers and enquiring about their students' enjoyment experiences, these researchers held in-depth interviews with a prototypical student from each archetype so as to unravel the trends and trajectories inducing a specific outcome or attractor state by tracking and investigating the dynamic events backward. The findings of this research added new insights to the dynamic trends that led to different FLE archetypes along with the adoptability of RQM to studies on enjoyment dynamics.

In the light of the aforementioned body of research, the trend seems to be moving toward more robustness realized through the development of psychometrically appropriate tools and application of triangulation to find more details of the dynamic aspect of FLE. The dominance of cross-sectional studies in the field reveals the need for more longitudinal designs and real-time exploration of FLE so as to make more comprehensive conclusions (Dewaele et al., 2019a). Furthermore, the new research directions that have appeared in the last few years have made it essential to evaluate the intrapersonal changes of students' emotions as they actually emerge to better understand the dynamics and nuances of the complex nature of FLE system (De Ruiter et al., 2019). A salient property of this complex system is the momentary changes to L2 learner's systems *in situ*. There are multiple methods being developed in the psychology of language learning to investigate this complex system. The focus in the majority of these new approaches has been on how the fluctuation within a univariate time series is mapped in time. For instance, the idiodynamic method that consists of self-ratings of fluctuations in such constructs as emotions

(MacIntyre and Legatto, 2011) provides researchers with a chance to track momentary fluctuations of univariate time series. The retrodictive qualitative method identifies the end states and moves backward to see how developmental trajectories produce particular effects (Dörnyei, 2014).

Such methods are truly useful for investigating the development or variability of a unique construct such as FLE. Nevertheless, as there are different interacting components in the FLE system that define its dynamicity, certain methods are required that tap on the relationship between these components while they are emerging over time; a methodological tool is required to capture fluctuations in multivariate data. In spite of the methodological advancements observed in recent DST research, innovative approaches are thus still required to capture the detailed determining moments of change in an entire system as shown here with FLE. Such methods should ideally be capable of capturing how a phenomenon like FLE fluctuates and makes progress through time rather than as a static series of an 'ordinary' experience often gained in traditional single-shot measures. Ecological momentary assessment can be a typical innovative approach.

Ecological Momentary Assessment

Ecological momentary assessment can be traced back to the experience sampling method (Csikszentmihalyi et al., 1977; Larson and Csikszentmihalyi, 1983), which aims to unravel phenomena as they occur in ordinary contexts of life (Stone et al., 1999). The designers maintained that the ecological value of physical, mental, social, or behavioral events that happen naturally would be significantly improved via data collection methods that obtain real-time information from actual contexts. Similarly, to realize the subjective and tentative nature of events as situated, the developers maintained that it was necessary for researchers to employ a method that could frequently assess the data through time. The three main properties of EMA are (1) assessments made as they occur in the field, (2) assessments involving many repeated observations, and (3) the required data assessed at a moment in time (Stone et al., 1999).

It is worth noting that the time-sampling approach in EMA can be associated with the concept of chronosystem in Bronfenbrenner's (1989) nested ecosystems model. It refers to the changes occurring for an individual over his or her lifetime under the influence of events and experiences (Bronfenbrenner, 1989). Given this, in this study, we have regarded time as an important ecological setting in the emergence of language learners' enjoyment. Additionally, ecological factors in this study refer to the factors based on which shifts of enjoyment take place in different timescales of their language learning.

Ecological momentary assessment-designed studies enjoy certain distinctive benefits that are largely absent in traditional, retrospective approaches. First of all, EMA studies enjoy a better resistance to pinpoint inaccuracies found in global self-reports that are used in such methods as retrodictive qualitative modeling. Many researchers observed that individuals either tend to dramatically underestimate or overestimate prior emotions, cognitions, and behaviors recalled through long periods of time (e.g., Thomas and Diener, 1990; Robinson and Clore, 2002). Furthermore, as documented, summaries of recollection are usually distorted by several reporting conditions during measurement, including a current mood state, a prevalent and salient event, or the most recent event (Brief et al., 1995). Collecting momentary data frequently, close in time to an actual experience, renders EMA an ideal approach to address the biases and distortions associated with retrospective reports (Smyth and Stone, 2003).

Second, EMA significantly increases the chance to trace meaningful intrapersonal variability that is generally lost in aggregate-level data (Beal and Weiss, 2003). Put it simply, EMA helps researchers to see how phenomena change across time rather than a fixed ordering of "typical" experience often obtained from nomothetic single shot measures.

Third, EMA helps researchers to scrutinize the contextual complexities as well as contingencies of everyday psychological constructs including emotions. The use of EMA has allowed researchers to show that immediate incidences of negative and positive emotions are the result of changing proximal stimuli (Zohar et al., 2003; Fisher and Noble, 2004), personality traits (Grandey et al., 2002), and perceptions of job properties (Fisher, 2002). Evidently, the experiential focus of EMA helps researchers to carefully explore and validate the dynamic processes of real emotional states from an ecological perspective, and it contributes to theoretical concepts (Scollon et al., 2003).

Considering the lack of studies using EMA to explore the dynamics of FLE in the literature of this construct, in this study, we maintain that the frequent assessment of the data through time can contribute to our understanding of the subjective nature of the participants' moments of feeling enjoyment during different ecological timescales.

MATERIALS AND METHODS

Participants and Context

This study was conducted in an intermediate course of English as a foreign language (EFL) in a private language institute in Mashhad, Iran. One of the problems with EMA is the considerable time commitment that it involves from the participants. Therefore, it is necessary to work with volunteer students in the class who could provide us with accurate data on the four timescales considered in this study.

In the class, we provided the students with a written statement of the aims of the study and the procedures of data collection. Two female students volunteered to participate in this study. They provided us with written consent for their volunteer participation in the project and they were told that they could leave the project whenever they were not at ease in any stage of the project. We met both at the end of one of the classroom sessions and provided them with more details regarding to their participation in the research project. We analyzed the data of two comparable participants. Both were from the same cultural and educational backgrounds (both Iranian) and of the same gender and level of competence (intermediate level) based on the Oxford Placement Test. They were both assigned pseudonyms (Sara and

Sanaz) for ethical reasons. When the study was conducted, Sara was 21 years old and Sanaz was 20 years old.

Data Collection

In this study, we applied a time-based sampling scheme of ecological momentary analysis. Inspired by Mercer's (2015) study on the exploration of the dynamics of self, we generated the EMA data in this study to explore the participants' moments of experiencing enjoyment on four timescales including seconds, minutes, weeks, and months using four different forms of data collection. To do this, we applied open-ended interviews across months, diaries across weeks, enjoy-meters across minutes, and the idiodynamic approach across seconds (see **Table 1**).

The micro-level form of data collection (Level 1) encompassed the application of the idiodynamic method (MacIntyre and Legatto, 2011). We invited the two participants to meet us out of their class time about the middle of the course. We asked them to do two different speaking tasks that took about 15 min. In the first task, they were supposed to introduce themselves to each other and ask each other about the recent activities they had enjoyed. We asked them to start with this task because its personal nature could make them feel at ease while they intended to know each other. They were supposed to carry out a more challenging activity in the second task that required them to argue about this prompt: "What impact has industrial changes in your country had on natural places?" We video recorded them while they worked on these speaking tasks. Having used the idiodynamic software program (Anion Variable Tester V2; MacIntyre and Legatto, 2011), we showed the recorded video of each participant's involvement in the tasks to her so that she could watch and remember her moments of feeling enjoyment during the tasks. Next, we asked them to watch their recorded videos for a second time to rate their level of enjoyment during the two tasks via the use of a computer mouse on a scale ranging from −5 to +5. The software program then generated an output graph, in Excel format, of the fluctuations of both participants' enjoyment level. Having considered this output graph as the guide for the interviews, we conducted semi-structured interview with each learner to gain deep information about the rises or falls in their enjoyment moments while they were completing the tasks.

We collected in-class enjoyment thermometer (enjoymeter) readings as our next layer of data (Level 2) across minutes in which the participants were asked to rate how much enjoyment they felt while using their English in the class at 5-min intervals. The enjoymeter was developed based on the longitudinal classroom studies undertaken by Gardner et al. (2004) and Waninge et al. (2014) in which an anxometer and motometer were used, respectively. To start with, we handed an A4 size sheet of paper with 20 enjoymeters to each participant. The enjoymeters were in the form of thermometer-shaped figures that ranged from 0, indicating the lowest enjoyment and 10 indicating the highest enjoyment points. We trained the participants in how to indicate their enjoyment level, which involved drawing a horizontal line on each enjoymeter every 5 min. We also audio-recorded each classroom session so that we could trace the fluctuations of each participant's moments of feeling enjoyment. The participants were required to complete the enjoymeters every 5 min and add any comments regarding the levels of their enjoyment as well as the underlying factors contributing to those levels. This was conducted in three separate lessons that were spaced 3 weeks apart. We should mention that we decided to collect the first session of the enjoymeters data in the fourth week of the course because the class was more settled.

We collected our next level of data (Level 3) in the form of weekly journal entries. To provide the participants with chances of reflection in their journals, we provided them with the following prompt: "You should write about your moments of feeling enjoyment linked with your experiences of English language learning during the course." They were not limited with any specific length. They both emailed us their written journals every week.

Finally, we collected a series of open-ended interviews as the macro-level (Level 4) in the participants' first language, Persian. These interviews were spaced at almost three equal points, at the start, middle, and at the end of the 16-week semester. Before conducting the first interview, we asked the participants to prepare a self-description narrative of their language learning experiences during the course, in Persian, which were used as the basis for our first interview along with open-ended questions that we asked them in order to gain a holistic view of the participants' moments of feeling enjoyment during the course.

TABLE 1 | Matrix of data collection.

Level of FLE system	Timescale	Data collection tool	Spacing of data collection
Micro-level FLE (Level 1)	Second	Idiodynamic method	Every second
In-class FLE (Level 2)	Minute	Enjoymeter	Every 5 min within one session
Weekly FLE (Level 3)	Week	Journal	Every week
Macro level of FLE (Level 4)	Month	Interviews	6 weeks apart

Data Analysis

We transcribed all of the collected data via MAXQDA software program. Then, through qualitative analysis, we coded all the transcribed data line-by-line so that we could take into account all aspects of the collected data in terms of any unexpected points in the analysis. Having conducted the rounds of coding, we combined or expanded the extracted codes until well-established categories emerged in terms of saturation level. The first and the second authors in this study did the coding process separately. That is, they both checked the extracted themes with each other, and they discussed any points of disagreement with each other to reach consensus on them. The inter-coder agreement was 90%, which is equal to the threshold suggested by Miles and Huberman (1994). Then, we examined the codes and categories with complex dynamic systems theory in mind and with a focus on the moment-to-moment changes of both participants' enjoyment systems *in situ*. It should be noted that we did this process for each participant separately. We focused on each

individual and developed her profile before moving on to the next. Finally, having analyzed the patterns of enjoyment in each level of data for each participant, we examined the possible interactions across each level of data for both participants.

Sara's Case

Sara's Idiodynamic Data (Level 1)

Sara's idiodynamic data were a combination of both moments of experiencing high and low levels of enjoyment (see **Figure 1**). Consistent with Dewaele and MacIntyre's (2019) categorization of causes of emotions, our specific focus in this analysis was on the notion of different sources of FLE, including those associated with self, self–peer, self–teacher, self–peers–teacher (Dewaele and MacIntyre, 2019), as well as *FLE-Private* and *FLE-Social* dimensions (Dewaele and MacIntyre, 2016).

For Sara, factors contributing to her moments of low enjoyment in her idiodynamic data were revealed to be mainly bound to the *FLE-Private* dimension. More specifically, she went through moments of enjoyment under the factors related to her "self." As seen in **Figure 1**, she went through low moments of enjoyment in the primary seconds of her interaction with Sanaz. Regarding these moments, she pointed out the following:

> I was highly concerned about my grammar and structure, so I didn't enjoy the primary seconds of the interaction. I know it was supposed to be a greeting type of conversation, but I was deep in my own thoughts on what I was to talk and how I would structure it.

As seen in **Figure 1**, in the middle of her interaction, she had some high moments of enjoyment. The emergence of these moments was still "self" bounded. With respect to these moments she reported the following:

> Having gained the confidence in my speech I started enjoying the conversation as I found it pleasant. At the beginning of the second task, I had to think about the topic—that's why my enjoyment was low in those seconds. Later, I liked the challenge in the second task. I mean at first it seemed difficult for me to deal with the idea of industrial effects on nature but later when I came up with the concept map and the right wording in my mind, I was so much engaged in the topic. It was like a joyful ride.

About her moments of low enjoyment in the final second of the interaction, she pointed to her being fatigued at the end of the interaction, as she was involved in the structuring of supporting ideas for the topics. This shows that throughout her interaction with Sanaz, almost all the dynamics of her moments of enjoyment were susceptible to a private zone of enjoyment with her "self" as the contributing ecological factor to these dynamic moments.

Sara's Enjoymeters (Level 2)

Sara's enjoymeters indicated moments of high enjoyment during her in-class tasks as her range of enjoyment fluctuated between 1 and 5 in every 5-min period of the class activities. It should be noted that two of her single ratings were zero. As seen in **Figure 2**, none of her ratings were on the highest enjoyment extreme at 10. Unlike her idiodynamic, data which showed the contribution of only her "self" to her dynamic moments of enjoyment, her enjoymeter data indicated that other social factors could also pave the way for her enjoyment moments. That is, the traces of both *FLE-Private* and *FLE-Social* such as those related to "self," "self–teacher," "self–peers," as well as "self–peers–teacher" could be seen in Sara's enjoymeter data.

First of all, as it was dominant in her idiodynamic data, many episodes of her high enjoyment moments were also related to instances of her *FLE-Private*, such as her sense of creativity during the class activities. This sense was so enjoyable for her because she could make links between her background knowledge and the activities of the new session. For example, in the seventh session of the course (the second enjoymeter collection session), she experienced moments of high enjoyment in almost all the moments of the classroom because she could feel her creative power in the class. Regarding these moments, she explained the following:

> Today, for the reading activity, we were supposed to read the first page of a short story and then predict the content of the next page. These moments were so enjoyable for me because I could make some good links with my background information of the movies I had watched and lots of stories I had read. Making a concept map of my thoughts on the page gave me a pleasant feeling as well. This joy was even higher when I could imagine myself as the author of the story thinking about how to go on with the rest of the story. This gave me food for thought.

As factors associated with "self–peers–teachers" contributing to her moments of feeling enjoyment, she referred to interacting with the same students and the teacher every week and having a group discussion with the peers.

The role of her teacher was noticeable in her moments of enjoyment. Some "self–teacher" related factors contributing to these moments were described:

(a) A positive teacher

According to Sara's enjoymeter descriptions, her teacher's praise, her personal attention, her recognition of the students' efforts and encouragement provided enjoyable experiences for the students in almost all the moments of the three classroom sessions.

(b) Using humor in the class

Her moments of enjoyment were due to her teacher's use of humor in the beginning of the seventh session and the middle of the 10th session of the course (the second and the third sessions of the enjoymeter data).

(c) Giving positive feedback

She appreciated her teacher's constant use of appropriate feedback to the students in the class. Regarding the middle of the fourth session of the course (the first session of enjoymeter data), she pointed out "I felt very happy whenever I answered the teacher's questions correctly and; in turn, she appreciated my responses."

(d) Providing a pleasant and supportive atmosphere

She appreciated her teacher's active role in making the class intriguing and engaging for her. She reported how well she could concentrate on the challenging activities in the class via the support of her teacher in helping her to engage with these activities.

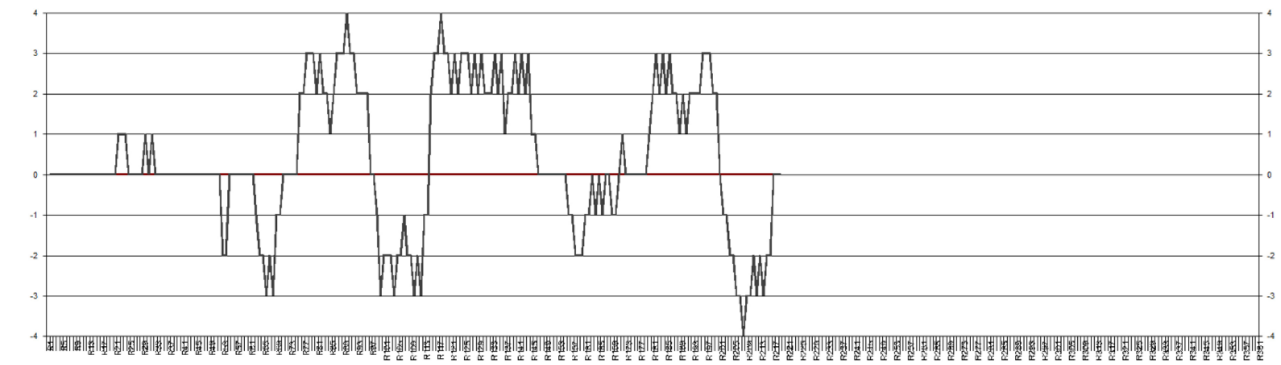

FIGURE 1 | Sara's idiodynamic graph.

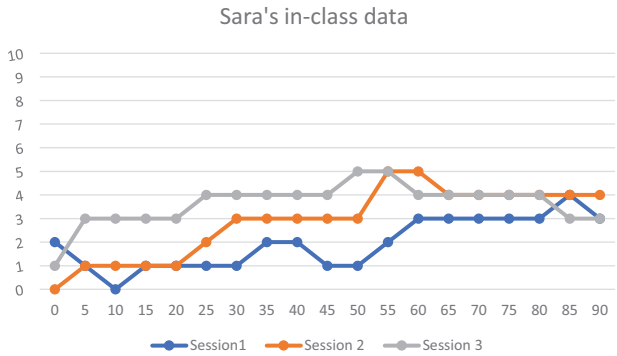

FIGURE 2 | Sara's in-class data (10 = high FLE; 0 = low FLE).

On the other hand, some moments of low enjoyment were noted in her enjoymeter descriptions due to the lack of affective support on the part of her classmates. For example, with regard to the latter moments of the 10th session of the course (the second session of enjoymeter data collection, she explained that "During the discussion phase, I was so excited to share my opinions with the rest of the class, enjoying these moments; once I could not find the word "equipment," and, instead, I used the Persian equivalent "tajhizat." But everyone started laughing at me and I felt so embarrassed. This reduced the level of joy I went through some moments before."

Sara's Weekly Journal Data (Level 3)

Sara's moments of enjoyment as reported in her weekly journals fluctuated each week, but, as is quite common with her idiodynamic and enjoymeter data, the ecological factors underpinning these weekly moments stemmed from a *FLE-Private* zone. During the course weeks, she was involved with her "self" concerns such as her speaking skills and her plans and strategies for learning English. Besides these "self" factors, like her in-class enjoyment moments, the "self–teacher" factors played a central role in the development of her *FLE-Social*.

During these weeks, she was involved with the ways she could improve her speaking skill. She referred to this in nine out of her 15 journal entries, sometimes with frustration (e.g., Journal entry 1 or 5), rendering her experienced moments of high anxiety, and, on other occasions, with hope (e.g., Journal entry 6), making her feel high in enjoyment. In her very first journal entry, Sara wrote the following:

> In this course, I am so worried about my speaking skill. In the previous semesters we had few chances of improving our speaking sub-skills and, to be honest, I did not make that much effort. Now I feel very confused how I can improve my speaking skill. But I aimed to do my best on it. Being able to speak accurately and fluently is always a good vision for me in this course.

Throughout all of her journal and interview data, Sara repeatedly put emphasis on her belief in the development of this vision, as she pointed out above, and she was relatively positive that she could go through moments of enjoyment and improve her speaking skill as long as she had that vision in her mind. In her fourth journal entry, she wrote that "Whenever I see myself close to this vision of mine as a fluent speaker in the weekly sessions, I enjoy it more, but whenever I see it rather implausible, I go through moments of low enjoyment during the week."

Also, she was involved with strategies, planning, and making to-do lists for the improvement of her English. For her, it was important to be organized and have a clear plan to be prepared for each weekly session. In her seventh journal entry, she noted the following:

> To achieve in doing the assignments of this course, I have tried to have a good plan and follow the strategies, which have been introduced in the course books and by the teacher. I think this plan has made the process of language learning so enjoyable for me because I can concentrate well on what I do. Definitely, whenever I felt this sense of achievement during the week, I felt moments of high enjoyment. Sometimes feeling anxious that I might be behind the schedule, I went through moments of low enjoyment.

These considerable moments of anxiety and ambiguity could be seen in her journals underlying her unstable moments of experiencing enjoyment. She repeatedly expressed this uncertainty at various points. For example, in Week 6, before her oral presentation, she wrote the following:

> This week, I have a presentation in English in front of all class. This is very stressful. For me, lecturing even in Persian is very difficult let alone speaking in English. I am thinking of the things that might happen during my lecture. . . What if my classmates feel my anxiety? What if I have wrong pronunciation? What if I make grammatical mistakes or forget words? It would be super embarrassing.

Then she switched to her plans, strategies, and made lists of what to do:

> I like doing presentation when I'm prepared for it completely. So, I need some strategies to stick to in order to have a nice presentation. If I could prepare for the lecture, I can deeply enjoy it.

Similarly, in Week 9, directly before her speaking exam, a sharp decrease in her moments of enjoyment was observed. This was because she was anxious that she might not have a satisfactory performance in the exam.

Experiencing *FLE-Social* as reflected in her journal data, she referred to the positive role of her teacher in the emergence of her high-enjoyment moments. For example, in Week 7, she reported a serious moment in which the teacher gave her some advice on strategies she could use to improve her speaking skills. Afterward, she felt more positive and motivated. She once again wrote optimistically about a plan to work with a new strategy that, she hoped, would improve her speaking as well as receiving positive feedback from her teacher.

Likewise, the contribution of the teacher to Sara's moments of enjoyment was tangible in her tenth week journal entry concerning her listening exam. At this point, she wrote the following:

> Having talked to the teacher before the exam, everything went well, and I felt very relieved. I am enjoying my English now, as all the practices are worth all the efforts I have made up to now. This joy of leaning makes me think of the next stages of my learning English with more attention.

Sara's Macro-Level Interview Data (Level 4)

In alignment with her experiences of enjoyment moments in the other ecological timescales, Sara's interview data revealed the dominance of her private FLE. Her interview data indicated that her moments of enjoyment pivoted on her "self" concerns with her sense of progress in the course and her sense of ambiguity about her skills. In general, she felt that her moments of feeling enjoyment generally fluctuated over the semester. Regarding this fluctuation, in her end of the course interview she explained the following:

> I can say that my moments of feeling enjoyment were not stable during the semester. This can be due to several factors, like the doubts I had about my own skills in the middle of the course, my future image of learning English, as well as my sense of satisfaction of, and pride in, of my efforts and the strategies I used to improve my English.

Despite the fluctuation observed in Sara's moments of enjoyment during the course, the findings of the three interview sessions across the semester indicated that Sara's trajectories of enjoyment moments had an increasing trend during the semester.

A noticeable feature of Sara's data on the macro-level was her inclination to discuss her level of enjoyment with regard to specific aspects of English language such as listening and speaking. Much of the interview data reflected her journal entries regarding her speaking skills. She repeatedly noted how this area was new to her but how, with appropriate practice and strategies and teacher's support, she could enjoy her improvement in her skills during the course. At the middle of the course interview, she felt a sense of progress in this area that has an important effect on her FLE.

It should be noted that these "self" concerns in Sara were intertwined with a "self–peer" factor that influenced the fluctuations in her moments of enjoyment. Mainly concerned with her speaking skill, in her first interview session, she referred to moments of low enjoyment by expressing how uncertain she felt about her speaking ability due to her peers' judgment. She noted the following:

> When speaking in the class, sometimes I was unsure of what I was saying. Then I noticed that I had some mistakes in my grammar; then I feel embarrassed in front of my classmates, and I could not enjoy the class.
>
> Regarding her listening skills, in the first interview session, she also said the following:
>
> At this moment, I enjoy my listening more than my speaking because I see less judgment on the part of my classmates. My good knowledge of vocabulary makes the meaning of the listening excerpts in the listening assignments so clear for. An enjoyable feeling comes to me.

The traces of "self–teacher" and "self–peer" teacher were found to be contributing to Sara's high enjoyment at the end of the course. In her final interview, at the end of the course, she expressed more enjoyment as felt more confident in her speaking due to her teachers' and classmates' positive feedback and the supportive atmosphere of the classroom. She pointed out the following:

> Thanks to the teachers' affective support and the change in the atmosphere of the class in terms of positive feedback from my classmates as well as my own efforts in speaking assignments during the course, I am experiencing more moments of enjoyment than before because I feel more comfortable in talking and more fluent in speaking English now.

Sanaz's Case

Sanaz's Idiodynamic Data (Level 1)

Like Sara, Sanaz's micro-level data is characterized by both high and low moments of feeling enjoyment, but she went through higher enjoyment moments while doing the tasks. As seen in **Figure 3**, her data did not vary within the full range of the scale, never going below –2, but extended up to +5 on the high enjoyment band following the overall positive trajectory of her enjoyment moments in her self-ratings. Also, an especially interesting feature of her idiodynamic data is that she changed frequently between the 0 and +5 bands, showing noticeable dynamism across the band of high enjoyment.

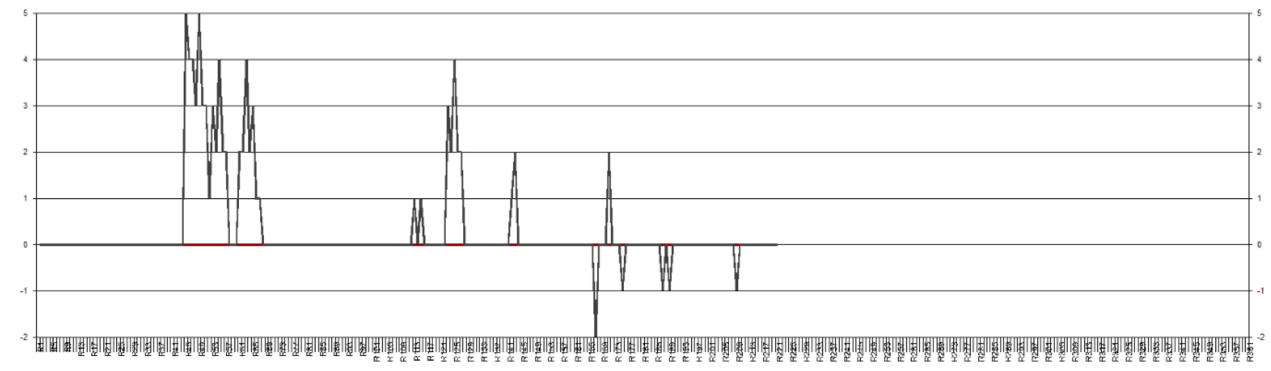

FIGURE 3 | Sanaz's idiodynamic graph.

Quite different from the "self" oriented factors underlying Sara's moments of enjoyment in her idiodynamic data, Sanaz's moments of enjoyment were rooted in her "self–peer." For instance, a pivotal factor contributing to Sanaz's moments of enjoyment in her idiodynamic data was the enjoyment contagion emerging during her interaction with Sara. Regarding this contagion, she explained the following:

> My moments of feeling enjoyment were all dependent on what feelings I could get from Sara. In the primary seconds of our interaction, I had no specific feeling because she seemed to be in herself, and didn't look at me. Later, when she started to talk enthusiastically about the topic, I felt the joy in our interaction.

As seen in **Figure 3**, she went through some ups and downs in her moments of enjoyment in the high enjoyment band of her idiodynamic graph. With respect to these moments, she said the following:

> These were the seconds when I had my preparation time to talk on the second topic; I expected Sara to keep her eye contact with me, but she was involved in her own thoughts, so I felt some drops in my enjoyment in these moments.

We should note that despite the differences in the sources of the ecological factors contributing to both participants' moments of enjoyment, the *FLE-Private* was revealed to be a common domain of enjoyment for both. Like Sara, Sanaz went through a falling enjoyment trajectory at the end of her interaction. Trying not to be embarrassed before Sara, some traces of "self" related factors were revealed in her dynamic trajectory of enjoyment, as she was mentally loaded with the structure and wording of her sentences. She mentioned the following:

> In the final seconds of our conversation, seeing Sara talking so passionately about the second topic, I didn't want to feel embarrassed in front of her by making erroneous structures since the topic was a bit demanding. So, for some moments, I was in my own thoughts choosing the right words and grammar. This made me away from the joyful moments of the previous seconds.

Sanaz's In-Class Data (Level 2)

Sanaz's enjoymeters dynamics also represented more variation in her enjoyment than Sara's as it stretched across their full range. As seen in **Figure 4**, Sanaz's trajectories of enjoyment in the first and the second sessions of the enjoyment data collection phase indicate moments of higher enjoyment than her trajectory in the third session. Quite like her idiodynamic data, her enjoymeter data highlighted the dominance of her *FLE-Social* in the dynamics of her in-class moments of enjoyment.

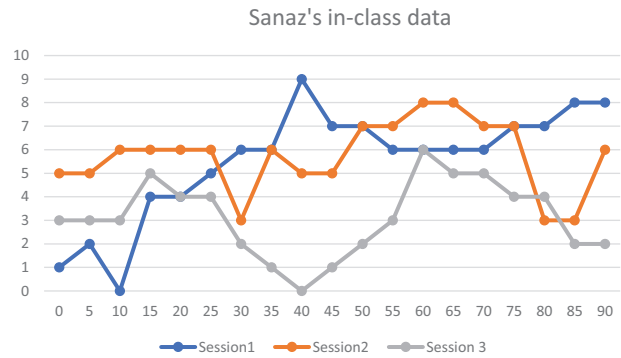

FIGURE 4 | Sanaz's in-class data (10 = high FLE; 0 = low FLE).

Among the factors associated with Sanaz' *FLE-Social*, like what Sara experienced, the contributing role of the teacher to Sanaz's enjoyment moments was considerable. For instance, in her enjoymeters descriptions related to her middle-class moments of the first and second sessions of the enjoymeters data collection, she referred to the encouraging role of her teacher in the development of her classroom performance. She noted that her moments of high enjoyment in the first session, especially in the middle of the session, were shaped by her teacher's constant monitoring as well all as affective support of her and the other students in the class in doing the classroom activities.

Furthermore, like what was revealed in her idiodynamic data, another contributing factor to her moments of high enjoyment in the middle of the second session of enjoymeter data (the seventh session) was her frequent use of English with her peers. Sanaz regarded these moments as enjoyable due to her opportunities for classroom communication with her peers. She stated the following:

> Generally, I enjoyed the class; there was a friendly atmosphere. My classmates were all open up. My classmates' lecture was so funny. We had a nice group discussion about the Yalda night.

Susceptible to her peers' judgment of her performance in the third session of the enjoymeters data collection phase (the 10th session of course), she went through moments of lower enjoyment than the previous two sessions. With respect to the moments, she maintained the following:

> Today I was not that much ready for the classroom assignments. I was worried that I would be embarrassed in front of my classmates in case of my weak performance in responding to the teachers' questions. I was deeply involved in these thoughts. So, in those moments in which I had a satisfactory performance, I felt that I could handle that session performance; so my enjoyment was high but in some moments I was still not sure about my performance. So, my enjoyment fell and it was mainly in the middle of the session.

Also, the outside class experiences such as social relations were a salient factor in the low levels of Sanaz's enjoyment moments in the primary min of the second session of the enjoymeter data (the seventh session of the course). Regarding this, in her enjoymeter descriptions, she implied the following: "I had an argument with one of my best friends the day before. Considering this, in these moments I can't enjoy my moments in the class." This indicates that, despite the fact these experiences took place beyond the immediate setting of the classroom, they could overshadow the Sanaz's in-class enjoyment moments.

Sanaz's Weekly Journal Data (Level 3)

Consistent with the micro level and in-class timescale moments of enjoyment, Sanaz's journal entries revealed her moments of *FLE-Social* under the influence of "self–peer" and "self–teacher" factors and in particular enjoyment contagion.

One of the things that characterized her journal data was the importance that she assigned her classmates and her teacher when writing about her sense of enjoyment in terms of her social contact with her classmates. She referred to these issues in 10 out of 13 journal entries. Sanaz expressed this influence directly in journal entry 12: "All people influence me—they influence how I feel and how I evaluate my skills in general." This influence involved her classmates' and her teacher's feedback or opinion and social comparisons. For instance, the way her classmates felt in their classroom interactions or group work assignments contributed to her fluctuations in her sense of enjoyment. Regarding this, in her second journal entry, she noted that, "As long as my classmates feel positive in our group-work activities, I feel language learning can be an enjoyable process."

In her fifth journal entry, she pointed out the following:

> One of my group mates did not feel positive as I talked about the task to her because she was down; that made me feel down too. When I asked the reason for her low mood, she referred to an outside class accident for her.

Also, she highlighted the role of her teacher as a significant factor to her moments of feeling enjoyment. She referred to some factors such as the teacher's non-threatening techniques and her efforts in providing motivation building strategies as well as promoting cooperation among learners.

In her seventh journal entry, she said, "Having done the reading assignment this week, I received the teacher's positive feedback. This gave me a sense of pride, encouraging me to continue the other assignments with more focus." Moreover, in her ninth journal entry, she wrote the following:

> I really enjoyed my speaking when I saw the teacher's smile while I was not sure about the structure I used in my speaking. It reminded me of the teacher's statement in the previous session that what matters in the speaking time is our willingness to communicate and maintaining the flow of interaction.

On the other hand, like Sara's private experiences of enjoyment, Sanaz went through some moments of private FLE due to a "self-"oriented factor. The dynamics of some of her enjoyment moments during each week were quite bound to her involvement with her past experiences of learning English. That is, her past experiences seemed to represent a heavy weight for her present feelings and she frequently compared her experiences in the present to her past. This, present in eight of the weekly journal entries, often gave her a positive sense of progress. For instance, she remarked, "Seeing my progress in English in this semester is so clear for me. Once I found learning English difficult, but it sounds easier and more enjoyable for me now" (Journal entry 8). Also, in her fourth journal entry, she wrote the following:

> Compared to my past learning English, my attitude to this language has changed as well. Previously, I thought that I should try speaking or writing in English whenever I'm fully prepared for them, which made learning English stressful. Now, I've acquired this attitude that full mastery of structure and vocabulary is not needed to start a communication, but they emerge within the classroom communication.

Sanaz's Macro-Level Interview Data (Level 4)

The moments of experiencing *FLE-Social* were notable in Sanaz's interview data. One particularly interesting aspect, notable across the three interview sessions, was related to her dynamics of enjoyment moments with respect to the teacher's and her peers' roles, which fluctuated from interview to interview.

In her first interview session she said the following:

> The teacher and the students in the class definitely play a pivotal role in how I might feel in the course. I know how I am dependent on their feelings. Once I felt the teacher was not satisfied with my writing assignment, it came to me that writing in English might not be as enjoyable as the other skills like reading and speaking.

The influence of the teacher in her feelings was also tangible in her second session interview:

> I noticed that that writing in English can be as enjoyable as reading, and there is no difference in enjoyment level of the different skills, and I owe these moments of my enjoyment in doing writing assignments to my teacher who appreciated my writing performance.

Considering her overall enjoyment moments in the course, in her third interview she said the following:

Thanks to the teacher, my classmates' overall attitude toward each other's classroom activities was supportive and positive, which rendered the atmosphere of the class so enjoyable for me.

Like what Sara experienced as *FLE-Private*, the "self-"oriented factors of enjoyment were evident in her interview data. For example, she perceived her high enjoyment moments associated to her sense of self-satisfaction in her exam achievements. Regarding these post-exam moments of enjoyment, she said, "Success in exams of the course is enjoyable. It reminds me of my progress and change in my English ability."

Furthermore, the interview data showed that Sanaz's moments of enjoyment were not limited to her performance in the assignments of the course, but she went through further moments of enjoyment when she noticed how well she could take advantage of her English competence beyond the boundaries of her class assignments. Regarding this, in her third interview session she noted the following:

> The practice of the videos with the video books in the course helped me try watching some movies at home by myself, an experience that I didn't dare to do before but I found so enjoyable. I even write down the summaries of some of these movies and share it with my friends on social media.

DISCUSSION

The participants' moments of experiencing enjoyment can be explained via the principles of broaden-and-build theory as a main theory in positive psychology (Fredrickson, 2001, 2013). For instance, as seen in her micro-level timescale data, Sara embraced the challenges in her tasks and the positive sense she felt as she was coping with these challenges provided her with the psychological base and sense of flow to accomplish the tasks. In other words, despite the fact that the challenges in the tasks seemed difficult for her when she started doing them, she did not quit the tasks; instead, her moments of going through enjoyment during the tasks extended her thought-action repertoires to accomplish them.

Moreover, as seen in her weekly journal data, her moments of enjoyment during the course are associated with her expansion of thought–action repertoires that are in line with previous research (Piechurska-Kuciel, 2017); these support the utilization of different problem solving techniques. At the beginning of the course, she was worried about her proficiency in the speaking activities, but her positive sense of being engaged in these activities helped her put more effort into her study in the course to improve her English proficiency. Besides, her belief in the construction of enjoyable moments in her speaking performance, as long as she worked hard, enabled her to enhance her mental resources by using appropriate strategies and plans to improve her speaking skill during the course. Importantly, Seligman and Csikszentmihalyi (2000) notion of enjoyment as a sense of novelty and source of personal development underpinned Sara's moments of enjoyment. As seen in her enjoymeter data, the use of novel and various materials in the seventh session of the course enhanced her personal development and resulted in a sense of enjoyment for her.

On the other hand, as seen in Sanaz's enjoymeter data, her moments of feeling enjoyment in the middle of the second session were intertwined with her construction of the social resources contributing to the establishment of a strong bond with her classmates. That is, via her socialization with her peers as social resources she experienced enjoyment moments in that session of the course, and this sense contributed to expanding her social bond with peers as well. Furthermore, Sanaz's macro level timescale data indicated that she learned to expand her moments of enjoyment beyond those associated with her satisfaction in her exams. In fact, her moments of positive emotions during the exams enabled her to construct an intellectual base for her continuous willingness to use English by realizing the usefulness of English beyond her performance in the exams.

In addition, in alignment with Dewaele and Alfawzan (2018), language learners' feelings toward each other played a pivotal role in the dynamics of moments of enjoyment. For instance, as indicated in Sanaz's enjoymeters as well as her weekly journals, the emergence of her moments of enjoyment was highly dependent on her classmates' affective approach toward her in the class. Their positive and negative feelings were reciprocated by her and, thus, made her experience both high and low enjoyment. This is what Elahi Shirvan et al. (2019) regarded as FLE contagion. Furthermore, quite consistent with the strong bond between the feelings of enjoyment and anxiety in learning a foreign language (Dewaele and MacIntyre, 2016, 2019; Elahi Shirvan and Talebzadeh, 2020), the findings indicated that learners' related factors shaped their moments of high anxiety and, thus, low enjoyment, while teachers' related factors provided them with high-enjoyment moments. In other words, when the participants were in their own "self" thoughts with regard to the choice of the right words and structure or when they felt anxious not to be embarrassed in front of their peers, they went through low-enjoyment moments. On the other hand, whenever they received their teacher's support and positive feedback, they experienced high-enjoyment moments.

Unique Ecological Moments of Enjoyment

In agreement with the previous research (Dewaele and Dewaele, 2017; Elahi Shirvan and Taherian, 2018; Elahi Shirvan and Talebzadeh, 2018a,b), all levels of timescale data showed that both participants' moments of enjoyment during the course were heterogeneous. That is, they experienced both moments of high and low enjoyment. However, both participants' sets of timescale data differ in content and dynamics influenced by ecological factors ranging from micro to macro level. Such divergences show the idiosyncrasies of individuals, the feelings they express and the latent complexity lying in each participant's time of enjoyment, which in line with Lowie and Verspoor (2019), indicates that language learners are not ergodic ensembles. Three main differences can be seen in both sets of data: (1) differences in content and focus of FLE system; (2) differences in terms of the drivers of change in each learner's moments of enjoyment; and (3) differences in numbers, the types and forms of dynamics.

Differences in Content and Focus of the FLE System

Both learners differed strongly on the different timescales of FLE in terms of the content and focus of what they reported, but the more micro-level enjoyment moments have a more distinctive scope. Indeed, Sanaz's content and focus of her dynamic system of enjoyment reflect the more social dimension of FLE (Dewaele and MacIntyre, 2016) such as her shared opinions and ideas with her interlocutors, classroom laugher, and pleasant relationships inside and outside of the class. In contrast, Sara's FLE-system focus reflected the private dimension of FLE by experiencing joy when she felt pride, fun, or a sense of progress during the course.

At the micro level, the two participants' trajectories of enjoyment could be divided into two dimensions of *FLE-Private* and *FLE-Social*. Sara was mainly involved with her "self" concerns of finding the right wording and structure in her conversation while Sanaz was heavily dependent on how Sara felt during the interaction. Despite the dominance of these two patterns of enjoyment moments of both participants in the other timescales, similarities were revealed between their moments of enjoyment. For instance, at the micro level, while keeping her eyes on Sara's emotions, Sanaz in some moments felt less enjoyment than at other moments due to her mental loading of choosing the right words for the second topic that seemed more demanding for her.

Also, within the situated in-class time setting and weekly classroom sessions, while both participants went through moments of different, social vs. private, dimensions of enjoyment, their patterns of enjoyment emerged in some moments from a common source. For instance, the "self–teacher" factor was a common factor underpinning both Sara's and Sanaz's moments of enjoyment in these timescales.

At the macro level, Sanaz was more holistic while elaborating on her time of enjoyment and referred to her FLE on a broader social scope. Experiencing both *FLE-Social* and *FLE-Private*, she also made clear links between her moments of enjoyment under the influence of her teacher and her classmates, giving the impression of a more interactive system. In contrast, Sara expressed a tremendously more disintegrated, private FLE, primarily focusing on enjoyment to particular "self" concerns like the development of her speaking skill.

Differences in Terms of the Drivers of Change in Each Learner's System of Enjoyment Moments

Concerning what makes changes to each participant's system of enjoyment, different factors can be involved individually. This shows that the main factors and the primary causes of change in a person's FLE system cannot be regarded as universal, but they vary across individuals depending on their own unique characteristics. One such cause of change was the significant patterns among the systemic factors for each learner. For Sara, her moments of enjoyment were mainly driven by "self-"oriented ecological factors underpinning her *FLE-Private*. Furthermore, it was interesting that these "self-"oriented causes of change were not necessarily equal for each timescale of enjoyment. For instance, her mental involvement with the right wording and grammar was a constant "self-"oriented factor determining her moments of enjoyment, but the weight of this determining factor was overshadowed by other social factors like the positive influence of her teacher in the other timescales.

For Sanaz, the main drivers of change were clearly social and shaped by "self–peer," "self–teacher," and "self–peer–teacher" factors. These same drivers of change were apparent at different levels of her enjoyment system. In the idiodynamic data, for example, they are reflected in her strong focus on Sara's reactions and, in the interview and journal data, in her affective responses to her experiences with others both inside (e.g., teacher and peers) and outside (e.g., friends) the classroom.

Differences in Terms of Intra- and Inter-Variations of Enjoyment Moments

The findings of the study indicated that frequent assessment of the data through time could contribute to our understanding of the subjective nature of the participants' moments of feeling enjoyment as situated in different ecological timescales. As seen in the findings, each timescale provided its unique affordances to the dynamics of each participant's moments of enjoyment. For instance, for Sara, the underlying factors contributing to her moments of enjoyment were all bound to her "self" at the micro-level in terms of the seconds. However, in the in-class timescale, her moments of feeling enjoyment were shaped by the influence of social FLE factors associated with "self–teacher" and "self–peers–teacher." This means that, even for the same individual learners, the patterns of enjoyment might emerge differently under the influence of different factors at each ecological timescale. Also, each ecological timescale contributed to the inter-individual variation in moments of enjoyment. As seen in the findings, the micro level timescale shaped the emergence of two different patterns of enjoyment for the two participants. That is, for Sara, her moments of enjoyment in the micro timescale were mainly *FLE-Private,* but those of Sanaz were social FLE. These different patterns seemed to be dominant in the other timescales as well. However, it is worth noting that, despite the dominance of unique patterns of enjoyment in moments of each individual learner timescale, these patterns overlapped within the ecology of differing scales, rendering the two participants' experiences similar in moments of enjoyment. For instance, the role of the teacher was really important as an attractor in affording "self–teacher" moments of enjoyment for both Sara and Sanaz.

CONCLUSION

Following Dewaele and Li's (2020) recommendation for researchers to develop original methodological approaches to explore the dynamic nature of FLE, in this study, we aimed to apply a potentially rich methodological approach, EMA, to investigate the dynamics of two foreign language learners' moments of enjoyment. The results of this study indicated that the nature of each learner's enjoyment moments is unique to that individual, which is susceptible to the main ecological drivers

of change. On the other hand, the findings indicated that each ecological timescale contributes differently to the emergence of enjoyment patterns for each individual. Furthermore, despite the dominance of some unique patterns of enjoyment for each individual at different timescales, the two participants experienced similar patterns of enjoyment under the influence of the same ecological factors.

We hope that this study highlights the contribution of a complexity dynamic perspective to our insights into the dynamics of FLE in terms of its emergent dynamic patterns in different ecological timescales. The use of EMA in the exploration of the dynamics of FLE can be extended by future research via an event-based sampling scheme. However, we should note that understanding the dynamics of FLE in terms of its ecological temporal moments is still in its fledgling state. The exploration of these dynamics via EMA can shed lights on the situated nature of the FLE system. In general, building on the results of the current study and other related studies, we can gradually come up with a comprehensive model of FLE in terms of its dynamic nature. From a pedagogical perspective, the findings of this study indicate that even the same language learner might go through different levels of enjoyment in the different timescales of a course of language learning ranging from the micro scale of classroom interaction to the macro scale of the whole course. Teachers should notice that, despite the "self-"oriented determinants of their learners' enjoyment, they can play a central role in their learners' moments of high enjoyment. The importance of teachers cannot be underestimated, and their role increases through the creation of a positive and supportive atmosphere in their classes. On the other hand, teachers should be aware of the fact that the proportion of their role in the enjoyment moments of their students in not necessarily the same. Teachers should be especially attentive to the "self" factors underlying the private enjoyment zone of their students.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by The Ethics Committee of the University of Bojnord. The patients/participants provided written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors have participated in the data collection of the study and data analysis, helped to draft the manuscript, and read and approved final manuscript.

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"Does My Teacher Believe I Can Improve?": The Role of Meta-Lay Theories in ESL Learners' Mindsets and Need Satisfaction

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Supporting students' growth mindsets (i.e., beliefs that ability can be improved) and basic psychological needs (i.e., needs for autonomy, competence, and relatedness) is an important way to sustain their motivation and resilience after challenging situations. We argue that others' feedback may support or undermine mindsets and need satisfaction simultaneously through students' meta-lay theories—that is, students' perceptions of whether others (in this case, their teacher) believe that ability can be improved or not. We conducted a randomized controlled experiment in which 180 university students who spoke English as their second language failed a difficult English test and received either feedback from a teacher who consoled their lack of ability, feedback that focused on improving ability, or no feedback. We found that compared to students receiving no feedback, students receiving ability-consoling feedback perceived that the teacher believed less in their potential and felt less competent, and students receiving improvement-oriented feedback perceived that the teacher believed more in their potential. Consequently, meta-lay theory ("the teacher believes I can change my ability") predicted students' endorsement of growth mindsets ("I believe I can improve") and need satisfaction (sense of competence, relatedness, and autonomy). In turn, mindsets and need satisfaction jointly predicted language confidence and beliefs about mistakes. Only need satisfaction, however, predicted task avoidance and duration of task engagement. Meta-lay theories underlie the processes through which feedback supports or undermines students' resilience after failure.

Keywords: meta-lay theory, self-determination, language mindsets, feedback, language learning, English as a second language

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INTRODUCTION

When learning and using a new language, learners often experience difficulties and setbacks, such as making mistakes in writing, miscommunicating with others, getting bad grades, and being ignored by interlocutors because of accents/lack of proficiency. These experiences can undermine learners' confidence to use the language and motivation to continue second language learning. Prior research indicates that supporting learners' growth mindsets (i.e., beliefs that ability can be improved; Dweck et al., 1995) and basic psychological needs (i.e., needs for autonomy, competence, and relatedness; Ryan and Deci, 2020) is an important way to help them sustain their motivation and resilience.

On the one hand, learners with growth (vs. fixed) mindsets tend to adopt mastery goals that focus on improvement, to seek challenges, and to react positively to language failures (Lou and Noels, 2016, 2020; Dweck and Yeager, 2019). On the other hand, learners who are satisfied with their psychological needs feel more intrinsically motivated, enjoy challenges more, and persist longer in language learning (Noels, 2001; Oga-Baldwin et al., 2017; Noels et al., 2019). Strategies for supporting learners' growth mindsets (Park et al., 2016) and need satisfaction (Jang et al., 2016) are important resources for instructional design and teaching practice that support learners' engaged and successful learning (see also Linnenbrink-Garcia et al., 2016).

Despite the importance of fostering growth mindsets and need satisfaction, little attention has been directed toward understanding how these two frameworks are related and whether the effects they each predict are shaped through a similar social–psychological mechanism. Mindset theory (MT) and research emphasize how learners develop fixed mindsets (i.e., beliefs that intelligence is immutable) and growth mindsets (i.e., beliefs that intelligence can be cultivated), as well as the consequences on motivation and achievement of holding different mindsets (Haimovitz and Dweck, 2017). On the other hand, self-determination theory (SDT) focuses on how learning conditions meet learners' basic psychological needs as well as how the need satisfaction predicts self-determined motivation, achievement, and well-being (Ryan and Deci, 2020). The connections between the two frameworks are important because each of these theories offers insights into motivation and self-regulation and because empirical research shows each of these theories predicts achievement and important psychological outcomes (Burnette et al., 2013; Ryan and Deci, 2020). One goal of this study is to integrate these frameworks by examining what types of feedback influence learners' growth mindsets and need satisfaction. We identify a key psychological factor—meta-lay theory (i.e., perceptions of whether others believe one's ability can be improved or not; Rattan et al., 2018), and we argue that the meta-lay theory shares a common mechanism through which teachers' supportive feedback influences learners' mindsets and need satisfaction. Another goal of this study is to examine whether growth mindsets and need satisfaction make distinct contributions to learners' responses to failure. Answering these questions can bridge the connections between MT and SDT, extending the understanding of motivational processes by integrating both theories. Such amalgamation can also offer insights for educational practice that supports learners' resilience and success.

Ability Feedback in Self-Determination Theory and Mindset Research: The Role of the Meta-Lay Theory

Teachers', parents', and peers' feedback can support learners' motivation and influence their reaction to failure situations, which in turn shapes learners' subsequent resilience (Schunk, 1983; Rattan et al., 2012; Ahn et al., 2016; Fong et al., 2019; Zhou et al., 2019). For example, feedback that encourages learners to improve their skills can buffer the negative effect of failures on perceived competence (see Fong et al., 2019, for a meta-analysis). The importance of growth-oriented feedback is emphasized in both SDT and MT. SDT conceives humans as growth-oriented organisms and emphasizes that nurturing conditions should meet people's fundamental needs for competence, relatedness, and autonomy (Deci and Ryan, 2000; Skinner et al., 2008; Jang et al., 2016; Vansteenkiste et al., 2018). If learners receive feedback and opportunities to experience growth, the learners feel more satisfied with their psychological needs and more self-determined to initiate learning (Noels, 2001; Skinner et al., 2008; Ruzek et al., 2016; Oga-Baldwin et al., 2017; Lou et al., 2018; Burns et al., 2019). On the other hand, MT emphasizes that beliefs about growth shape human development and that learning contexts and socialization can modify these basic beliefs about their ability (Rattan et al., 2012; Haimovitz and Dweck, 2017; Barger, 2019). Learners who receive encouragement for improvement (e.g., praise for effort rather than ability and encourage learners to make mistakes) are more likely to endorse growth mindsets about their ability, to see challenges and making mistakes as learning opportunities, and to put effort into overcoming challenges (Leith et al., 2014; Haimovitz and Dweck, 2017).

Both MT and SDT emphasize that feedback is an important interpersonal process that impacts motivation, but it is unclear whether there are shared social processes that influence both mindsets and need satisfaction. We propose that learners' meta-lay theories underlie the social–psychological processes through which learners perceive and react to others' feedback. Rattan et al. (2018) argued that "just as people have their own lay theories or mindsets, they may be aware that others hold such beliefs as well" (p. 55). Of particular relevance to learning are the beliefs that significant others hold about the learner. In this research, we use the term "meta-lay theories" to refer to learners' perceptions about whether the feedback providers believe the learners' ability is fixed (i.e., fixed meta-lay theories) and malleable (i.e., growth meta-lay theories). Specifically, through interactions with others (e.g., receiving feedback), learners may see themselves and develop their mindsets (Haimovitz and Dweck, 2017). This perspective is in line with a long tradition of research that demonstrated that learners' beliefs are influenced by teachers' expectations and feedback (Friedrich et al., 2015; Rubie-Davies et al., 2015). Learners not only are aware of others' expectations but also often assess their own ability and potential by "reflecting" how others think of them (Wigfield and Eccles, 2000; Bouchey and Harter, 2005). As such, learners may internalize others' expectations/beliefs (e.g., "Does my teacher think that I am good at math?") to their own self-concepts of ability (e.g., "Am I good at math?"; Wigfield and Eccles, 2000; Lazarides and Watt, 2015). Similarly, we argue that learners can also perceive others' lay beliefs (meta-lay theories; e.g., "Does my teacher think that I can improve my ability?") and internalize others' beliefs to their own mindsets about ability (e.g., "Can I improve my ability?"; Dweck et al., 1995).

Ability-Consoling and Improvement-Oriented Feedback to Failures

Students are motivated to understand what others think about them and their ability, and one source of information is others'

responses to the learners' learning outcomes (Swann, 1983; Bouchey and Harter, 2005). In this study, we focus on ability-consoling and improvement-oriented feedback because they are commonly used to comfort and to encourage struggling learners (Rattan et al., 2012; Burns et al., 2019). After failure, some people may comfort learners by assuring them that they are competent in other domains. They might say, for example, "Some people aren't naturally good at languages. But they are good at other things, such as math." In contrast, some people might focus their feedback on encouraging the learners to improve their ability, saying, "If you keep working on it, you'll improve your ability." These conceptualizations of the ability-consoling and improvement-oriented feedback are in line with a previous study (Rattan et al., 2012; Study 4). Rattan et al. (2012) showed that learners who received ability-consoling feedback perceived their teachers to have a stronger fixed mindset than those who received improvement-oriented feedback. We further argue that this feedback may not only signal that the feedback providers have a fixed or growth mindset themselves, but also convey messages about whether the feedback providers believe in the learners' potential to improve or not, thus affecting learners' own mindsets. Moreover, this feedback may foster or thwart learners' need satisfaction.

Ability-consoling feedback may at first seem to restore learners' general sense of competence by assuring learners' competence in other domains, but it poses a static, immutable view of ability and signals that the feedback providers do not have a high expectation that the learners can change in the target domain (see Rattan et al., 2012). Learners may perceive that the feedback provider does not believe that their ability can be improved (fixed meta-lay theories). From an SDT perspective, ability-consoling feedback can be construed to be controlling instructional behaviors that signal that the learners have little control or competence over their learning, which may also undermine learners' sense of autonomy (i.e., perceived volition and psychological freedom; Reeve and Jang, 2006; Jang et al., 2016). Ability-consoling feedback may also influence how learners feel about their relatedness to the feedback providers (Niemiec and Ryan, 2009). Research demonstrated that after failure, learners viewed the teacher–student relationship more negatively (i.e., decreased in sense of relatedness) when teachers provided feedback that indicated learners had a fixed ability than when teachers provided no feedback (Skipper and Douglas, 2015).

In contrast, improvement-oriented feedback that focuses on the learners' growth may indicate that the feedback provider believes that the learners have the potential to grow and can become effective in the task (Rattan et al., 2012; Burns et al., 2019). Thus, improvement-oriented feedback supports both the endorsement of growth mindsets (Dweck et al., 1995) and a sense of competence (Deci and Ryan, 2000; Niemiec and Ryan, 2009).

Joint Effects of Mindsets and Need Satisfaction

Although both SDT and MT each provide insight into learners' motivation and achievements, little empirical research has addressed their connections and unique contributions simultaneously. One reason for this lack of synthesis is that they come at motivation from different traditions. Specifically, need satisfaction influences learners' effort and engagement through internalizing and integrating the values of learning activities into personal relevance/meaning (Noels et al., 2016; Vansteenkiste et al., 2018). For example, learners whose needs are satisfied are more likely to engage in goal pursuits for self-determined reasons and thus invest more and persist in goal pursuits (Oga-Baldwin et al., 2017; Ryan and Deci, 2020). In contrast, mindsets are argued to influence effort and self-regulation, providing a lens through which people can make sense of their learning environment and ability (Molden and Dweck, 2006; Lou et al., 2017). For example, learners with fixed (vs. growth) mindsets are less likely to persist and more likely to feel ego-threatened after setbacks because they tend to attribute failures and mistakes to a lack of ability (vs. lack of effort). In summary, learners are driven by their need satisfaction but are also constantly trying to construct meaning out of their learning experiences, and therefore both processes are important for predicting learners' motivation and behaviors (Dweck, 2017). SDT and MT encompass different components of motivational processes that can operate simultaneously and complement each other in predicting adaptive motivational tendencies.

The Current Study

In this study, we integrate SDT and MT through understanding not only their shared contextual and cognitive antecedents (i.e., how ability-consoling vs. improvement-oriented feedback and meta-lay theories influence both growth mindsets and need satisfaction) but also the connection between these constructs and their joint predictions on learners' self-regulation, adaptive beliefs, and emotional responses to failure situations. We proposed a theoretically based mediational model (**Figure 1**). Specifically, we argue that cues in the learning environment, such as messages that are focused on existing talent or future improvement, affect learners' meta-lay theories, which in turn predict one's need satisfaction and mindset. As a result, learners' mindsets and need satisfaction jointly predict motivational outcomes.

This study focused on the context of migrant learners' English learning and their motivation after receiving different feedback. Migrant learners often receive comments and feedback about their language ability in everyday communication (Lippi-Green, 1997). As a result, some English-as-a-second-language (ESL) learners believe that making mistakes in English can make them look "dumb" (i.e., negative view of mistakes; Tulis et al., 2018); spend less time learning from mistakes; avoid situations where they fail (e.g., task avoidance goals, Elliot and Church, 1997; Lou and Noels, 2019a); and lack confidence when using English (Clément and Kruidenier, 1985; Noels et al., 1996; Lou and Noels, 2018). How ESL learners respond to language failures can profoundly affect their social adaptions and academic growth. Thus, one goal of this study is to understand how learners' perceptions about feedback providers can support or hinder learners' language confidence and anxiety (i.e., affective outcome), beliefs about mistakes (i.e., cognitive/belief outcome),

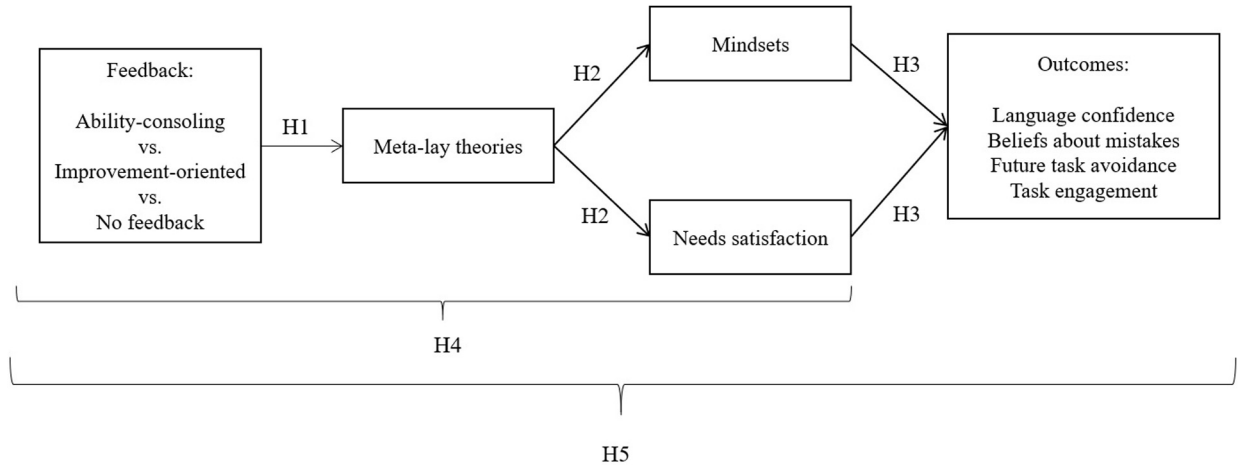

FIGURE 1 | Hypothesized path model.

task avoidance goal (i.e., behavioral tendency outcome), and time spent on learning from mistakes (i.e., objective behavioral outcome) after failing an English test. Based on our theoretical mediational model, we proposed five hypotheses:

H1: Receiving ability-consoling feedback predicts fixed meta-lay theories (e.g., "I think the teacher believes that I cannot improve my language ability"), whereas receiving improvement-oriented feedback predicts growth meta-lay theories (e.g., "I think the teacher believes that my language aptitude is changeable").

H2: Fixed (vs. growth) meta-lay theories predict more subjective support for psychological needs (autonomy, competence, and relatedness) and stronger endorsement of a growth (vs. fixed) mindset about language learning.

H3: Fixed (vs. growth) mindsets and need satisfaction jointly predict adaptive outcomes. Fixed mindsets would negatively predict ESL learners' language confidence, beliefs about mistakes, task avoidance, and duration of task engagement, whereas need satisfaction would positively predict these outcomes.

H4: The effects of ability-consoling and improvement-oriented feedback on language mindsets and need satisfaction are mediated by meta-lay theories.

H5: Feedback influences motivational outcomes through meta-lay theories and then mindsets and need satisfaction.

MATERIALS AND METHODS

Participants

Participants were recruited through a psychology research pool in a large Canadian university where English is the dominant language. Ethical permission for this study is approved by the University of Alberta's human research ethics office. Students who self-identified as foreign-born and spoke English as a second language could sign up for this study in exchange for course credits. All participants passed the university's English requirement or an equivalent in an ESL test [90 in Test of English as a Foreign Language (TOEFL) or 6.5 in International English Language Testing System (IELTS)]. We recruited 192 eligible participants. Five participants who did not fill out the key measures due to procedural errors were not included. Seven participants were also excluded either because they knew the purpose of the study was about the impact of the teacher/feedback or because they did not pay attention to the feedback (indicated during debriefing). The final sample was comprised of 180 participants (60.6% female)[1]. Their ages ranged from 15 to 26 years old (M = 19.68; SD = 2.60). Participants are either international students (n = 74) or immigrants (n = 106), and they had lived in Canada for 5.89 years on average (SD = 4.69). Most of them originated from Asian countries (80.0%; see **Supplementary Data Sheet 1** for details).

Procedure and Manipulation

Participants waited outside of a research lab in groups of two to four. The experiment was conducted by one of the two experimenters (one male and one female) who were blind to the research question and greeted the participants. The experimenters were Anglo-Canadian and were dressed professionally to convey the appearance of an English teacher. Before proceeding with the explanation of the task, the experimenter introduced himself/herself as an English teacher who was working on his/her master's degree in education (see **Supplementary Data Sheet 1** for the script the experimenter used). Participants signed a consent form that included a

[1]The sample size of 180 is more than the suggested minimum sample size of 100 for path analysis based on the ratio of 10 cases per variable (10 variables in this study; Kline, 2015). Moreover, a power analysis based on a previous experimental study concerning the effects of feedback on students' perceptions of teacher (Rattan et al., 2012; Study 3; η^2 = 0.38) suggested that detecting a significant effect size requires a sample of 39 participants (α = 0.05, power = 0.99, groups = 3). Thus, this current sample size is sufficient to detect the effect of feedback on meta-lay theories.

statement of the purpose of the research. Participants were told that the study examined psychological factors related to learners' language ability and performance on an English test. The experimenter also explicitly told the participants that they could quit anytime during the experiment.

Next, the experimenter instructed the participants to complete an English test with a time limit of 15 min. The English test was comprised of (a) five fill-in-two-to-three-blank questions from a graduate record examination (GRE) practice exam of English verbal ability and (b) one passage of text, followed by eight reading comprehension questions from a Law School Admission Test (LSAT) practice exam (see **Supplementary Data Sheet 1** for English test items). A few minutes after completing the test, the participants were then informed by the "teacher" through the computer that they failed the test, accompanied by one of the three feedback conditions: no feedback (i.e., control condition), ability-consoling feedback, or improvement-oriented feedback (with the differences bolded). Ability-consoling and improvement-oriented feedback scripts were adapted from a previous study (Rattan et al., 2012), which showed different effects on learners' perceptions of their teachers' mindsets.

Ability-consoling feedback: "I'm sorry that you did not do well on the test. I wanted to let you know that you're an adept and capable student. *English isn't a subject for everyone—it's okay if you didn't do as great as you hoped. Some people aren't naturally good at languages. But I'm sure you have great talent in other subjects.* I care about how you're doing and feeling with this task, so if you have any questions, feel free to talk to me about the task or about language learning in general after the study."

Improvement-oriented feedback: "I'm sorry that you did not do well on the test. I wanted to let you know that you're an adept and capable student. *Like with many things, practice makes perfect. If you put in the work, you'll be at the level of proficiency that you want, so keep working on it.* I care about how you're doing and feeling with this task, so if you have any questions, feel free to talk to me about the task or about language learning in general after the study."

After reading the feedback, participants filled out a questionnaire containing the measures described below. To encourage participants' candid responses, the teacher informed the participants that the teacher had no access to the questionnaire answers. At last, participants were offered to review the test questions and to learn from the answer keys. The computer automatically recorded the time participants stay on this learning task. After the experiment, the experimenter asked participants about their thoughts on the study's purpose and the feedback. Finally, the experimenter offered all participants a debriefing letter, including the purpose of the study, and fully debriefed them verbally.

External Manipulation Check

To ensure that the feedback would induce different perceptions about the feedback provider, a separate sample of students from the same university ($n = 39$) were asked to imagine that they were ESL learners who had taken an English test and received feedback from a teacher. Participants were then randomly assigned to either ability-consoling or improvement-oriented (see **Supplementary Data Sheet 1**). All participants were given two items to measure their perceptions about the teachers' consoling intention (Do you agree that the teacher's intention is to console the student for failing the test?) and improvement intention (Do you agree that the teacher's intention is to encourage the student to improve?) on a five-point scale (1 = Strongly Disagree to 5 = Strongly Agree). We ran a 2 × 2 mixed-model ANOVA. We found a significant interaction effect, $F(1,37) = 82.28$, $p < 0.001$, $\eta_p^2 = 0.69$ (strong effect). Specifically, participants in the consoling condition rated the teacher's consoling intention (M = 4.19, SD = 0.60) more strongly than his/her improvement intention (M = 2.38, SD = 1.20), $F(1,20) = 39.03$, $p < 0.001$, $\eta^2 = 0.66$ (strong effect). Those in the improvement condition rated the teacher's improvement intention (M = 4.61, SD = 0.61) more strongly than the consoling intention (M = 3.11, SD = 1.02), $F(1,17) = 55.08$, $p < 0.001$, $\eta_p^2 = 0.76$ (strong effect). Furthermore, participants in the consoling condition believed that the teacher was more consoling than did participants in the improvement condition, $F(1,37) = 11.29$, $p < 0.001$, $\eta_p^2 = 0.31$ (strong effect), whereas participants in the improvement condition believed that the teacher was more encouraging of improvement than did participants in the consoling condition, $F(1,37) = 50.63$, $p < 0.001$, $\eta_p^2 = 0.58$ (strong effect). These results validated that the feedback message can induce the corresponding perceptions about the feedback provider.

Questionnaire

The descriptions of each measure, including mean (M), standard deviation (SD), skewness, kurtosis, and Cronbach's alpha (α), are reported in **Table 1** (see **Supplementary Data Sheet 1** for all items). All measures used a five-point scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), unless otherwise stated.

Meta-Lay Theories

The Meta-Lay Theories Scale (Rattan et al., 2018) was adapted to measure participants' perceptions of whether teachers believe one's language learning ability can be improved or not. It contained six items with statements such as "The teacher believes that I can always improve my foreign language ability" and "The teacher believes that I can't really change my language intelligence." Participants rated their agreement on a six-point scale (1 = Strongly Disagree to 6 = Strongly Agree). An exploratory factor analysis yielded a one-factor solution (extraction based on Eigenvalue > 1; all factor loadings were above 0.62), which explained 58.18% of the variance. We also found that the internal consistency of the scale is high ($\alpha = 0.86$). A higher score indicated a stronger agreement with fixed (vs. growth) meta-lay theories.

Basic Psychological Need Satisfaction

The Basic Psychological Need Satisfaction (BPNS) was used to assess learners' general satisfaction of their need for autonomy, competence, and relatedness (Chen et al., 2015). Eight items from the original measure were not included in this study because

TABLE 1 | Descriptive statistics and correlations among key variables.

	1	2	3	4	5	6	7	8	9	10	11
1. Meta-lay theories (fixed vs. growth)		−0.18*	−0.25***	−0.31***	0.28***	−0.27***	0.08	−0.06	−0.05	−0.11	−0.10
2. Competence		–	0.55***	0.34***	−0.27***	0.30***	−0.56***	0.46***	0.17*	0.19*	0.17*
3. Autonomy			–	0.35***	−0.25***	0.39***	−0.37***	0.34***	0.12	−0.05	0.21**
4. Relatedness				–	−0.30***	0.23**	−0.24***	0.27***	0.25***	0.05	0.14
5. Language mindsets (fixed vs. growth)					–	−0.32***	0.25***	−0.28***	−0.04	0.08	−0.11
6. Beliefs about mistakes						–	−0.13	0.41***	0.22**	0.02	0.07
7. Future task avoidance							–	−0.36**	−0.09	−0.24***	−0.06
8. Language confidence								–	0.16*	0.08	0.31***
9. Duration of task engagement (log transformed)									–	0.04	0.07
10. Gender (0 = women; = men)										–	−0.06
11. Length of residence (year)											–
M	2.68	3.29	3.32	3.82	2.76	4.54	2.89	4.50	1.73	0.39	5.89
SD	0.88	0.78	0.68	0.64	0.67	0.90	1.04	1.03	0.38	0.49	4.69
α	0.86	0.78	0.70	0.67	0.86	0.89	0.84	0.94	NA	NA	NA
Skewness	0.85	−0.04	0.12	−0.68	−0.02	−0.43	−0.01	−0.51	0.12	0.44	0.71
Kurtosis	1.85	−0.45	−0.29	1.47	−0.20	0.92	−0.87	0.07	0.03	−1.83	−0.41
Theoretical range	1–6	1–5	1–5	1–5	1–6	1–6	1–5	1–6	NA	NA	0–18

****p < 0.001, **p < 0.01, and *p < 0.05.*

they did not fit the context of the current study (e.g., "I feel excluded from the group I want to belong to"). As a result, the questionnaire contained six items of competence satisfaction (e.g., "I feel confident that I can do things well"), six items of autonomy satisfaction ("I feel I have been doing what really interests me"), and four items of relatedness satisfaction with the teacher ("I experience a warm feeling toward the teacher"). A higher score indicated more satisfaction of the particular need (αs = 0.78, 70, 67[2] for competence, autonomy, and relatedness).

Language Mindset Inventory

We used the Language Mindset Inventory to assess participants' fixed and growth mindsets about language learning ability (Lou and Noels, 2017). Participants rated their agreement on nine growth mindset items ("How good you are at using a foreign language will always improve if you really work at it") and nine fixed mindset items (e.g., "You have a certain amount of language intelligence, and you can't really do much to change it") on a six-point scale (1 = Strongly Disagree to 6 = Strongly Agree). Given that fixed and growth mindsets are strongly and negatively correlated ($r = -0.65$, $p < 0.001$), growth mindset items were reversed coded such that a higher score represents a stronger fixed mindset (vs. growth mindset; $\alpha = 0.86$).

Beliefs About Mistakes

We used the five-item Beliefs about Mistakes measure to tap participants' beliefs about the importance of making mistakes in the English test (e.g., "I can develop new skills by making errors in the English test"; Tulis et al., 2018). The scale ranged from 1 (strongly disagree) to 6 (strongly agree). A higher score represents a more positive belief about making mistakes ($\alpha = 0.89$).

Future Task Avoidance

We adapted Elliot and Church's (1997) measure of performance-avoidance orientation to measure participants' avoidance orientation toward partaking in another similar English test. This set of questions contained five items (e.g., I am thinking, "I will try to avoid doing this task again"; "I am worried that I may look incompetent if I do the test again"). Participants responded on a scale from 1 (not at all true of me) to 5 (very true of me). A higher score indicates a stronger avoidance tendency for a possible future task ($\alpha = 0.84$).

Language Confidence

Participants rated their English confidence on a six-item measure (e.g., "I feel confident using English regardless of my ability"; Clément and Kruidenier, 1985). Participants responded on a six-point scale from 1 (totally disagree) to 6 (totally agree). A higher score indicates stronger language confidence ($\alpha = 0.94$).

Duration of Task Engagement

The computer automatically recorded the time (in seconds) that participants spent on reviewing the answer keys. Given the time was not normally distributed ($M = 79.44$, $SD = 90.81$, skewness = 3.92, kurtosis = 23.57), we log-transformed this variable (**Table 1**).

RESULTS

Preliminary Analysis

We found that participants performed poorly in the test; the average correct answer was 3.80 ($SD = 2.02$) out of 13 questions (29%). Moreover, participants in the three conditions did not

[2]Deleting any items would not improve the α for relatedness. The average inter-item correlation of this measure ($r = 0.33$), which is another way of examining internal consistency, showed that the measure was within the ideal range (i.e., 0.20–0.40; Cohen and Swerdlik, 2005).

differ significantly in their test scores, $F(2,177) = 2.26$, $p = 0.11$, suggesting that participants' pre-experiment competence was equivalent across conditions. All self-report variables and the log-transformed variable of the task duration supported the normality assumption (**Table 1**). We found that participants in the three conditions showed no significant differences in terms of their year of living in Canada, $F(2,77) = 1.33$, $p = 0.27$, and gender distribution, $\chi^2(2) = 1.24$, $p = 0.54$. We also found that gender and year of living in Canada did not predict meta-lay theories. However, we found that men are more satisfied with their confidence ($M = 3.47$, $SD = 0.74$) compared to women ($M = 3.17$, $SD = 0.79$; $t = -2.59$, $df = 178$, $p = 0.01$) and that those who lived in Canada longer are more satisfied with their confidence ($r = 0.17$, $p = 0.02$) and autonomy ($r = 0.21$, $p = 0.006$) and felt more confidence ($r = 0.32$, $p < 0.001$). Because gender and length of residence did not change the conclusions of the major findings, we did not include these variables in further analysis (see **Supplementary Data Sheet 1** for the results that include gender and length of residence).

Correlation

As shown in **Table 1**, meta-lay theories are correlated with a sense of competence, autonomy, and relatedness, as well as with language mindsets and beliefs about mistakes. Those who felt that the teacher did not believe in their potential (i.e., a fixed meta-lay theory) were also less satisfied with their competence, autonomy, and relatedness and also more likely to endorse fixed (vs. growth) mindsets about L2 ability and negative beliefs about making mistakes. We also found that the correlations between mindsets and need satisfaction were significant and moderate (r = -0.25 to -0.30, ps < 0.001), as well were the correlations among the three aspects of need satisfaction ($r = 0.34$ to 0.55, ps < 0.001). Additional analyses indicated no multicollinearity issues between mindsets and the three aspects of need satisfaction on any outcome variable [variance inflation factors (VIFs) ≤ 1.50]. Moreover, we found that meta-lay theories were not correlated with any outcome variable, but mindsets and need satisfaction were significantly correlated with beliefs about mistakes, future task avoidance, and language confidence ($|r|$ s ≥ 0.23, $p < 0.01$). That is, those who endorsed growth mindsets and those who felt more satisfied with the psychological needs were more likely to hold positive beliefs about making mistakes, less likely to avoid future tasks, and felt more confident about using English. However, satisfaction with competence and relatedness were the only two variables that positively correlated with the duration of task engagement (rs = 0.17 and.25, $p < 0.05$).

Main Effect of the Feedback Manipulations

One-way ANOVA supported Hypothesis 1 and suggested that the quality of ability feedback had a strong influence on meta-lay theories (**Table 2**), $F(2,184) = 34.71$, $p < 0.001$, $\eta_p^2 = 0.28$ (strong effect size). Tukey *post hoc* tests showed that participants in the consoling feedback condition perceived that the teacher believed the participants' ability was less likely to be improved ($M = 3.20$, $SD = 0.98$) than participants in the improvement condition ($M = 2.06$, $SD = 0.61$), $p < 0.001$, and participants in the control condition were midway between the other two groups and differed significantly from both ($M = 2.73$, $SD = 0.56$; **Figure 2**), ps ≤ 0.002.

We also explored whether feedback conditions directly affected mindsets and need satisfaction. As shown in **Table 2**, feedback directly affected a sense of competence, but not relatedness, autonomy, or language mindsets. Specifically, participants in the consoling condition had a lower sense of competence than participants in the control and improvement conditions. However, there were no significant differences between control and improvement conditions.

Finally, we found that the feedback type influenced task avoidance, but did not influence other outcome variables. Specifically, participants in the consoling condition reported that they were more likely to avoid future tasks than did participants in the control condition. However, there was no significant difference between participants in the improvement condition and control condition.

Path Analyses

To test the hypothesized model presented in **Figure 1** and the five hypotheses holistically, we used Mplus 8.0 (Muthén and Muthén, 2010) to conduct a path analysis of the direct and mediated effects. Given that the independent variables were multi-categorical, feedback was dummy coded, following the recommendation of Hayes and Preacher (2014): Ability-consoling feedback (1 = consoling feedback vs. 0 = no feedback and improvement feedback) and improvement-oriented feedback (1 = improvement feedback vs. 0 = no feedback and consoling feedback). That is, the no-feedback condition was coded as the reference condition and was compared to the other two feedback conditions. The hypothesized model fit the data well [$\chi^2 = 27.85$, $df = 20$, $p = 0.11$, comparative fit index (CFI) = 0.98, root mean square error of approximation (RMSEA) = 0.047, 90% CI = 0.00-0.08, and standardized root mean square residual (SRMR) = 0.035]. The results of the standardized path coefficients are presented in **Figure 3**, and unstandardized path coefficients are presented in **Table 3**. To understand the mediation effects, we used a bootstrapping resampling method to test the indirect effects (Hayes and Preacher, 2014). The results of the indirect effects are presented in **Table 4**.

Feedback Influences Meta-Lay Theories (Hypothesis 1)

We found that both contrasts of feedback significantly predicted meta-lay theories. Specifically, consoling feedback (vs. improvement feedback and no feedback) positively predicted meta-lay theories, whereas improvement feedback (vs. consoling feedback and no feedback) negatively predicted meta-lay theories. This finding is consistent with the ANOVA findings in **Table 2**.

TABLE 2 | The effect of feedback conditions (mean differences) on outcome variables.

Outcome variables	Condition	*M*	*SD*	*95% CI*		*F*	*p*	η_p^2
				Lower	Upper			
Meta-lay theories (fixed vs. growth)	Consoling	3.20[a]	0.98	2.95	3.45	34.71***	<0.001	0.28
	Control	2.73[b]	0.56	2.59	2.87			
	Improvement	2.06[c]	0.61	1.90	2.22			
Competence	Consoling	3.04[b]	0.78	2.84	3.24	5.12**	0.007	0.06
	Control	3.38[a]	0.70	3.20	3.56			
	Improvement	3.46[a]	0.81	3.24	3.68			
Autonomy	Consoling	3.19	0.68	3.01	3.36	2.74	0.068	0.03
	Control	3.30	0.64	3.14	3.47			
	Improvement	3.48	0.70	3.29	3.66			
Relatedness	Consoling	3.73	0.67	3.56	3.90	2.30	0.104	0.03
	Control	3.78	0.61	3.62	3.93			
	Improvement	3.97	0.63	3.80	4.14			
Language mindsets	Consoling	2.84	0.66	2.67	3.01	1.10	0.334	0.01
	Control	2.77	0.63	2.61	2.93			
	Improvement	2.66	0.71	2.47	2.85			
Beliefs about mistakes	Consoling	4.43	0.95	4.19	4.67	0.90	0.409	0.01
	Control	4.54	0.94	4.30	4.78			
	Improvement	4.65	0.81	4.44	4.87			
Future task avoidance	Consoling	3.14[a]	1.03	2.88	3.40	3.34*	0.038	0.04
	Control	2.67[b]	0.94	2.43	2.91			
	Improvement	2.87[ab]	1.11	2.57	3.17			
Language confidence	Consoling	4.41	1.19	4.11	4.71	0.41	0.667	0.01
	Control	4.53	1.00	4.27	4.78			
	Improvement	4.58	0.89	4.34	4.81			
Duration of task engagement	Consoling	1.77	0.35	1.68	1.86	2.10	0.118	0.02
	Control	1.65	0.40	1.54	1.75			
	Improvement	1.78	0.39	1.68	1.89			

****p < 0.001, **p < 0.01, and *p < 0.05. [abc]The same superscript represent no significant different between groups, Tukey's honestly significant difference (HSD) test. ns = 62, 62, and 56 for consoling, control, and improvement feedback, respectively.*

Meta-Lay Theories Predict Mindsets and Need Satisfaction (H2)

Supporting Hypothesis 2, meta-lay theories predicted language mindsets and satisfaction of the three psychological needs. Those who strongly perceived their teacher believes their ability to be fixed also more likely to endorse fixed mindsets about their own language ability (β = 0.28, $p < 0.001$), have a lower sense of competence (β = -0.18, $p = 0.014$), relatedness (β = -0.31, $p < 0.001$), and autonomy (β = -0.25, $p < 0.001$). These findings support the claim that language mindsets and psychological need satisfaction are both predicted by the meta-perceptions.

Mindsets and Need Satisfactions Jointly Predict Motivational Outcomes (Hypothesis 3)

In the path analysis, we also found that fixed (vs. growth) language mindsets were negatively and weakly associated with perceived competence (β = -0.24, $p = 0.001$), autonomy (β = -0.19, $p = 0.010$), and relatedness (β = -0.23, $p = 0.001$). Those who felt more satisfied with their psychological needs also more likely to endorse a stronger growth mindset. These findings support the hypothesis that mindsets and satisfaction of psychological needs were interrelated but distinct constructs.

Regarding their joint predictions on motivational outcomes, we found that language mindsets (β = -0.15, $p = 0.035$) and perceived competence (β = 0.34, $p < 0.001$) jointly predicted confidence to use English. Language mindsets (β = -0.22, $p = 0.002$) and perceived autonomy (β = 0.28, $p < 0.001$) jointly predicted beliefs about making mistakes. These findings showed that confidence and the beliefs about making mistakes were predicted by perceived competence and autonomy, respectively, as well as by mindsets. This finding highlights the independent but complementary contribution of some aspects of need satisfaction and mindsets to the prediction of motivational variables. However, we found that only perceived competence predicted future task avoidance (β = -0.48, $p < 0.001$), and only perceived relatedness predicted the duration of engagement with the task (β = 0.22, $p = 0.005$). Although language mindsets were significantly correlated to future task avoidance ($r = 0.25$, $p < 0.001$), this link was no longer significant in the path model (β = 0.09, $p = 0.162$).

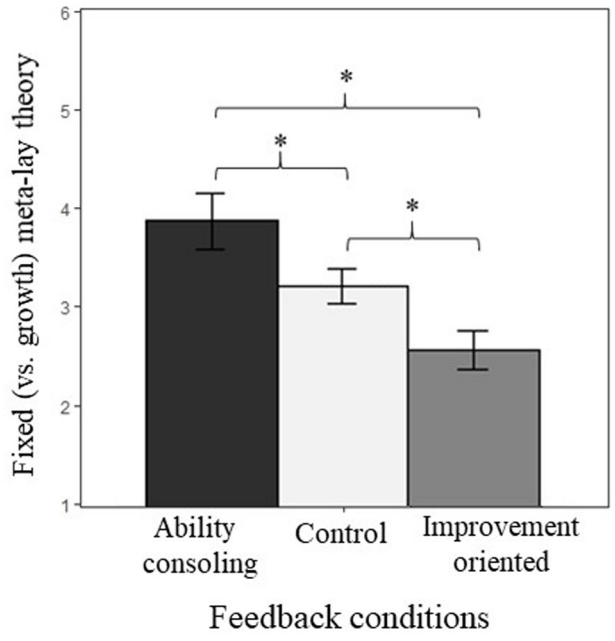

FIGURE 2 | Mean meta-perceptions of potential across the three conditions. Error bars represent 95% confidence intervals.

The Effect of Feedback on Mindsets and Need Satisfaction Through Meta-Lay Theories (Hypothesis 4)

We tested whether feedback indirectly influenced language mindsets and need satisfaction through fixed (vs. growth) meta-lay theories. As shown in **Table 4**, consoling feedback resulted in a higher score in meta-lay theories, which in turn predicted stronger fixed mindsets, and a lower sense of competence, autonomy, and relatedness relative to no feedback and improvement feedback. In contrast, improvement feedback led to a lower score in meta-lay theories, which in turn predicted stronger endorsement of growth language mindsets, and a higher sense of competence, autonomy, and relatedness relative to no feedback and consoling feedback. In summary, these findings supported that feedback indirectly influenced language mindsets and need satisfaction through meta-lay theories.

Feedback Influenced Outcomes Through Meta-Lay Theories, Mindsets, and Psychological Need Satisfaction (Hypothesis 5)

We tested whether feedback indirectly predicted motivational outcomes (**Table 4**, H5a to H5d). First, we found that consoling feedback negatively and improvement feedback positively influenced English confidence through meta-lay theories and then mindsets and a sense of competence (see H5a). Second, consoling feedback negatively and improvement feedback positively influenced beliefs about mistakes through meta-lay theories and then mindsets and a sense of autonomy (see H5b). Third, consoling feedback positively and improvement feedback negatively predicted future task avoidance through meta-perceptions and then competence (H5c). Finally, consoling feedback negatively and improvement feedback positively predicted the duration of task engagement through meta-lay theories and then relatedness (H5d). In summary, the feedback type influenced different outcomes through meta-lay theories and then mindsets and/or need satisfaction.

DISCUSSION

English-as-a-second-language learners are sensitive to subtle interpersonal signals that indicate whether other people in their social and learning environments believe they are capable or not, which can impact their motivation to use English. In this study, ESL learners experienced challenges in an English test, and one group of learners received ability-consoling feedback, the second group received improvement feedback, while the third group received no additional feedback (i.e., control group). We found that compared to learners who received no feedback, those who received improvement-oriented feedback perceived that their teacher believed that they could improve their ability (i.e., growth meta-lay theory). In contrast, compared to learners who received no feedback, those who received ability-consoling feedback perceived the teacher believed less in their potential to improve and had a weaker sense of competence in English. Furthermore, we identified two pathways through which feedback and meta-lay theories predicted motivational outcomes: the path through mindsets and the paths through need satisfaction. That is, meta-lay theories predict learners' growth (vs. fixed) mindsets and their need satisfaction, which can in turn influence important motivational outcomes, including learners' willingness to retake the English test they failed, confidence in using English, and the time they spend on reviewing the answer keys. As such, both meaning-making processes about growth (i.e., mindsets) and sense of need satisfaction are important for learners' resilience in challenging situations (Lou and Noels, 2019a).

Theoretical Contributions

The findings contribute to bridging two important motivation theories, SDT and MT, in three ways. First, we found that learners' mindsets were only weakly linked to their sense of competence, autonomy, and relatedness, suggesting that mindsets and need satisfactions are related but distinct concepts. Learners who endorsed growth mindsets were more likely to feel they are capable, have choices in their learning, and related to the feedback provider. Second, we found that the quality of feedback is an important social factor that influenced both mindsets and need satisfaction either directly or indirectly through meta-lay theories. These findings extended previous research on how others' feedback influences learners' mindsets (Rattan et al., 2012) and are consistent with the notion of perceived need support from SDT (Ryan and Deci, 2020). Specifically, feedback directly influenced a sense of competence, but indirectly influenced growth mindsets, and feelings of relatedness and autonomy through meta-lay theories. Third, we found that mindsets and need satisfaction jointly predicted adaptive outcomes. When controlling for the correlations

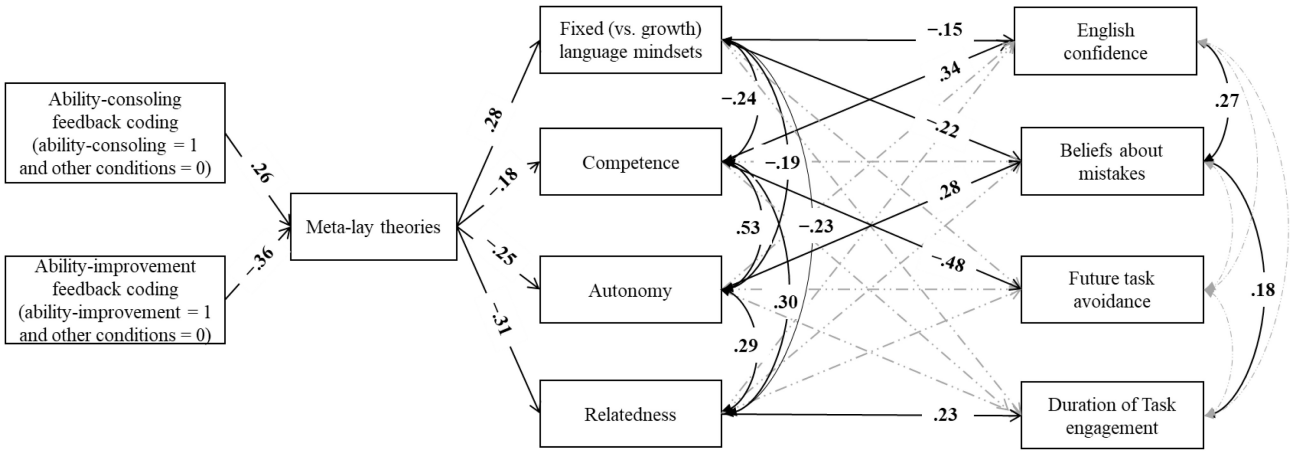

FIGURE 3 | Results of the final path model. Numbers are standardized path coefficients. The solid dark lines represent significant paths ($p < 0.05$); the dashed gray lines represent non-significant paths.

TABLE 3 | Unstandardized path coefficients of the path model.

Outcome variable	Predictor	*b*	*SE*	*t*	*p*	95% CI	R^2
Meta-lay theories	Consoling feedback	0.47***	0.13	3.54	<0.001	0.210, 0.731	0.28
	Improvement feedback	−0.67***	0.14	−4.92	<0.001	−0.940, −0.405	
Language mindsets	Meta-lay theories	0.22***	0.05	3.95	<0.001	0.108, 0.321	0.08
Competence		−0.16*	0.07	−2.42	0.015	−0.287, −0.030	0.03
Autonomy		−0.20***	0.06	−3.52	<0.001	−0.307, −0.087	0.06
Relatedness		−0.23***	0.05	−4.43	<0.001	−0.332, −0.128	0.10
Language confidence	Language mindsets	−0.22*	0.11	−2.09	0.037	−0.435, −0.014	0.25
	Competence	0.44***	0.10	4.24	<0.001	0.239, 0.650	
	Autonomy	0.14	0.12	1.19	0.234	−0.092, 0.378	
	Relatedness	0.14	0.12	1.18	0.239	−0.090, 0.363	
Beliefs about mistake	Language mindsets	−0.30**	0.10	−3.11	0.002	−0.489, −0.111	0.21
	Competence	0.08	0.09	0.84	0.401	−0.105, 0.264	
	Autonomy	0.37***	0.11	3.44	0.001	0.159, 0.581	
	Relatedness	0.07	0.10	0.65	0.513	−0.136, 0.271	
Future task avoidance	Language mindsets	0.14	0.10	1.40	0.163	−0.058, 0.345	0.32
	Competence	−0.64***	0.10	−6.35	<0.001	−0.833, −0.440	
	Autonomy	−0.11	0.11	−0.97	0.332	−0.336, 0.114	
	Relatedness	−0.04	0.11	0.38	0.705	−0.259, 0.175	
Duration of task engagement	Language mindsets	0.03	0.04	0.78	0.434	−0.052, 0.120	0.07
	Competence	0.06	0.04	1.28	0.200	−0.029, 0.139	
	Autonomy	−0.01	0.05	−0.14	0.891	−0.103, 0.089	
	Relatedness	0.14**	0.05	2.90	0.004	0.044, 0.230	

*$p < 0.05$, **$p < 0.01$, and ***$p < 0.001$.

between feelings of satisfaction of the three needs and mindsets, learners' own mindsets accounted for distinct variance in English use confidence and beliefs about mistakes. Similarly, a sense of competence contributed uniquely to English use confidence and future task avoidance, a sense of autonomy contributed uniquely to beliefs about mistakes, and a sense of relatedness contributed uniquely to the length of time learners spent reviewing their mistakes. Together, these findings suggest that combining MT (Dweck et al., 1995) with SDT (Deci and Ryan, 2000) can enrich the understanding of how interpersonal factors predict learners' responses to failure situations—through both meaning-making about ability and the sense of psychological need satisfaction.

Our study also contributes to the growing research on how learners' growth mindsets are developed (e.g., Haimovitz and Dweck, 2017; Rattan et al., 2018). Previous research showed that teachers' and parents' self-reported mindsets do not predict learners' mindsets; rather, the way that teachers and parents react to learners' failures predicted learners' mindsets (Park et al., 2016; Haimovitz and Dweck, 2017). Our study further

TABLE 4 | Indirect effects for the path model: estimates, standard error (SE), and 95% bias-corrected confidence intervals (CIs).

Hypothesis	Parameter	Estimate	*SE*	Lower 2.5% CI	Upper 2.5% CI	Effect size
H4	Consoling feedback Meta-lay theories Language mindsets	0.10*	0.04	0.040	0.192	0.07
	Consoling feedback→Meta-lay theories→Competence	−0.08*	0.04	−0.172	−0.011	0.05
	Consoling feedback→Meta-lay theories→Autonomy	−0.09*	0.04	−0.192	−0.026	0.07
	Consoling feedback→Meta-lay theories→Relatedness	−0.11*	0.04	−0.202	−0.025	0.08
	Improvement feedback→Meta-lay theories→Language mindsets	−0.14*	0.06	−0.269	−0.056	0.10
	Improvement feedback→Meta-lay theories→Competence	0.11*	0.05	0.018	0.221	0.06
	Improvement feedback→Meta-lay theories→Autonomy	0.16*	0.05	0.077	0.257	0.11
	Improvement feedback→Meta-lay theories→Relatedness	0.13*	0.05	0.056	0.232	0.09
H5(a)	Consoling feedback→Meta-lay theories→Mindsets→Confidence	−0.02*	0.01	−0.078	−0.001	0.01
	Consoling feedback→Competence→Mindsets→Confidence	−0.03*	0.02	−0.098	−0.005	0.02
	Improvement feedback→Meta-lay theories→Mindsets→Confidence	0.03*	0.02	0.001	0.090	0.02
	Improvement feedback→Competence→Mindsets→Confidence	0.05*	0.03	0.010	0.115	0.02
H5(b)	Consoling feedback→Meta-lay theories→Mindsets→Beliefs about mistakes	−0.03*	0.02	−0.076	−0.009	0.02
	Consoling feedback→Meta-lay theories→Autonomy→Beliefs about mistakes	−0.03*	0.02	−0.099	−0.007	0.02
	Improvement feedback→Meta-lay theories→Mindsets→Beliefs about mistakes	0.04*	0.02	0.011	0.114	0.02
	Improvement feedback→Meta-lay theories→Autonomy→Beliefs about mistakes	0.05*	0.03	0.013	0.126	0.03
H5(c)	Consoling feedback→Meta-lay theories→Competence→Future task avoidance	0.05*	0.03	0.007	0.120	0.02
	Improvement feedback→Meta-lay theories→Competence→Future task avoidance	−0.07*	0.03	−0.148	−0.012	0.03
H5(d)	Consoling feedback→Meta-lay theories→Relatedness→Duration of engagement	−0.02*	0.01	−0.036	−0.004	0.02
	Improvement feedback→Meta-lay theories→Relatedness→Duration of engagement	0.02*	0.01	0.007	0.045	0.03

**A 95% biased-corrected CI (with 5,000 bootstrap samples) not including zero indicates significant indirect effects. The effect sizes are the absolute values of the standardized estimates of the respective path coefficient.*

suggests that teachers' instructional practices indirectly impact mindsets through learners' perceptions of the teachers' beliefs. As such, one way that learning climates and teaching practices can help learners to adopt a growth mindset is through learners' perceptions that their teachers believe in their potential. Thus, we argue that if teachers' and parents' mindsets are transmitted to learners explicitly or implicitly through the type of feedback they offer, students will develop and adjust their own mindsets in line with how they perceive significant other people to view them. This process, whereby perceptions of others' beliefs about the learners' potential function as a mirror through which learners see their own ability, may have far-reaching effects on learners' achievement and persistence. For example, learners' who developed growth mindsets are more resilient in failure situations (Yeager and Dweck, 2012). In language learning, research also found that those with growth mindsets are less likely to give up language learning and feel less anxious when using the target language (Lou and Noels, 2016, 2019c). They are also more likely to use the language outside the classroom (Lou and Noels, 2020).

Limitations and Future Directions

Like other lab-based experiments, the results of this experiment may not be generalizable to actual classrooms given that the "teacher" in this study was not actually a trained teacher, and the communication between the participants and the "teacher" may not reflect classroom dynamics. However, because ESL learners often receive feedback about their language competence from many different interlocutors (not just teachers), their responses in this lab interaction may reflect their natural reactions to receiving different feedback from native speakers. Moreover, this randomized controlled experiment serves an important step for clarifying concepts and mechanisms to inform the development of "real-world" research. Building on this current research, future longitudinal field experiments might address how receiving different kinds of feedback changes meta-lay theories for learners in the language classroom and the long-term effects of providing learners with growth meta-lay theories.

In this study, we only focused on students' reactions to two possible types of feedback to their failure (i.e., ability-consoling and improvement-oriented). Future research could investigate whether and how other aspects of interpersonal feedback influence learners' need satisfaction and mindsets. For example, research suggests that autonomy support versus being controlling and well-structured (e.g., clear expectations and explicit directions in learning) versus a chaotic environment can affect need satisfaction (Reeve and Jang, 2006; Jang et al., 2016). However, the impact of different aspects of autonomy-supportive strategies on mindsets has not been examined. Similarly, research suggested that a performance-oriented environment (e.g., competition for grades) versus a learning-oriented environment (Leith et al., 2014), generic statements (e.g., "boys are always good at math") versus specific statements (e.g., "That student is good at math"; Cimpian, 2010), and ability praise ("You are so smart") versus process praise (e.g., "Good Job, you worked so hard"; Pomerantz and Kempner, 2013) can strengthen fixed mindsets (see Haimovitz and Dweck, 2017; Muenks et al., 2020). Although these antecedents of mindsets may share overlap with autonomy-support strategies, they have not been systematically studied in reference to the SDT literature. In addition, a student may believe that their teacher believes their ability is fixed or malleable through various non-verbal cues, such as the teachers' tone of enthusiasm (Young-Jones et al., 2014). Future research would also benefit from observing teachers' behaviors to identify what other strategies teachers use in the classroom to shift learners' meta-lay theories and enhance learners' growth mindsets and/or need satisfaction. Finally, in addition to the duration of reviewing answer keys, future research may include students' revision and follow-up performance to understand the role of mindsets in learning behaviors and outcomes (cf. Cutumisu and Lou, 2020).

To further extend the integration of MT and SDT, future research could also study different domains, learning situations, and outcomes that are more commonly studied in SDT but not MT research, and vice versa. In this study, we focused on the domain of English language learning, particularly in the face of a challenging situation. Given that SDT and MT are general motivational theories that have been applied to different educational domains (Dweck and Yeager, 2019; Ryan and Deci, 2020), integrating mindsets and SDT may benefit motivation research in other areas. In addition, meta-lay theories are relevant not only in challenging situations. For example, in competitive situations where ability is emphasized and successful situations where teachers praise learners' intelligence, learners may draw on their meta-lay theories and thereby influence their motivation. In these different situations, it would be important to examine whether the integrated model can better explain learners' emotional, behavioral, and achievement development than either SDT or MT alone. For example, previous meta-analytical research found a consistent but small effect of mindsets on achievement (Sisk et al., 2018). Similarly, mindsets was found to have little influence on language performance (Chaffee et al., 2020). Applying the integrated model, future research can continue to identify unique and overlapping effects of different growth-related constructs on learning engagement and achievement, which can have implications for designing more effective and parsimonious interventions.

Pedagogical Implications

Providing feedback about learners' ability is one of the most powerful tools to help learners cultivate confidence and regulate their behavior to achieve their goals (Koenka et al., 2019). However, it is inevitable that learners will receive negative feedback when they fail. This study supports the idea that failures are less detrimental when teachers provide growth-oriented feedback and are more detrimental when teachers focus on learners' innate ability (cf. Rattan et al., 2012; Skipper and Douglas, 2015; Fong et al., 2019). We further learned that how teachers communicate their feedback about the learners' abilities can shape learners' motivation through their perceptions about the teachers' beliefs. That is, teachers' feedback may be most effective in encouraging "growth" when teachers make learners feel that the teachers believe in the learners' potential to improve. To do so, educators should first pay attention to their own beliefs

(Heyder et al., 2019) and how they communicate their beliefs to learners. Previous research showed that teachers who believed in fixed mindsets are more likely to create a more controlling learning environment (Leroy et al., 2007; Canning et al., 2019) and to provide consoling feedback to poor performers (Rattan et al., 2012). Although consoling feedback may seem intuitively positive and consistent with the theory of multiple intelligences, our findings showed that comforting learners who failed in a given domain (e.g., languages) by assuring them that they are good in other domains could lead to negative motivational consequences. Thus, teachers should be mindful of how such beliefs may impact their practices and learners' motivation.

Learners' mindsets and need satisfaction are easily influenced by significant others in different ways (e.g., praise, guided attribution, competition; Leith et al., 2014; Haimovitz and Dweck, 2017). As this study showed, learners could readily perceive whether the feedback provider believed in their potential in English or not, which in turn influenced learners' psychological need satisfaction and mindsets. To foster a growth mindset in their learners, for example, educators can openly share their belief that everyone has the potential (Rattan et al., 2018), provide opportunities for learners to experience "growth," and behave in line with their beliefs (e.g., by providing improvement feedback, creating a fair learning environment that does not favor high-achieving learners, utilizing growth-oriented assessments, and providing support when it is needed; see Lou and Noels, 2019b, for a discussion). As a result, learners who perceive that their teachers support their growth would likely put more effort, feel more confident, and be more resilient in the face of challenges (Burns et al., 2019; Dweck and Yeager, 2019).

CONCLUSION

This study demonstrated that meta-lay theories are an important interpersonal perception that underlies the process by which others' feedback influences learners' motivation. As such, providing ability-consoling feedback can make learners think that the feedback provider does not believe in the learners' potential and that they are not competent, which can lead to negative motivational consequences, including spending less time reviewing test materials, unwillingness to redo the test, and a lack of language confidence. In contrast, providing improvement-oriented feedback can lead to positive effects by shifting learners' perceptions that the feedback provider believes in the learners' potential. Moreover, we extend previous research through the findings that mindsets and need satisfaction have independent yet complementary effects on motivational outcomes, hence providing support for integrating MT and SDT.

DATA AVAILABILITY STATEMENT

The datasets generated for this study are available on request to the corresponding author.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by University of Alberta Ethics Board. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

NL and KN conceived the idea, developed the materials, and contributed to the interpretation of the results. NL carried out the experiment and took the lead in writing the manuscript. KN provided critical feedback and helped shape the research, analysis, and manuscript. All authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2020.01417/full#supplementary-material

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Emotions and Instructed Language Learning: Proposing a Second Language Emotions and Positive Psychology Model

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Although emotion research and positive psychology (PP) have recently gained strong momentum in the field of second language acquisition (SLA), theoretical models linking language emotion and PP research, which offer insights for both research and intervention practice are lacking. To address this gap, the present article first introduces the origin, concept, and research around PP. Next, it summarizes recent research on PP and emotions in SLA. Finally, by triangulating emotion theories and research in the fields of psychology, education, and SLA, we propose a new model, which merges the three pillars of PP (positive institutions, positive characteristics, and positive emotions) with the antecedents, outcomes, and interventions of second language (L2) emotions (the L2EPP model). The value of the model to L2 pedagogy and research is highlighted in the context of the importance of integrating PP into the area of emotions and instructed SLA.

Keywords: emotion, second language acquisition, positive psychology, theory, learning, teaching

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INTRODUCTION

Language learning creates a spectrum of emotions of both positive and negative connotation. These emotions are of critical importance for second language (L2) learning and achievement (Shao et al., 2019). However, past research on emotions and second language acquisition (SLA) has traditionally focused on negative emotions, particularly language anxiety (see Teimouri et al., 2019, for review), leaving the effects of positive emotions (e.g., happiness, pride, gratitude, joy, hope, and admiration) largely unaddressed (Dewaele and MacIntyre, 2014). Recently, there has been a move toward examining a few positive emotions (e.g., enjoyment; Dewaele et al., 2018), as well as the positive effects of negative emotions (Swain, 2013) in L2 teaching and learning. Examining different language learning emotions together with their antecedents and outcomes from a more positive rather than solely negative perspective permits a balanced insight into how language learners are able to fine-tune their emotions that eventually leads them to success in the long run of SLA (Oxford, 2016).

According to Gable and Haidt (2005), positive psychology (PP) can be defined as the scientific study that aims to better understand the conditions and processes involved in the flourishing or optimal functioning of groups and individuals. Seligman and Csikszentmihalyi (2000) pointed out that PP research is built on three pillars: positive emotions (e.g., happiness and joy), positive

characteristics (e.g., strengths and virtues), and positive institutions (e.g., family and school). As a key component of PP, positive emotions are seen not only as end states of flourishing and happiness, but also as a means to achieving psychological growth, intellectual development, and improved well-being over time (Fredrickson, 2001). This suggests that they are worth cultivating and may play a central role in SLA, which is a gradually developing process necessitating long-term effort, motivation, interest, resilience, optimism, and the like (MacIntyre et al., 2019). Moreover, positive characteristics such as empathy, courage, optimism, and trait emotional intelligence, which are reflected in thoughts, feelings, and behaviors, can energize the language learners, helping them to recognize their own and others' strengths, overcome language obstacles, and obtain optimal affective and learning experience in the L2 classroom (Lake, 2013; Shao et al., 2013). Good institutions/schools, which are characterized by security, democracy, freedom of inquiry, high quality of education, and teacher and peer support can transcend the lone individual L2 learner, strengthen positive characteristics, and engender positive emotions to better a community of language learners (Peterson, 2006; Khajavy et al., 2018). These three pillars of PP are intricately linked with one another in the process of SLA as an individual L2 learner's positive characteristics can generate positive emotions, which can have a ripple effect on peers and teachers through mechanisms such as emotion contagion and social appraisal (Parkinson, 2019), and thus influence the emotional climate at classroom and institutional levels, resulting in a beneficial effective experience and language development for all (Khajavy et al., 2018).

Riding on the wave of PP in SLA, these core concepts of PP may serve as a useful guide for L2 emotion researchers to expand the scope of emotions investigated, examine the causes and consequences of multiple emotions in more depth, and provide concrete recommendations for L2 teachers to foster students' beneficial emotional experiences (Dewaele et al., 2019a; Shao et al., 2019). The present article aims to contribute to our knowledge and understanding of these important topics by first briefly synthesizing existing literature on PP and emotions in SLA, and then introducing a theoretical model, namely, L2EPP (second language emotions and positive psychology), which integrates emotion theories and research in the fields of psychology, education, and language with preliminary PP intervention studies in SLA. We anticipate that the interdisciplinary nature of this model will promote more research opportunities for L2 researchers, as well as the practical improvement of instruction in language classes.

AN OVERVIEW OF POSITIVE PSYCHOLOGY

PP has become a buzzword in the field of psychology in the past two decades. The historical basis of this concept can be traced back to the teaching of ancient Greek philosopher Aristotle, who emphasized the importance of happiness and well-being in life, which he referred to as *eudaimonia* (Robinson, 1991). With its modern roots in the humanistic approach of psychology (Maslow, 1954), PP, as a structured discipline, was first introduced in Martin Seligman's 1988 Presidential Address of the American Psychological Association (Seligman, 2002; Gable and Haidt, 2005). Initially, the basic premise of PP was that human beings are bestowed with positive traits and driven by the passion to seek a happy, engaged, and meaningful life. It was envisioned that psychology needed a more optimistic outlook by studying topics such as character strengths, love, happiness, well-being, and wisdom rather than being preoccupied by the abnormal and illness mentalities (Seligman and Csikszentmihalyi, 2000). PP did not aim to disregard negative emotions and psychological disorders but was proposed as a complementary approach that could help to balance pathology-focused approaches, which might produce only limited understanding of human nature (Peterson, 2006).

The concept of PP at the subjective level is about positive subjective experience: well-being and satisfaction, flow, joy, the sensual pleasures, and happiness; and constructive cognitions about the future – optimism, hope, and faith. At the individual level, it is about positive personal traits: the capacity for love and vocation, courage, interpersonal skill, aesthetic sensibility, perseverance, forgiveness, originality, future-mindedness, high talent, and wisdom. At the group level, it is about the civic virtues and the institutions that move individuals toward better citizenship: responsibility, nurturance, altruism, civility, moderation, tolerance, and work ethic (Seligman and Csikszentmihalyi, 2000). As the three pillars of PP, positive emotions, positive characteristics, and positive institutions are tied to the scientific inquiries of what makes life worth living and what helps people flourish in life (Peterson, 2006).

PP is a science that emphasizes theory-practice integration. Since Seligman and colleagues co-initiated the special issue of PP in the journal of *American Psychologist* (Peterson, 2000; Seligman and Csikszentmihalyi, 2000), a large number of empirical research has been conducted to attest to the theoretical soundness of PP constructs. In general, findings provided support for the tenets of PP, showing that each pillar of PP is pivotal for human beings' cognitive and affective functioning, coping and resilience to adversity, physical and psychological health, and increased engagement, performance, and satisfaction with their work and life (e.g., Fredrickson and Branigan, 2005; Rode, 2013; Meneghel et al., 2016). Seligman et al. (2005) also developed and refined a list of 40 practical interventions for practitioners to use to help people increase happiness. For instance, some of the well-known interventions include: expressing gratitude to an important person, describing three good things that happened each day, identifying one's signature strengths, and using signature strengths in new ways. Two meta-analyses, which included 49 and 39 studies, respectively, supported the effectiveness of PP interventions for improving well-being and lowering depression, and the positive effects of these interventions on psychological well-being remained significant after 6 months (Sin and Lyubomirsky, 2009; Bolier et al., 2013).

Theory and practice of PP have evolved in recent years. The focus of PP has shifted from happiness (positive emotions, engagement, and meaning) to a more well-rounded theory of well-being. In his book, "Flourishing", Seligman (2011) explicitly states that "…the topic of positive psychology is well-being, that the gold standard for measuring well-being is flourishing,

and that the goal of positive psychology is to increase flourishing" (Seligman, 2011, p. 13). According to Seligman (2011), human flourishing can only be achieved through enhancing each and every aspect of PERMA: positive emotion, engagement, meaning, positive relationships, and accomplishment. Individuals in such a state thrive, feel vitality, and prosper at both individual and institutional levels. Furthermore, the term "second wave positive psychology" represents a call in the field of PP to integrate conceptualization of positive and negative processes and to understand the role of contexts to create more appropriate theoretical accounts about psychology in practice (Lomas and Ivtzan, 2016). Combining the study of positive and negative experiences allows theory and research to move beyond simple, static, and linear descriptions of emotions, attitudes, and cultures (Snyder et al., 2015). These new developments of PP coincide with the introduction and flowering of PP in emotions and SLA.

PP AND EMOTIONS IN SLA

PP Constructs in SLA

Although the explicit introduction of PP into the field of SLA has only been a recent phenomenon, earlier studies on the "good language learner" (e.g., Naiman, 1978) as well as L2 motivation research such as Gardner's (1985) socio-educational model and Dörnyei's (2005) L2 self-system model have all touched on the positive aspects of language learners and demonstrated the importance of positive characteristics, positive attitudes, and positive emotions for the successful acquisition of a second language.

MacIntyre and colleagues (MacIntyre and Gregersen, 2012; MacIntyre and Mercer, 2014) were the first to formally bring PP into the spotlight of L2 researchers. They referred to Fredrickson's broaden-and-build theory (BBT) of positive emotions and its associated practical functions (see MacIntyre and Gregersen, 2012, for a summary) and argued that teachers have the potential to help students harness both positive and negative emotions by using techniques such as promoting imagination and practicing relaxation in language classrooms. Their work highlighted the importance of PP theories for language teaching, learning, and communication, and identified promising trends such as the move toward studying positive emotional states (e.g., love, enjoyment, and flow) and learner strengths (e.g., courage, empathy, and hardiness) in SLA. They also addressed and proposed solutions for criticisms of PP that also occurred in L2 contexts (e.g., measurement issues and over-reliance on cross-sectional data; MacIntyre et al., 2016, 2019).

In another body of work, Oxford (2016) expanded Seligman's (2011) PERMA framework by drawing upon prior research in psychology and proposing a more encompassing model containing key elements that promote happiness within language learners and teachers. Specifically, the model comprises emotion and empathy; meaning and motivation; perseverance (including hope, resilience, and optimism); agency and autonomy; time; hardiness and habits of mind; intelligence; character strengths; and self-concept, self-efficacy, self-esteem, and self-verification, and is known using the acronym, EMPATHICS. Oxford (2016) put forth a series of testable hypotheses related to each dimension of the model, and the preliminary empirical findings appeared to support the efficacy of the classroom interventions. Lake (2013, 2016) and Mercer (2016), to name a few, also investigated a small number of constructs in this framework, such as courage, self-concept, and empathy and their initial findings provided support for the usefulness of these variables for L2 teaching and learning at both individual (in terms of enhancing positive L2 self, L2 self-efficacy, and L2 intended effort) and institutional level (in terms of promoting social relationships, positive group dynamics, and optimal classroom atmosphere).

Dewaele and colleagues have also emphasized the importance of adapting a more holistic view of L2 learners' emotions by focusing on both negative and positive emotions (Dewaele and MacIntyre, 2014; Dewaele et al., 2018). They proposed that positive emotions promote students' resilience and perseverance to overcome language difficulties and encourage learners to explore and play, which are crucial for building social cohesion (Dewaele et al., 2018). Their work on foreign language enjoyment (FLE) has shifted L2 researchers' attention from their previous preoccupation with negative constructs, such as anxiety, to positive emotion constructs, which marks a new era of investigation. This research has triggered a series of recent studies examining antecedents and outcomes of FLE in different contexts (to be discussed next; e.g., Jin and Zhang, 2018; Saito et al., 2018; Dewaele et al., 2019b; Li, 2020).

Positive Emotions in SLA

Before the advent of PP in SLA, research in the field of emotions and language learning has been dominated by anxiety, which is the only emotion that has been systematically investigated (MacIntyre, 2017; Teimouri et al., 2019). However, even in this "negative" period, one could add that signs of PP were already present in studies that investigated the effects of positive characteristics such as trait emotional intelligence on language anxiety (Dewaele et al., 2008; Shao et al., 2013). The role of positive affect has also featured in more teacher-oriented research by Arnold (1999) since the turn of the century. Theoretical and empirical introduction of positive emotions in SLA started from the work of MacIntyre (MacIntyre and Gregersen, 2012) and Dewaele (Dewaele and MacIntyre, 2014). Following the BBT (Fredrickson, 2001), they pointed out the beneficial functions of positive emotions for language learners in terms of broadening cognition, tempering negative emotions, promoting resilience, building personal and social resources, and triggering a virtuous circle toward greater well-being and achievement (MacIntyre and Gregersen, 2012; Dewaele et al., 2019a). Employing these concepts, Dewaele and MacIntyre (2014) explored one type of positive emotions: enjoyment, among 1,746 foreign language (FL) learners from around the world. Findings revealed that participants reported higher levels of FLE than foreign language anxiety (FLA), and FLE was only moderately negatively correlated with FLA. FLE and FLA were also linked with socio-demographical variables such as gender, age, number of FL known, and perceived language proficiency. Qualitative data indicated that teachers' professional and emotional skills and peer support are important factors influencing learners' FLE.

Inspired by this pioneering study, L2 researchers began to investigate a wide range of predictors (internal vs. external) and outcomes of FLE as well as the dynamic interactions among these variables from a PP perspective. For example, Dewaele et al. (2018) examined the extent to which certain learner and teacher variables were linked to students' FLE and FLA. Results from 189 British high school students learning various foreign languages in class showed that FLE was negatively correlated with FLA but positively related to achievement. Students' age, gender, degree of multilingualism, language proficiency, and attitude toward the foreign language were also related to their FLE. Interestingly, teacher variables such as unpredictability of the class, frequency of L2 use, and students' attitudes toward the teacher were more strongly correlated with students' FLE than to their FLA. Moreover, employing a mixed cross-sectional and longitudinal design, Saito et al. (2018) investigated how language learners' emotion and motivation profiles related to their oral proficiency among 108 Japanese high school students. Results showed that learners' enjoyment and motivation, but not anxiety, were positively related to studying, practicing, and using the target language throughout their L2 learning experience. Students with a clear vision of their ideal L2-Self experienced more enjoyment and less anxiety in their language learning. Students' enjoyment also positively predicted both their long-term and short-term language achievement, while anxiety only influenced their long-term achievement. In the Chinese context, Jin and Zhang (2018) investigated factors underlying FLE among 320 EFL high school students. Factor analysis yielded a three-factor solution from an adapted FLE scale: enjoyment of teacher support, enjoyment of student support, and enjoyment of FL learning. FLE exerted both direct and indirect effects on students' FL performance. Enjoyment of FL learning had the strongest effect on achievement scores with enjoyment of teacher support and enjoyment of student support having indirect effects.

Taken together, this initial evidence highlights the importance of positive emotions in enhancing L2 learners' motivation and performance and decreasing their language anxiety in the long run and suggests that L2 teachers should strive to boost students' enjoyment rather than solely focusing on reducing their anxiety in language classrooms (Dewaele et al., 2018). However, it is noteworthy that these initial studies probed only one type of positive emotions; enjoyment, but other pleasant emotions such as hope, pride, contentment, gratitude, and admiration may play an equally important role in promoting L2 learners' motivation, creativity, interest, and performance and thus are also worth investigating. Recent research has started to address this by adapting the construct of achievement emotions from the field of educational psychology to the FL context in order to measure a wider range of positive emotions: enjoyment, hope, and pride (Shao et al., 2019, 2020). This line of research will be discussed in more detail later on.

A More Balanced Approach to the Study of Emotions in SLA

Recent hermeneutics on PP emphasize the need to integrate positive and negative experiences and move beyond the static notion of seeing them as simply good or bad (Snyder et al., 2015). As Prior (2019, p. 522) pointed out, "Any emotion can be facilitative or restrictive, motivating or demotivating, adaptive or maladaptive. To fully engage with emotion in language research and teaching requires a focus on context and a willingness to simultaneously embrace 'joy' as well as 'pain.'" First and foremost, this foregrounds a more balanced meta-theoretical perspective on the influence of negative emotions in the language learning process, rather than treating them as purely maladaptive. Indeed, some research has demonstrated the "positive power" of negative emotions for L2 learners to acquire the target languages.

For example, Swain's (2013) study showed that learners' embarrassment may serve as a strong impetus for them to acquire the L2 in order to avoid such feelings in front of peers; while anger can motivate some students to master the second language as a way of revenging on perceived unfair treatment by the school principal. Similarly, López and Cárdenas (2014) found that Mexican students were able to transform negative emotions such as fear, anger, and frustration toward teachers' written feedback and evaluations into positive energy after reflecting on their moral obligations as students to their families. Cultural value on education, socio-economic condition, family issues, and aspiration are documented as mediators in the relation between teacher feedback and students' emotions and writing texts. In the Japanese context, Imai (2010) examined how a group of EFL learners discursively constructed and shared their emotional attitudes toward a semester-long group assignment that pushed them to co-construct their knowledge and challenge the assigned tasks and material. Participants' narratives show that emotions like boredom, discontentment, and frustration could become a psychological resource for their L2 development and mediate the relationship between cognitive task demands and subsequent learning behavior.

Importantly, these studies imply that negative emotions are seemingly detrimental and may initially lower students' motivation; however, they may be turned into motivational fuels, depending on how L2 learners can make sense of these emotions and manage their emotionality to their advantage rather than succumbing to it. This meaning-making process is in line with the essence of PP, which emphasizes the importance of learning lessons from negative experiences and finding positive meaning in the face of adversities (Peterson, 2006). Such complex effects of negative emotions are more readily observed from anxiety research in education and language showing that anxiety can have either positive, negative, or zero correlations with performance (e.g., Kleinmann, 1977; Eysenck et al., 2007; Marcos-Llinás and Garau, 2009). Furthermore, these findings demonstrate that negative emotions and positive emotions often co-exist in the language acquisition process and may interact with cognition and contextual factors in affecting language learning and use. For example, family responsibility, economic condition, and collective culture were important contextual factors that shaped the emotions of enjoyment, pride, and hope in the studies by Imai (2010) and López and Cárdenas (2014). The interplay among emotion, cognition, and context may take a more complex non-linear

form than any experimental or cross-sectional research has assumed. Rather than denying the positive side of negative emotions, it may be best to find a leverage point on the continuum of positive emotions and negative emotions with a consideration of the language learning context.

Further, it is important to note that the effects of positive emotions on language learning are also context-dependent and may not always be adaptive (Komorowska, 2016). From the PP perspective, this implies a more balanced approach regarding the influence of positive emotions in SLA as well. Research in psychology and education has shown that positive emotions, under certain circumstances, may induce unrealistic appraisals, fostering superficial information processing, and reducing motivation to pursue challenging goals (Forgas and East, 2008; Pekrun and Perry, 2014). For language learners, unrealistic optimism may lead to an overestimated sense of control over the learning tasks and situation, hope for an easy shortcut to achievement, and less systematic planning and preparation, which will diminish their chances of success (Komorowska, 2016).

A THEORETICAL MODEL OF SECOND LANGUAGE EMOTIONS AND POSITIVE PSYCHOLOGY

Building on emotion theories and research from the fields of psychology, education, and SLA (e.g., Fredrickson, 2001; Pekrun, 2006; Dewaele et al., 2018; Shao et al., 2019), we now propose a second language emotions and positive psychology (L2EPP) model (see **Figure 1**) integrating the three core components of PP, that is, positive emotions, adaptive characteristics, and good institutions with the antecedents, outcomes, and interventions of L2 emotions. We begin by describing the theoretical framework before presenting empirical support for each aspect. As can be seen from **Figure 1**, characteristics and institutions represent individual and environmental antecedents of L2 emotions, respectively, and they are expected to be reciprocally linked with emotions and their learning outcomes in a feedback loop model. With emotion being placed at the center, each component of the model contains elements situating different aspects of PP into the L2 context and may exert both direct and indirect effects on the elements in other components. These elements may also interact with one another and with contextual factors (e.g., culture, policy, and language group, which are out of scope of the discussion) to co-determine language learners' emotions, achievement, and well-being.

The theoretical assumptions underlying the L2EPP model are in line with both Pekrun's (Pekrun, 2006; Pekrun and Perry, 2014) control-value theory of achievement emotions (CVT) and Fredrickson's (Fredrickson, 2001; Fredrickson and Joiner, 2018) BBT. The CVT posits that students experience specific learning or achievement-related emotions when they feel in control, or out of control, of achievement activities and outcomes that are subjectively important, implying that perceived control and perceived value are proximal determinants of classroom emotions (Pekrun, 2006). Importantly, the CVT places emotion at the center of its framework (i.e., emotion is seen as both an independent and a dependent variable) and explicitly emphasizes the direct, indirect, and bidirectional effects as well as associated interventions among environmental features, appraisals, emotions, and achievement outcomes (Pekrun and Perry, 2014). On the other hand, the BBT postulates that experiences of positive emotions broaden people's momentary thought-action repertoires and undo the lingering effects of negative emotions, which in turn serves to build their enduring personal resources, ranging from physical and intellectual resources to social and psychological resources (Fredrickson, 2001). The relationships among positive emotions, cognitive thinking, coping, and well-being are reciprocal, triggering an upward spiral (Fredrickson and Joiner, 2002).

The distinctions between these theories lie in the fact that the BBT is one of the founding blocks and major theories of PP, and it was introduced into the field of emotions and SLA as a fundamental theory for advocating the current PP movement in second language learning (MacIntyre and Gregersen, 2012; Dewaele and MacIntyre, 2014; Dewaele et al., 2019a). The CVT is based on contemporary appraisal theories of emotions (Scherer, 2013) and integrates various established theories in educational psychology (e.g., expectancy-value theory, transactional approaches of emotions, and attributional theory of motivation; see Pekrun et al., 2011). It was developed in general education aiming to expand the scope of emotion investigated beyond test anxiety in academic contexts as well as to systematically examine the antecedents and outcomes of students' diverse achievement emotions (Pekrun et al., 2002). As a domain-general emotion theory, the CVT has only recently been applied to the domain of language learning (e.g., Piniel and Albert, 2018; Shao et al., 2019, 2020; Davari et al., 2020). While the BBT focuses on the effects of positive emotions on cognitive and psychological processes, the CVT attends to both positive and negative emotions together with their antecedents and outcomes.

In spite of the differences, these two theories share some common basic assumptions. Both CVT and BBT emphasize the crucial role of positive emotions (e.g., enjoyment, hope, pride, and contentment) in relation to cognitive thinking, personality traits, physical health, psychological well-being, and social environment as well as the reciprocal relationships among these variables. The value of cultivating positive emotions and fine-tuning negative emotions for the promotion of intellectual growth and psychological functioning is also prominent in both. The two theories are complementary for building our L2EPP model, which is designed for putting forward a series of testable hypotheses for L2 researchers and practitioners who are willing to devote their time and efforts into the exciting research area of PP and emotions in SLA.

Specifically, as delineated in the L2EPP framework (see **Figure 1**), we propose that academic environments/institutions can shape students' learning characteristics, which then go on to influence their emotions toward language tasks. For example, a school/classroom climate featuring positive teacher and peer relationships can foster students' positive characteristics such as self-confidence and optimism, which are likely to generate positive emotions such as enjoyment of learning, hope, and pride. These emotions can in turn affect the cognitive and motivational

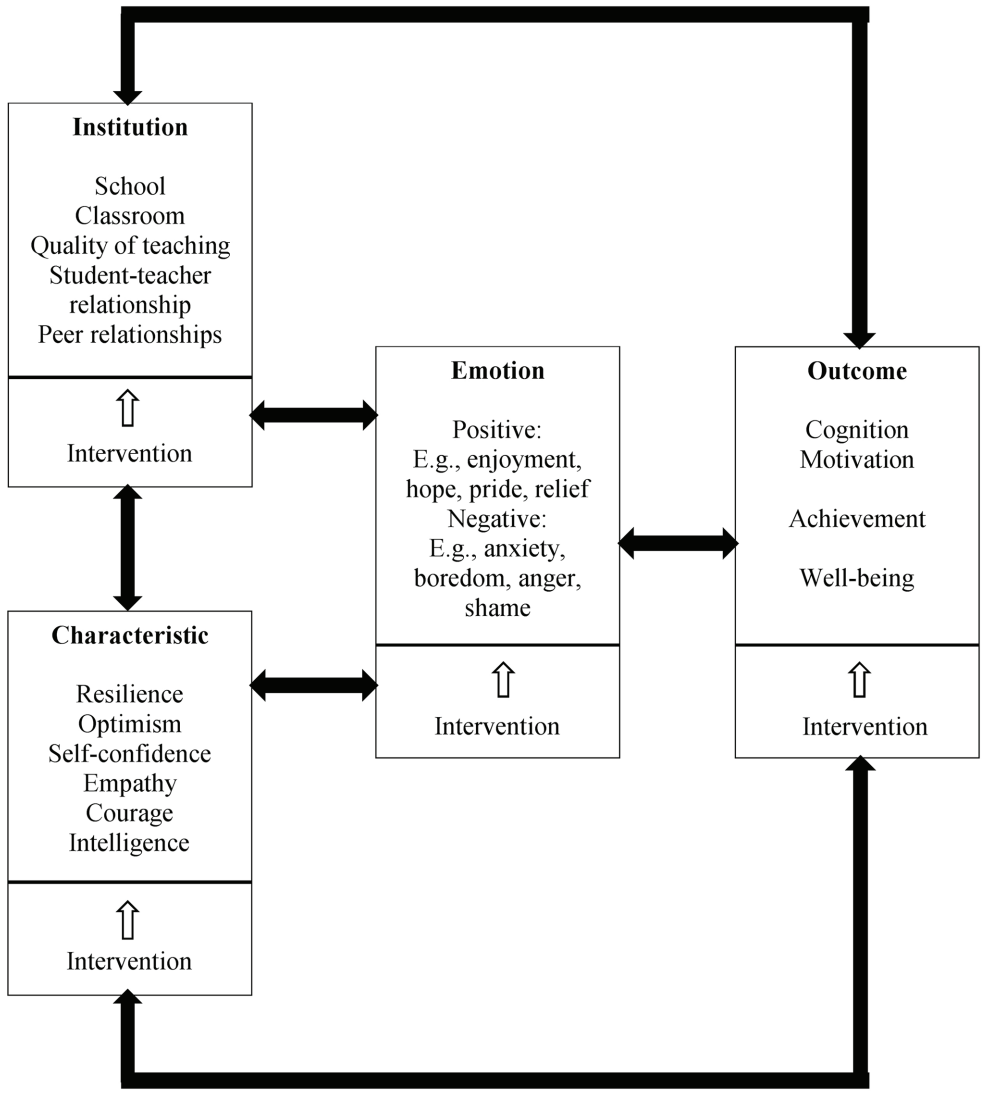

FIGURE 1 | L2EPP (second language emotions and positive psychology) model integrating three pillars of PP with antecedents, outcomes, and interventions of L2 emotions.

processes involved in language learning and subsequent achievement, which ultimately influences psychological well-being. Reciprocally, students' psychosomatic health can also influence their language achievement, cognition, and motivation, which may have differential effects on their language learning emotions, for example, academic success might strengthen positive emotions and failure would induce negative emotions (e.g., anxiety, shame, and boredom). Different emotions can then influence students' learning characteristics such as curiosity and perseverance, which will impact features of the learning environment, such as teachers' design and selection of language tasks and materials. All of these effects are bidirectional, triggering a feedback loop. L2 emotion interventions that focus on any dimension of the model are likely to bring syntonic effects to all other parts of the L2EPP model. It is noted that the aspects included in each component of the model are not exhaustive; they are examples, albeit the most pertinent ones based on past research and theory. Not only could L2 researchers systematically study particular aspects of each component and how they relate to one another through possible mediation/moderation mechanisms, but also exploratory research could be conducted to identify other elements of each component that are not mentioned in the model.

The L2EPP model intends to guide L2 researchers to conduct innovative research incorporating PP into the particular area of emotions and SLA, as well as to help language teachers design PP interventions targeting students' affective experiences in the classroom. In the following paragraphs, we illustrate each component of this model by merging recent emotion research in language and education with the preliminary applications of PP in SLA. Then, we discuss potential PP interventions, which may be applied

to the field of L2 emotions based on each component. Finally, we suggest directions for future research and implications for language teaching based on each dimension of the model.

Empirical Findings

Institutions

According to Peterson (2006, p. 20), "positive institutions can promote the development and display of positive characteristics, which in turn facilitate positive subjective experiences." From a PP perspective, school is a unique institution that plays a role not only in fostering language learning, but also in the personal development and affective growth of teachers and students (Gabryś-Barker, 2016). However, institutional factors are the least investigated among the three pillars of PP by L2 emotion researchers (MacIntyre, 2016). Possible reasons for this situation include the multiple determinants of school environment, difficulty in assessing these factors, and different perceptions of these features by teachers and students (Gabryś-Barker, 2016). As Dörnyei (2014, p. 46) stated, "the complex character of school climate calls for a multidisciplinary approach which makes use of research findings from motivational psychology, educational studies and second language research."

In general education, the CVT proposes that institutional factors (e.g., school, classroom, and teaching quality; see **Figure 1**) are distal antecedents of achievement emotions, which can have a collective influence on both teachers' and learners' emotions, resulting in a change of emotional experience for everyone in that particular environment (Pekrun, 2006). Supporting this proposition, research has shown that a classroom environment conveying positive relationships, enjoyment, and mastery goal orientation positively predicts students' academic enjoyment, engagement, and achievement and negatively predicts their anxiety at both classroom and individual levels (Arens et al., 2015; Frenzel et al., 2018).

Specifically, Frenzel et al. (2018) examined the relationship between teacher and student enjoyment in math classes. Findings showed that teacher and student enjoyment were positively related even when controlling for students' previous mathematics enjoyment, and that the effect of teacher enjoyment on student enjoyment was mediated by teacher enthusiasm. Lazarides and Buchholz (2019) investigated the relation between students' perceived teaching quality in math classrooms and enjoyment, anxiety, and boredom among 6,020 German middle school students. Multilevel regression analyses showed that teacher support and classroom management were negatively related to student-level anxiety and boredom. Teacher support was positively related to enjoyment and negatively related to anxiety at the classroom level. Classroom management was negatively related to classroom-level boredom. Recently, employing doubly-latent multilevel analysis, Khajavy et al. (2018) examined the influence of classroom environment on students' emotions in second language learning from the PP perspective. Results showed that a positive classroom climate featuring by teacher support and student cohesiveness positively predicts students' enjoyment, but negatively predicts their anxiety. Enjoyment and anxiety also mediated the relationship between classroom environment and willingness to communicate at the classroom level.

Characteristics

The BBT (Fredrickson, 2001) suggests that positive characteristics such as resilience, perseverance, and optimism can help people undo the protracted effects of negative emotions quickly and experience more positive emotions that improve their cognitive functioning and psychological well-being. In the same vein, the CVT (Pekrun, 2006) proposes that personality traits like emotional intelligence and self-confidence related appraisals are more immediate antecedents of achievement emotions that can have a significant impact on learners' emotional experiences. Educational research studies conducted so far have supported these propositions.

For example, using the BBT, Seaton and Beaumont (2015) examined the relationships between students' positive emotions (awe and amusement), resilience, personal goals, and subjective well-being. Results revealed that positive emotions predicted increased resilience and more personal growth goals. Resilience partially mediated the relationship between positive emotions and well-being. Moreover, following the CVT, Heckel and Ringeisen (2019) investigated the proposed structural relationships between self-efficacy, cognitive appraisals, achievement emotions, and learning outcomes among 220 university students in an online learning environment. Findings showed self-efficacy was positively related to perceived control, interests, and pride, but was negatively correlated with anxiety. Control and interest mediated the relationships between self-efficacy and satisfaction/competence gain, respectively, while pride mediated the relationship between self-efficacy and competence gain.

In SLA, adapting the PP perspective, Wei et al. (2019) investigated the effect of grit on FLE and foreign language performance (FLP) among 832 middle school students in China. Results indicated that grit positively affected FLE and FLP, and the relationship between grit and FLP was mediated by FLE. Positive classroom environment also moderated the relationship between grit and FLE, and between grit and FLP. Similarly, Teimouri et al. (2020) examined the relationship between grit, as measured by consistency of interest and perseverance of effort, with emotion, motivation, and language performance. Findings showed that FL grit positively correlated with enjoyment, motivational variables (intended effort, willingness to communicate, and attention), and a series of language achievement measures (grammar, speaking, GPA, and self-rating), but negative correlated with anxiety. In another study, Li (2020) investigated the impact of trait emotional intelligence on Chinese students' FLE and achievement from the perspective of PP. Results demonstrated that emotional intelligence is a positive predictor of language enjoyment and achievement. FLE partially mediated the relationship between emotional intelligence and self-reported/actual language performance.

Emotions

As previously mentioned, from a PP perspective, current L2 emotion research needs to expand the scope of both positive and negative emotions investigated. In the fields of psychology and education, Pekrun and colleagues' research has demonstrated that there are qualitative and quantitative differences (e.g.,

content, intensity, valence, activation, and object focus) between discrete positive emotions and negative emotions (Frenzel et al., 2007; Goetz et al., 2010; Pekrun et al., 2011). According to the CVT (Pekrun, 2006), pleasant achievement emotions (e.g., enjoyment, hope, and pride) are posited to be jointly caused by high perceived control and high positive value, whereas unpleasant achievement emotions (e.g., anger, anxiety, shame, hopelessness, and boredom) are assumed to be elicited as a joint function of perceived lack of control and high negative value. Moreover, these discrete positive emotions and negative emotions are presumed to differentially relate to a wide range of learning outcomes (e.g., motivation, cognition, interest, learning strategies, and performance; see Pekrun et al., 2011). Although this line of emotion research has traditionally tended to focus on domain-general emotion variables, such as general test anxiety, or on students' math-related emotions (e.g., Goetz et al., 2010; Pekrun et al., 2017), the construct of achievement emotions has recently attracted increasing attention from L2 researchers (e.g., Starkey-Perret et al., 2018; Shao et al., 2019, 2020; Davari et al., 2020). As Davari et al. (2020, p. 4) pointed out, "Adherence to a complex system of learning emotions would set L2 researchers free of a narrow, discrete approach to investigating language emotions. This complex system would also protect the SLA field from the criticism levelled against the perspectives on learning emotions that would draw on PP (e.g., dichotomization of positive emotions versus negative emotions and measurement problem)."

Specifically, employing a short-version of the achievement emotion questionnaire (AEQ; Pekrun et al., 2005, 2011), Starkey-Perret et al. (2018) examined the impact of two FL teaching approaches (i.e., traditional approach vs. task-based teaching) on learners' two positive emotions (enjoyment and pride) and five negative emotions (anger, anxiety, shame, hopelessness, and boredom) in an urban middle school in France in three settings (class, learning, and test). Results of the study provided support for the reliability and validity of the AEQ for measuring language learning emotions. Similarly, Davari et al. (2020) investigated the psychometric properties of the class-related AEQ among 784 Iranian EFL learners. Exploratory factor analyses and confirmatory factor analysis (CFA) substantiated the internal structure of the AEQ for measuring eight emotions (enjoyment, hope, pride, anger, anxiety, shame, hopelessness, and boredom) in language learning. Multi-group CFA also demonstrated the measurement invariance of the AEQ across gender and learning contexts (school vs. institution). Very recently, Shao et al. (2020) examined the effects of perceived control and value on language emotions and performance as well as the moderated mediation effects of appraisals on achievement through emotions among Chinese college EFL students (N = 550). Results indicated that students experienced more positive emotions (enjoyment, hope, and pride) and less negative emotions (anger, anxiety, shame, hopelessness, and boredom) and achieved better language performance when they felt confident about language learning and found the learning activities and outcomes important and interesting. The interactive effects of control and value appraisals on FL performance were also mediated by enjoyment, hope, pride, and hopelessness.

Outcomes

Achievement and well-being are the ultimate goals of fostering learners' adaptive emotions in language classrooms. This is in line with the goal of "positive education," which explicitly aims to combine academic goals with the promotion of well-being for learners (Seligman et al., 2009). It is well-documented in psychology and education that the effects of emotions on learners' achievement and psychological well-being depend on the interplay between various cognitive and motivational mechanisms (Pekrun et al., 2011; Fredrickson and Joiner, 2018; see above). According to the BBT and CVT, positive emotions can facilitate holistic thinking and creative problem solving, broaden the scope of attention and cognition, promote mastery approach goal, and enhance intrinsic motivation and long-term efforts, which eventually lead to better performance and well-being (Fredrickson and Branigan, 2005; Pekrun et al., 2011). On the other hand, negative emotions may cause divided attention and reduced cognitive resources, but can promote analytical thinking, facilitate emotion congruent memory and retrieval, and stimulate extrinsic motivation to invest effort (Pekrun and Perry, 2014). Thus, negative emotions can have variable effects on learning and well-being (e.g., López and Cárdenas, 2014), although negative consequences on overall academic performance likely outweigh any beneficial effects for most students (e.g., Pekrun et al., 2017).

However, existing L2 research has almost exclusively focused on the effects of emotions on language performance, leaving other language outcomes (such as cognition, motivation, and well-being) understudied. Among the few studies that have examined relations between emotions and motivation, most of them centered around Gardner's (1985) social-educational model and Dörnyei's (2005) L2 motivational self-system. From the PP perspective, supporters of the two theories argued that learners' positive attitudes and behaviors (e.g., willingness to communicate) toward L2 learning or determination to deal with the discrepancy between their present self and their ideal L2 self would all require a strong sense of enjoyment for acquiring the target language (Teimouri, 2017; Dewaele et al., 2018; MacIntyre et al., 2019). Preliminary research findings supported this claim showing that L2 motivation and performance were positively related to enjoyment, but negatively correlated with anxiety (e.g., Chow et al., 2018; Saito et al., 2018).

Recently, pioneering L2 researchers have started to adapt the construct of achievement emotion to SLA and found similar motivational effects in a broader scope of emotions. For instance, Méndez-Aguado et al. (2020) examined the influence of emotions on motivation and performance among 394 students who learned French as a foreign language. Findings showed that positive emotions (enjoyment, calmness, and pride) positively predicted motivation, while negative emotions (anxiety, hopelessness, boredom, and embarrassment) negatively predicted it. Motivation toward French learning positively related to leisure habit to learn French and academic performance. Shao et al. (submitted manuscript) examined the relations between eight discrete emotions, motivational variables, and language performance in a sample of 1,021 Chinese EFL students. Results show that students' enjoyment, hope, and pride were positively

correlated with intrinsic motivation, extrinsic motivation, self-regulation, and FL performance; while the opposite trend was generally found among anger, anxiety, shame, hopelessness, and boredom.

PP Interventions and L2 Emotions

Peterson (2006, p. 25) advocated that PP is "not a spectator sport", that the field has taken on a mandate to develop practical interventions that help to create personal growth. Emotion-centered language activities targeting any part of the L2EPP model may empower positive transformation and growth among learners through the acquisition of essential life skills, thereby generating beneficial impact on the individual and their surroundings via emotion contagion (Hatfield et al., 1994). L2 educators may avail themselves of PP interventions tailored to different aspects of the L2EPP model for promoting students' emotional well-being and linguistic competence. Some pioneering studies already exist for each dimension of the L2EPP, which we exemplify below.

Regarding interventions focused on the institutional component, Gabryś-Barker (2016) explored the possibility of applying PP activities to enhance emotional climate in language classrooms. Results show that EFL teachers' awareness of the indicators of positive classroom atmosphere, understanding of teachers' and students' contribution to it and ability to use PP knowledge and techniques to adjust teaching are positively linked with both teachers' and students' affective well-being. Useful tips include creating a form of mutual responsibility for cultivating a positive learning environment and relationship between teachers and students; supporting students' emotional needs; and engaging students in activities such as experience sharing, small talks, and collaborative assignments, which can boost connectedness and group cohesion.

Turning to positive characteristics interventions, Piasecka (2016) investigated whether working on poetry with PP activities can support learners' character strengths. The findings show that this training can help learners develop language proficiency, imagination, and sensitivity and promote adaptive characteristics such as creativity, open-mindedness, courage, social intelligence, and appreciation of beauty. These enhanced characteristics show signs of helping students move toward their possible ideal L2 self. Students also reported increased self-efficacy, satisfaction, and happiness after the course. Moreover, adopting an emotional intelligence (EI) intervention program, Li and Xu (2019) examined the extent to which EFL learners' FLE and FLA were linked to trait EI. The results showed that the EI intervention was effective in increasing EFL learners' EI, boosting their FLE and reducing their FLA.

Concerning direct L2 emotion interventions, Kossakowska-Pisarek (2016) incorporated vocabulary training strategies with facets of self-control such as commitment control, metacognitive control, satiation control, emotion control, and environmental control to probe their influences on learners' emotion, motivation, and performance. Learners were asked to set up their own goals, analyze them, implement strategies and monitor the process that would help them negotiate emotional responses to achieving or not achieving their goals. Findings showed that these activities can potentially raise students' emotion awareness, enhance their commitment and motivation, and promote their positive emotions and language performance.

Finally, as reflected in the L2EPP model, any interventions focused on language outcomes would likely influence their antecedents and vice versa. For instance, applying six PP interventions (gratitude, altruism, music, pets, exercise, and laughter) into the language context, Gregersen (2016) paired experienced trainees of the PP approach with L2 learners to examine the efficacy of these procedures. Qualitative and quantitative findings showed that these activities were able to elevate students' mood and positive emotions, and students reported greater feelings of engagement and well-being. Similarly, Mercer et al. (2018) enlisted the promotion of positive language education among L2 learners by using principles such as content and language integrated learning, which can have the potential to improve linguistic competence and subjective well-being at both individual and institutional levels.

It should be noted, however, that these interventions are still in the trial period and some of the criticisms of PP mentioned by Lazarus (2003), such as over-reliance on cross-sectional data, inadequate attention to within-between group differences, and poor quality of measurement, remained unsolved in these studies. Thus, language teachers are advised to critically examine empirical support for the interventions, understand how these interventions are supposed to function, and evaluate their outcomes before putting them into large-scale practice. L2 researchers may collect longitudinal data (Elahi Shirvan and Taherian, 2018), employ multilevel analysis (Khajavy et al., 2018), and adapt established and validated instruments from psychology and education (Seligman et al., 2009; Davari et al., 2020) when testing the effectiveness of emotion interventions that target any dimension of the L2EPP model in the future.

Research Suggestions and Pedagogical Implications

The aforementioned empirical studies have demonstrated the theoretical utility of the L2EPP model for merging emotion research in language and education with PP concepts. However, this line of research is still in its infancy, and there is ample room for exploring each dimension of the model in the future. For example, previous research to date has only tapped relations between teacher and student emotions (Frenzel et al., 2018), leaving the influence of peer emotions largely neglected. Students spend a larger amount of time in the company of peers in their school life and the need for students to communicate and interact with one another is greater in language classrooms than for other subjects due to the communicative demands of language acquisition (Shao et al., 2019). Thus, language researchers may consider investigating how students' language learning emotions are influenced by the emotional experiences of their peers through processes such as emotional contagion (Hatfield et al., 1994) or social appraisals (Parkinson and Manstead, 2015). By implication, this may also suggest that language teachers can promote students' adaptive emotions by nurturing positive peer relations. One way to achieve this is through encouraging collaborative

learning in and out of the classroom, which may help with developing positive interdependence and a supportive learning atmosphere among students (Johnson and Johnson, 2009).

L2 researchers may also consider expanding the scope of positive characteristics investigated to include, for instance, courage, humor, resolution, open-mindedness, altruism, curiosity, and empathy. For example, empathy, as an important element in Oxford's (2016) EMPATHICS model, may play a vital role in shaping language learning emotions given that it relates to learners' competence to understand the minds and emotions of interlocutors and develop positive relationships with them during intercultural communication, social interaction, and language use (Mercer, 2016). L2 researchers can investigate the influence of empathy on a wide range of positive and negative emotions (e.g., enjoyment, hope, pride, anger, shame, and boredom) as well as the potential mediating role of empathy in the relationship between institutional factors and language learning emotions. Pedagogically, language teachers can employ various intervention tools (e.g., role-play, movies, drama, reflective journal, and reading literature) to help learners foster their empathy (Mercer, 2016). One effective method can be through the use of role-play, by using either real or imaginative characters. Acting helps language learners to gain deeper insight into the minds and emotions of others. This vicarious experience enables them to be more considerate and resourceful in handling the relationship with peers and teachers as well as their own language learning emotions (Shao et al., 2012).

As for the focal area of L2 emotions, researchers may examine discrete positive and negative emotions in language learning in a more nuanced manner. In line with the two-dimension circumplex model of affect in psychology (Linnenbrink, 2007), Pekrun et al. (2002) has classified achievement emotions in educational settings based on valence and activation. Accordingly, positive activating emotions (hope, pride, and enjoyment), negative deactivating emotions (boredom and hopelessness), negative activating emotions (anger, anxiety, and shame) and positive deactivating emotions (relief) are presumed to have distinguished influence on motivation, self-regulation, effort, and performance (see Pekrun, 2006; Pekrun et al., 2011). L2 emotion researchers may probe how multiple types of emotions differentially link with their antecedents and language outcomes as well as the potential mediation effects of emotions between institutional factors, positive characteristics, and language achievement. Language educators may also heed to the unique roles of different types of emotions experienced by students. It is advised that teachers can help students capitalize on the double-edged sword of both discrete positive emotions and negative emotions and maintain the equilibrium of their effects on language learning. Intervention programs specifically targeting students' achievement emotions such as attributional retraining (Hall et al., 2016) and value induction (Harackiewicz and Priniski, 2018) have already become available for language teachers.

Regarding language outcomes of emotions, one of the foremost areas might be to consider how emotions relate to well-being in language learning and teaching. Well-being is an aim, outcome, and contributor to the language learning process and can facilitate personal growth and social transformation (MacIntyre et al., 2019). Language researchers may pay more attention to the function of emotions for physiological and psychological health and investigate the influence of discrete positive emotions and negative emotions on psychosomatic indexes such as heart rate, adrenaline, blood pressure, satisfaction, mental health, and well-being (Gregersen et al., 2014). Possible mediation and moderation processes as well as the reciprocal links among institutional factors, learner characteristics, emotions, cognition, motivation, and well-being might also be probed (Fredrickson, 2001; Pekrun, 2006). In line with the goal of positive language education, L2 educators may explicitly aim to combine the acquisition of linguistic skills with the promotion of well-being in the classroom and school (Mercer et al., 2018). Language teachers can adopt a number of innovative instructional designs (e.g., participating in a fictional talk show or live interview; see Shao et al., 2012) to promote students' positive emotions, language proficiency, and well-being. For example, teachers may select different types of background music to match teaching content, students' preferences and learning contexts. The fine-tuned music may not only foster positive characteristics and adaptive emotions, but also facilitate language learning and psychological development (Kang and Williamson, 2014).

CONCLUSION

The emergence of PP in SLA and the particular area of emotion and language learning resonate with a change of mentality among L2 researchers, shifting from a narrow, negative focus to a more positive, balanced approach for investigating language teaching and learning. PP is deemed to be an exciting topic to incorporate into the study of emotions and SLA because it encompasses facets like positive institutions, positive characteristics, and positive emotions, which are of primary relevance to the examination and cultivation of beneficial affective experiences in language classrooms. The initial research in this promising field is already producing new ideas, knowledge and insights for L2 emotion theorists (MacIntyre et al., 2016; Oxford, 2016) and proposing practical interventions for language teachers (Gregersen, 2016; Dewaele et al., 2018). In this article, we propose an L2EPP model that enables us to have a more holistic and systematic view on the issue of emotions and language learning from the lens of PP, recognizing the importance of institutional factors and character strengths, together with effective intervention designs in shaping language learners' emotional well-being and achievement. By aligning the BBT (Fredrickson, 2001) with the CVT (Pekrun, 2006), the L2EPP model has the potential to provide a framework of language emotions that would effectively address criticism against the PP approach in SLA. The advent of PP into the area of emotions and language learning broadens the horizon for applied linguists and language practitioners, and in this research endeavor, we also offer new input from our unique experiences and perspectives to enrich its theories and practice, which can

lead to cross-fertilization of new ideas. In building the L2EPP model with its many hypotheses, mechanisms, and practices yet to be tested, we envision a bright future for its utility in the area of emotions and SLA.

DATA AVAILABILITY STATEMENT

The original contributions presented in the study are included in the article/supplementary material, and further inquiries can be directed to the corresponding author.

AUTHOR CONTRIBUTIONS

KS guided and drafted the review. LN co-wrote and designed the article. GK co-wrote and edited the review. FL reviewed and revised the manuscript. All authors contributed to the article and approved the submitted version.

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CONCEPTUAL ANALYSIS
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Thinking in a Non-native Language: A New Nudge?

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The majority of research on learning a non-native language has focused on the personal benefits of being bilingual or multilingual. In this paper, we focus on the potential positive effect of *actively thinking* in a non-native language. Our approach is inspired by recent experimental research suggesting that actively thinking in a non-native language leads to improved reasoning and decision-making, which is known as the foreign-language effect (FLE). We examine the possibility that one could choose to think in a non-native language in order to reap these potential benefits. Integrating this research with research in positive psychology, we explain how doing so might be understood as a type of "nudge," or intervention that one could use to increase their chances of making autonomous decisions reflecting their own best interest. Nudges have been associated with improved outcomes with respect to many aspects of our lives – for instance sticking to goals, saving money, exercising more frequently, maintaining a healthy diet. It may be that bilinguals can assume an active role in increasing their happiness or well-being by making better decisions through strategic implementation of a non-native language in decision-making contexts. We also discuss the ethics of using the FLE as a nudge when it has beneficial consequences, as there are instances when doing so could be beneficial with respect to public policy as well. For instance, it has been shown that people are less averse to sustainable farming and eating practices (e.g., eating insects) when actively thinking in a non-native language. After reviewing the current research on the FLE, we suggest that further research needs to be done because actively thinking in a non-native language seems to function beneficially in some circumstances but may pose cognitive disadvantages in others.

Keywords: foreign-language effect, FLE, bilingualism, decision-making, nudge

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INTRODUCTION

Research suggests that bilingualism is associated with benefits to cognition and executive functioning. Some of these benefits reflect the fact that both languages are simultaneously active in a bilingual brain (e.g., Marian and Spivey, 2003; Wu and Thierry, 2010). Since bilinguals must constantly employ cognitive control in order to suppress the language they are not currently using and to switch between languages when appropriate, it has been suggested that this leads bilinguals to develop stronger cognitive control than monolinguals (Abutalebi et al., 2008, Abutalebi et al., 2011; Prior and MacWhinney, 2010; Green, 2011; Soveri et al., 2011; Bialystok et al., 2012). Studies have

suggested that bilinguals have superior executive functioning (Bialystok et al., 2012) and are better able to switch between tasks (Prior and MacWhinney, 2010) in comparison with monolinguals. Despite the evidence for a bilingual advantage provided by these and other studies, there exists debate in the field as to how robust these findings are. One concern is that experiments showing an advantage for bilinguals are more likely to be published than those that do not (De Bruin et al., 2015; Paap et al., 2015; Lehtonen et al., 2018). Another concern is that sample sizes in these studies tend to be small (Duñabeitia et al., 2014; Paap et al., 2014, 2015). This has led researchers to conduct meta analyses, some of which have confirmed a bilingual advantage (Adesope et al., 2010; Donnelly, 2016; Grundy and Timmer, 2016). While this research is still under scrutiny, being bilingual does seem to provide individuals with at least some cognitive advantages.

More recently, researchers have suggested that *actively thinking* in a non-native language influences the cognitive processes responsible for judgment and decision-making. The idea that we may be able to strategically harness the effect of thinking in a non-native language for our own benefit has already inspired the popular press (Drake, 2012; Greene, 2012; Lieberman, 2017; Watson, 2020). Peñarredonda (2018) writes for *BBC Worklife* that "while at first glance, negotiating in a language other than your mother tongue might seem a disadvantage, it could also make you the most cool-headed person in the room" (2018, section "Potential Issues With Using the FLE as Nudge," para. 2). Similarly, Skapinker (2018) writes in *Financial Times* that "people working in a foreign language are less susceptible to cognitive bias" and applies this research to the workplace. He states,

> an increasing number of people are now working in organizations that operate in English, mixing native and second-language speakers. It is certainly worth thinking about whether people seem more considered, and make more dispassionate decisions, in English than the native speakers do. The non-native speakers may seem less witty, but pay more attention to their opinions (2018, para 15).

The interest in the using one's non-native language to enhance decision-making is not restricted to researchers, and journalists continue to be inspired to give their readers advice on how best to employ this advantage. Given the widespread interest in using one's non-native language as a tool to reason better or employing those who can do so, it is important to understand if and how non-native thinking can be harnessed and whether it is always beneficial for us to do so.

In this paper, we discuss actively thinking in a non-native language as a type of nudge toward achieving good outcomes, both for oneself and for greater societal goods, such as sustainable food practices. In this respect, we can understand using this type of nudge in pursuit of good outcomes as a potential element of positive psychology. More specifically, we consider whether actively thinking in a non-native language can serve as a positive psychology intervention (or PPI). We suggest that there needs to be a more nuanced discussion of how it affects reasoning, as research suggests that while it is beneficial in some circumstances, it could pose cognitive disadvantages in others. Finally, we discuss the ethics of implementing active thinking in a non-native language as a nudge to influence the behavior of ourselves and others and conclude that further research is essential for determining the efficacy of the nudge.

BACKGROUND

The idea that actively thinking in a non-native language influences the cognitive processes responsible for judgment and decision-making is known as the foreign-language effect (FLE), and it is distinct from the benefits of *being* bilingual generally, as all participants are bilingual, and yet the ones thinking in their non-native language show a marked difference from participants thinking in L1. The original studies on this effect demonstrated that thinking in a non-native language changes how participants respond to reasoning and decision-making scenarios, with the suggestion that it can help to avoid common reasoning errors or decision-making biases (Keysar et al., 2012; Costa et al., 2014a). In this section, we present the foreign-language effect (FLE) in more detail along with some of the proposed explanations for why it exists (i.e., the mechanisms for the FLE). Then, we define "nudges" and provide some common examples of how nudges can be used to improve decision-making[1]. We understand improving decision-making through the lens of improving well-being, and thus connect our discussion of nudges to positive psychology. In section "FLE as Nudge," we will connect these research areas and discuss how we may be able to harness the FLE to serve as a nudge to benefit ourselves and others. We then discuss some relevant ethical considerations of doing so and present directions for future related research in sections "Potential Issues With Using the FLE as Nudge" and "Directions for Future Research," respectively.

Foreign-Language Effect

The FLE was first proposed in Keysar et al. (2012). In their study, bilinguals who were presented with a problem in their native language were more likely to be influenced by the way in which the problem was presented (i.e., the framing effect) than bilinguals who were presented with this problem in the non-native language. In other words, participants who were actively thinking in a non-native language were less sensitive to the framing of the problem independent of the underlying facts. Subsequent research has reported that the FLE reduces other kinds of biases, including the Hot Hand fallacy, where individuals have a tendency to believe that good events will follow other good events (Gao et al., 2015) and illusions of causality, where individuals erroneously conclude that an event caused another event merely because it happened first (Díaz-Lago and Matute, 2018). Actively reasoning in one's non-native language has also

[1]Researchers working on the FLE and nudges have separately tied their research to Dual-Process models of reasoning. Some interlocutors focus on aspects of Dual-Process models as well (Saghai, 2013; Osman, 2016). Perhaps an understanding of Dual-Process models enriches understanding of these concepts, but we think the main ideas we want to discuss can be covered without layering a third construct in between nudges and the FLE for the purposes of this paper.

been shown to reduce superstitious beliefs (Hadjichristidis et al., 2019b). Participants who considered events in their non-native language were less likely to attribute negative feelings to "bad luck" events (e.g., breaking a mirror) and less positive feelings toward "good luck" events (e.g., finding a four-leaf clover).

Another domain where the foreign-language effect applies is moral judgment – both in the moral judgment one makes about a case, specifically trolley cases, and with respect to how one judges others' moral transgressions. In the original moral foreign-language effect research, participants are presented with two moral dilemmas, the trolley case and the footbridge case (Foot, 1978; Thomson, 1986). In the trolley case, a trolley is heading toward five individuals stuck on the track. They will die if the individual does not switch the trolley to an alternative track where only one person will die. Most individuals judge that one should switch the trolley sacrificing the one individual, thereby saving five others. However, people do not tend to make the same judgment with respect to the footbridge case. In this alternate dilemma, one is standing on a footbridge above the tracks. One can save the five individuals on the track below only by pushing a large individual off the footbridge onto the tracks, thereby stopping the trolley. Most individuals do not think that it is morally permissible to push the large man off the footbridge, sacrificing him to save those on the tracks below. In both moral dilemmas, respondents are faced with a choice of whether to sacrifice one individual to save five – where choosing to make this sacrifice is often coded as a utilitarian judgment and abstaining from making the sacrifice is coded as a deontological judgment. However, most people, in their native languages respond differently to the two dilemmas, being much more likely to provide utilitarian responses in the trolley dilemma and deontological responses in the footbridge dilemma (Greene et al., 2001). Researchers have found that individuals are more likely to choose the utilitarian option in the footbridge case in a non-native language than in a native language condition across a wide range of participants from different language groups (c.f. Costa et al., 2014b; Geipel et al., 2015b; Cipolletti et al., 2016), indicating a moral foreign-language effect[2]. Additionally, Geipel et al. (2015a) found that individuals judge moral transgressions and social norm transgressions less harshly in their non-native language than they do in their native language, at least when those transgressions do not involve significant negative consequences (see also Woumans et al., 2020).

Given the research supporting the existence of the FLE, researchers have begun to explore the underlying mechanisms responsible for it, resulting in the following three main hypotheses:

The Reduced Emotionality Account

According to the reduced emotionality account, our emotions have a stronger impact on our decision-making processes when we think in our native language as opposed to our non-native language (Keysar et al., 2012; Corey et al., 2017; Hayakawa et al., 2017; Vives et al., 2018; Hadjichristidis et al., 2019a). Since emotions might play into certain heuristics or biased reasoning, reducing emotion by actively thinking in a non-native language would allow for reasoning that is not interrupted or distorted by emotional reactions that one would have experienced reasoning in L1.

Metacognition Disruption Account

This account attributes the FLE to a distortion in metacognitive processing (Białek et al., 2019; Muda et al., 2020a,b), wherein there is interference with typical monitoring of first-order cognitive processes. This interference may cause bilinguals who are thinking in their non-native language to engage in more deliberate cognitive processing, rather than the automated, intuitive processing that usually occurs when thinking in one's native language. According to this view, context is important to determine whether thinking in a non-native language will improve our reasoning. Białek et al. (2019) argues that while this disruption can sometimes result in more rational thinking in cases where our intuitions fail or fall prey to certain cognitive biases, thinking in a non-native language might also impair our thinking in situations where our intuitive processing would typically function appropriately. On the other hand, it may cause us to engage in intuitive reasoning when typically, metacognitive monitoring would intervene and instigate more deliberate cognitive processing.

Cognitive Enhancement Account

According to the cognitive enhancement account, thinking in a non-native language engages deliberative cognitive processes, allowing us to avoid common reasoning errors (Costa et al., 2014a; Cipolletti et al., 2016; Corey et al., 2017; Hayakawa et al., 2017; Vives et al., 2018; Jensen Mækelæ and Pfuhl, 2019)[3]. Unlike the metacognition disruption account, this explanation suggests that we can activate deliberative cognitive processes regularly, as if using FLE turns on a switch that improves reasoning or decision-making. Whereas the metacognition disruption account carries the implication that the FLE can be a double-edged sword, the cognitive enhancement account seems to suggest that the FLE will be beneficial to reasoning – or at worst, neutral – in most circumstances.

The uncertainty regarding the underlying mechanism for the FLE is relevant apart from basic research purposes. It may seem that inducing the FLE could only have positive benefits, but if, for instance, the metacognitive disruption account is correct then inducing the FLE might lead to worse outcomes in terms of worse reasoning or judgment. We will return to this question is section "Potential Issues With Using the FLE as Nudge." For now, we need to define a few other concepts central to our argument – nudges and their relation to positive psychology.

Nudges and Wellbeing

Having reviewed the FLE and the possibility for improving reasoning and decision-making, we now introduce nudges

[2]Recent studies on moral judgment investigating the role of language mode have shown that bilinguals using their native language exhibit similar response patterns to participants in older studies not investigating this variable (e.g., Greene et al., 2001). This suggests that the participants from the older studies were likely reasoning in their native language, although we cannot be certain of this.

[3]While the CEA is addressed in the research cited here, it is important to note that the authors do not necessarily argue in favor of this account.

and tie both the FLE and nudges to positive psychology. Positive psychology is the study of the emotions and actions that contribute the most to human flourishing (Seligman and Csikszentmihalyi, 2000; Linley et al., 2006). In clinical or experimental settings, researchers and clinicians can use PPIs – sometimes a writing or mental exercise, sometimes a behavioral practice – to direct attention in positive ways or to establish positive habits (Seligman et al., 2005; Sin and Lyubomirsky, 2009). The goal of PPIs in a research context is to determine what sorts of interventions influence our well-being, and the goal of PPIs outside of a research context is to help people flourish. Our aim is to expand upon the idea that the FLE might be used as a nudge toward positive outcomes, or a type of PPI, and thus complements research in positive psychology.

Nudges are features of a decision-making context that influence how people make decisions. Importantly, while altering an individual's behavior, nudges "do not forbid other options or significantly change incentives" (Thaler and Sunstein, 2008, p. 6). To count as successful nudge, the interventions must be easy to employ (e.g., low cost, requiring little effort). Understanding nudges and knowing how best to employ them is considered in society's best interest because they can help individuals alter their behavior to act in ways that are in their own best interest or in the interest of the public good (e.g., public health) without undermining their own autonomy – their ability to choose to act in accordance with them or not[4].

Nudges come in many forms and are used for many purposes (Lunn, 2014; Sunstein, 2014). Common nudges include using defaults (e.g., needing to opt out of being an organ donor, rather than needing to opt in), simplifying complex forms or procedures (e.g., tax forms), arranging environments so as to draw attention to choice-worthy items (e.g., stocking attractive items at eye height at the grocery store while putting cheaper generic brands on shelves close to the floor), and adopting useful heuristics (e.g., always round up to the nearest dollar while shopping). Nudges in themselves belong to a general category of non-coercive influence on the psychology of choice, and it is possible for nudges to have good, neutral, or bad outcomes. In this section, we discuss the possibility of using nudges for good, and in section "Potential Issues With Using the FLE as Nudge" we turn to the question of harmful nudges.

It is possible for nudges to directly contribute to well-being, as there are nudges with explicit connections to positive psychology research. For instance, Seligman et al. (2009) explore the power of PPIs in an educational context, including the effects of interventions involving mental and writing exercises, such as writing down three good things that happened each day (p. 301). A prompt to write down three good things per day is plausibly both a PPI and a nudge, as it is a non-coercive influence that could increase flourishing. Likewise, nudges can be used to establish healthy habits, such as a mindfulness smartphone app (Howells et al., 2016)[5]. Not every nudge is a PPI, and not every PPI is a nudge. Some PPIs could potentially be coercive, such as mandatory positive psychology training or state-mandated medications for people with severe mental health problems. These are examples of PPIs, as presumably these activities would improve individuals' well-being, but they are not nudges, as nudges must, by definition, be non-coercive. Likewise, some nudges are not PPIs, since they are not intended to enhance flourishing (e.g., requiring gym members to cancel their membership in person) But there is an intersection between PPIs and nudges worth exploring.

One more distinction will help in the discussion ahead. The distinction relates to what sort of thing is being acted upon as an independent variable – something in the external environment, or something internal to a person's psychology directly? Nudges that intervene on environmental stimuli are what we might call *external* nudges, and nudges that involve interventions that directly target our cognitive framing or processing of environmental stimuli, are *internal* nudges[6]. External nudges affect primarily non-mental or environmental elements of choice architecture. Examples of external nudges include using a warning label, listing nutritional information, or sending text reminders. In the end, all nudges have an influence on internal states of our psychology. But in the case of external nudges, one enacts changes to internal cognitive states *via* interventions on things outside of our heads. Internal nudges affect primarily mental or cognitive elements of choice architecture directly, rather than through external elements. For instance, someone who is feeling down might look at a photograph taken during their honeymoon and get a dose of happy nostalgia as the memories come flooding back. Or a person in the same initial sad state can simply intentionally remember the honeymoon without looking at any photos, knowing that this always puts them in a better mood. The former would count as an external nudge, as the internal change happens via looking at the photo, and the latter an internal nudge because the nudge is simply an intentional activation of memory without the use of environmental stimulus.

In the following section, we will explain how inducing the FLE can be understood as an internal nudge to improve our own decision-making and, perhaps, be instituted to advance the public good (e.g., through sustainable food practices). As institutions and society-wide flourishing fit within the positive psychology framework, it is important consider how the FLE can relate to flourishing at both the individual and societal levels.

FLE AS NUDGE

Given the research suggesting that actively thinking in a non-native language leads to better decisions by helping to avoid common biases, it stands to reason that bilinguals could benefit from choosing to make decisions in their non-native language. In this section, we explore some possible situations in which intentionally engaging the FLE could be considered a "nudge"

[4]Autonomy and autonomy supporting behaviors have been tied to increased well-being and autonomy as a trait arguably belongs in the canon of positive psychology traits (Chirkov et al., 2011).

[5]For a review of research involving apps nudging users to perform positive psychology exercises, see Bakker et al. (2016).

[6]Grüne-Yanoff and Hertwig (2016) call internal nudges that enhance reasoning or decision-making "boosts." For our purposes, we are treating boosts as subspecies of the larger phenomenon of nudges that primarily work via effects on internal cognitive processes.

toward adopting behaviors that encourage positive outcomes or lead to a decision that reflects their best interest. Additionally, we will discuss how the FLE can be used to benefit society as a whole, as researchers have suggested that we might use the FLE for purposes related to public or environment policy (U.N., banks, or sustainable eating practices as found in Geipel et al., 2018).

Consider another example from Keysar et al. (2012). In addition to diminishing the framing effect (see section "Background"), they found that actively thinking in a non-native language reduced the degree to which bilinguals allowed their fear of losing something (i.e., loss aversion) to unduly influence their decisions. Specifically, bilinguals thinking in their non-native language were more likely to accept favorable bets than bilinguals thinking in their native language. If actively thinking in a non-native language can reduce loss aversion, bilinguals may want to intentionally engage the FLE to improve their chances of making a decision that reflects their best interest (i.e., "nudge" themselves toward a better outcome). For example, suppose Vinny can make an investment with a 50/50 chance to get 250% return on his investment and a 50/50 chance to get zero return (and that this is money that Vinny can comfortably lose). According to some normative models of decision-making of how one *ought* to choose, such as expected utility theory, Vinny ought to make this investment[7]. Suppose that were Vinny to consider the investment opportunity, the psychological reality is that he would be loss averse and choose to let it go by. Could he intentionally engage the FLE to reduce loss aversion and choose to make the investment?

Additionally, the benefits of using the FLE as a nudge might be able to be extended to society as a whole. For example, Geipel et al. (2018) found that bilinguals who were asked about sustainable food practices (e.g., eating insects or drinking recycled water) in their native language were more opposed to engaging in these practices than those who were asked about them in their non-native language. The authors propose that:

> The main barrier to the adoption of these products is the disgust they elicit. Although recycled water is technically clean, in people's minds it is dirty because it was once in contact with a disgusting entity. Similarly, surveys on artificial meat and insect-based food link refusal to adopt these products to feelings of disgust (Geipel et al., 2018, p. 3).

Given that sustainability is an important and relevant issue, the fact that participants were more open to it when thinking in their non-native language lends us to say that it may be beneficial to society if some of these decisions were made in non-native language (Bonini et al., 2018, p. 819–820).

The promise of using FLE as nudge for increasing personal well-being or for greater societal goods is apparent. To see more concretely how the FLE might be used, recall the distinction between internal and external nudges. A potential use of the FLE as an internal nudge. might take the form of enacting an internal rule: *When making an important decision, consider it using a non-native language*. Or suppose Vinny knows he has a history of regretting our decisions when it comes to specific domains (say saving vs. spending money). Vinny might adopt a heuristic before making a purchase *consider in a non-native language whether it would be better to buy this item or to save*. Or perhaps friends and colleagues can play a role in our decision-making procedure as external nudges. For example, one could ask one's partner to present in a non-native language the question "should we bid for this house or continue to rent?" "Deberíamos hacer una oferta por esta casa o seguir alquilando?" (this option would add an external nudge component). We might choose to read important documents in a non-native language or conduct business meetings in shared non-native languages, as well. Thinking in a non-native language directly, absent environmental stimulus can be an internal nudge, and reading a text in a non-native language could be an external nudge that activates thinking in that language.

To summarize, it may be possible to use the FLE to help us make better decisions toward our own well-being. Thaler and Sunstein famously claim that nudges can helps us make better decisions regarding "health, wealth, and happiness," and to the extent that the FLE can be used as such a nudge, it shares in this potential. If this is right, then the FLE as a nudge nicely complements the aims of positive psychology – there is a shared interest in pursuit of encouraging positive episodes, traits habits, and institutions. We encourage more research at the intersection of the FLE and nudges to see where positives opportunities lie.

Though there is promise, it is important not to fall prey to excessive optimism. In the next section, we examine some limitations with respect to our current knowledge of the FLE and provide reason to be more cautious about overly simple recommendations to use the FLE as nudge. Specifically, it is important to consider how attempts to nudge can backfire, causing negative outcomes or instilling bad habits or traits that are antithetical to human well-being.

POTENTIAL ISSUES WITH USING THE FLE AS NUDGE

Our discussion for the possibility of misuse of FLE as nudge has two parts. First, we will address some problems that one could encounter when attempting to use the FLE to improve their own decision making, which would be considered a *self-directed nudge*. Then, we will discuss some issues that could emerge when someone tries to use the FLE to improve someone else's decision making, which would be considered an *other-directed nudge*[8].

[7] See Jeffrey (1983) for a classic statement. We do not endorse any particular theory of rational decision-making, and only use expected utility as a mainstream model for purposes of illustration.

[8] One might wonder how the internal vs. external nudge distinction maps on to the self-directed vs. other-directed nudge distinction. One can attempt to influence one's own choices with internal nudges (intentionally counting in one's head to ten so as not to make a decision in anger) and external nudges (looking at a photo from one's honeymoon to cheer up). One can externally nudge others in lots of ways (for instance, the Surgeon General attempts to nudge people not to smoke by putting large warnings of health hazards on cigarette packaging). It is unclear if it is possible to internally nudge others, though it is common to think that prayer or positive thoughts have external impacts on the world, potentially including influencing other peoples' decisions.

Potential Issues With the FLE as a Self-Directed Nudge

Our primary concern with using the FLE as a self-directed nudge is that, given our current state of understanding, we might possibly instigate as many "sludges" as nudges. Sludges are features of decision-making contexts that lead to worse outcomes (Thaler, 2018; Sunstein, 2019). Making tax filing directions overly difficult, confusing street or parking signs, or requiring many difficult steps to opt out of a subscription qualify as sludges. Sludges are more likely to induce negative emotions, such as frustration or anxiety, and to interfere with forming positive habits or engaging with healthy behaviors.

There is some evidence that thinking in a non-native language can *negatively* affect one's judgment. For example, Białek et al. (2019) found that bilinguals who completed logical reasoning tasks in their non-native language were less accurate than those who did so in their native language. The authors explain that thinking in a non-native language may inhibit one's ability to recognize when the validity of an argument needs to be evaluated. This research suggests that bilinguals should not use the FLE as a self-nudge in logical reasoning tasks and/or situations in which the validity of an argument is not guaranteed.

Even when the FLE is not actively harmful, suggesting that the FLE is always an effective nudge may itself act as a sludge. Some research suggests that the thinking in a non-native language has *no effect* on critical thinking tasks (e.g., the cognitive reflection task) or tasks involving representative bias or the conjunction fallacy (Vives et al., 2018). Given this research, there are two possible outcomes of using the FLE as a self-nudge in these tasks. At best, the outcome would be neutral (i.e., their decision would not be better or worse than it would have been had they made the decision in the native language). However, they could also too readily accept their decision simply because they used their non-native language, having decided incorrectly that using their non-native language would always result in a more rational decision. If their decision would have been different had they used their native language, there would exist the possibility that they made the wrong decision.

Advocates for using the FLE in the popular press may have presumed that the Cognitive Enhancement account is correct – that using the FLE simply improves reasoning or decision-making. However, this assumption is too hasty. It may be that the FLE is impairs reasoning or has no discernable effect. It is important to know when and why the FLE occurs before making sweeping recommendations for widespread use.

Potential Issues With the FLE as an Other-Directed Nudge

In this subsection, we look at two sorts of concerns with the ethics of using FLE as nudge. First, we look at whether we can be sure that using the FLE *improves* moral judgments by making them more rational, and then we turn to the ethics of nudging others.

In pursuit of beneficial nudges, we must be wary of the possibility that activating the FLE might at times act as a sludge. Theoretical research can find its way into the popular press and opinion, and it is important to make sure that limitations on what researchers know place constraints on what might turn into popular advice, and researchers must play a part in preventing potentially reckless use of this research. This could happen in a few ways. Take the reduced emotionality account of the FLE first. This account says that using the FLE attenuates the salience of moral and socio-cultural norms. If so, nudging yourself with the FLE could lead to undesirable outcomes. For example, if one thinks that there are relevant moral differences between the trolley and footbridge moral dilemmas such that one ought not maximize lives saved in the footbridge case even if one ought to do so in the trolley case, and that considering these cases in a non-native language reduces our ability to detect those differences, then one might conclude that we should not engage in moral reasoning in a non-native language. And, indeed, some popular news sources have concluded this – a writer for an online blog, The Language Nerds (2020), stated that you are "more likely to make immoral decisions while speaking a second language" and that "the languages we speak interfere with and direct our moral choices". While one might argue that utilitarian moral judgments are not *immoral,* it is still clear that at least the writer of this blog would consider the FLE to be a sludge rather than a nudge with respect to moral deliberation. In contrast, Lieberman (2017) from *Travel and Leisure* states doing so makes you more "a more logical, utilitarian reasoner" and that actively considering these scenarios in a non-native language makes us "able to more clearly consider the consequences of our decisions, and be our most rational selves." The fact that popular news sources are drawing general conclusions on the moral implications of using a non-native language, and providing contradictory advice regarding the morality of thinking in a non-native vs. native language on the basis of FLE research illustrates the importance of acknowledging how little researchers currently know about the FLE and the mechanisms that underlie it. Therefore, some caution is in order to provide time to better understand when and how the FLE might be used as a positive nudge rather than a sludge.

We turn now to the ethics of nudging others. There are difficult ethical questions regarding the relationship between mere influence on the one hand and manipulation on the other. Of particular interest here is whether those being nudged are aware that they are being nudged and whether they are willing to be nudged. Furthermore, we can divide cases into those that are paternalistic, where we are nudging others for their own good vs. cases where we are nudging others for the sake of the greater good, irrespective of the individual's good.

To demonstrate the relevance of awareness and consent in evaluating paternalistic other-directed nudges, let's imagine that a man has been accused of a crime – call him Defendant – and he is going to have to make several important decisions in the next few weeks. He is a native speaker of German and a non-native speaker of English. He claims to feel more comfortable and confident communicating in German. In preparation for the trial, he meets with a lawyer who is equally comfortable and confident communicating in both languages. The lawyer knows about her client's linguistic situation before their first meeting, and she also knows about the research showing that actively thinking in a non-native language reduces the effect of some common reasoning

errors[9]. Based on this information, she wants to use English when she communicates with her client in the hopes that he will be more likely to make decisions that are in his best interest. Let's look at a few different scenarios to see how awareness of a nudge and willingness to be nudged can interact to create situations that differ in terms of how ethical they are.

We can imagine a matrix of Defendant's condition with respect to his understanding and consent to the effects of actively thinking in a non-native language. In other words, we can categorize the Defendant as being aware or unaware of the FLE and either consenting or not consenting to the influence the FLE will have on his thinking. For the sake of concision, we illustrate with a description of a few scenarios, though more can be constructed.

Scenario 1: Aware and Voluntary

The lawyer asks Defendant, who happens to be very familiar with the research on the FLE, which language he would prefer to use in the meeting, and he chooses English. They conduct the rest of the meeting in English. In this case, he is *aware* that making these decisions in his non-native language is beneficial, and his participation is *voluntary*, since he chose to conduct the meeting in English.

Scenario 2: Aware and Involuntary

The lawyer conducts the meeting in English. Defendant happens to be very familiar with the research on the FLE, but he asks her to switch to German because he feels more comfortable speaking in German. She says "no" because she wants him to make decisions in his best interest. They conduct the rest of the meeting in English. In this case, he is *aware* that making these decisions in his non-native language is beneficial, and his participation is *involuntary,* since he did not want to continue the meeting in English.

Scenario 3: Unaware and Involuntary

The lawyer begins the meeting in English, but Defendant asks her to switch to German because he feels more comfortable speaking in German. She says "no" because she wants him to make decisions in his best interest. They conduct the rest of the meeting in English. In this case, he is *unaware* that making these decisions in his non-native language is beneficial, and his participation is *involuntary*, since he did not want to continue the meeting in English.

The three scenarios above show the different ethical dimensions that can arise when using the FLE as a nudge. If Defendant is aware of FLE and agrees to it (Scenario 1), there is little ethical concern. But if Defendant is aware and would not prefer to undergo the effects of non-native thinking (Scenario 2), if there are such, then it is far from clear that his attorney should supersede that preference, even if she thinks it is for his own good. Scenario 3, where Defendant is unaware of the effect, but would not agree to it if he knew, also raises red flags. Surely, Defendant's wishes with respect to how he wants to reason and make decisions carries ethical weight.

These issues escalate when we turn to other-directed nudges for the greater social good. Using the FLE is thought to cause changes in how people think, and while there are ways to change others' thinking that are permissible or even laudatory (i.e., providing education), ethically dubious methods lurk as well. In particular, one might be concerned about manipulating others via strategic application of the FLE, especially when the speakers who will be affected are unaware of the influence of the FLE.

To focus discussion, let us use Geipel et al. (2018)'s suggestion that the FLE causes people who are aware of the features of these products to be less averse to sustainable food practices, such as eating insects or drinking recycled water. Suppose that someone is aware of the relevant properties of these products and is averse to ingesting them when presented the choice in her L1 but is not averse if the choice is presented in a non-native language. Is this a case of unethical manipulation?[10] If so, then surely it matters in the quest for both healthy and flourishing individuals as well as larger institutions.

On the one hand, it may seem that the initial aversion is due to an irrational, emotion-based bias. Using the FLE as a nudge might dampen this irrational bias, causing us to be more responsive to the positive, sustainable features of adopting these food practices. (This is the reduced emotionality account at work. See Geipel et al., 2018, p. 6–7). However, there is a danger in characterizing others' positions as biased and emotion-based, and therefore justifiably influenced via nudges. Supposing that people had full information and were averse before the nudge intervention, we may wonder if reducing their emotional reaction is a justified form of influence. Or perhaps the metacognition disruption account is correct. Then using a non-native language may cause people to be less averse due to our metacognitive monitors overlooking what would be a first-order intuition conflict when choosing to enact the sustainable food practices. Interference with metacognitive monitoring has the potential for objectionable manipulation. The details behind the causal mechanism responsible for the FLE and how attempted nudges interact via that mechanism matter.

We submit that the following are important ethical considerations when one is attempting to nudge others via the FLE:

1. Transparency and prior consent to using a non-native language to influence thinking in environments outside

[9]We are assuming for the sake of argument that the FLE really does reduce the effect of common reasoning errors, as it makes the strongest case for nudging others for paternalistic reasons. If it is the case that the FLE acts as a sludge in these cases, then the need for caution is imperative.

[10]See Wilkinson (2013) for arguments to the effect that nudges easily fall into the category of manipulation. In his treatment of influencing how others think and behave with respect to nudges more generally, Sunstein (2016) claims that "an effort to influence people's choices is manipulative *to the extent that it does not sufficiently engage or appeal to their capacity for reflection and deliberation*" (2016, p. 82, italics in original). He writes that a "manipulator is leading the chooser *to make a choice without sufficiently assessing, on the chooser's own terms, its costs and benefits*" and that objections to manipulative nudges "reflect a sense that people are not being treated respectfully. Their own capacities and agency – to assess, to weigh, to judge – are not being given appropriate deference" (p. 84, italics in original). If the nudgers are aware of the FLE, and instigate it in others so that others act in line with what the nudger views as the greater good, it is a serious question as to whether the nudger is insufficiently engaging with the person who is being nudged on that person's own terms.

of the laboratory, where these decisions might have real stakes, is essential.
2. Understanding the causal mechanisms and how FLE nudges interact with them is important.

Before committing to using the FLE to nudge people to engage in more socially cooperative or greener behavior, it is important to think carefully about how the FLE works and how it is being used. If the FLE simply makes someone more rational – perhaps cognitively enhanced or less susceptible to irrational emotions – by their own lights, then it may seem that there is no ethical issue or moral trade-off. It may seem like a positive sum intervention. However, there is the potential for paternalism or problematic manipulation if others determine which of our reactions or emotions are irrational or due to inappropriate emotional biases. If people have a disgust reaction which causes them to be resistant to consuming recycled water, then there is an implicit value judgment to claim that this disgust reaction is irrational or that it ought to be countered via the FLE, as if it were a problem to be solved. It may be the correct value judgment, but it is important to recognize the ethical trade-off.

The matter is even more ethically fraught if the FLE has a potential to work as a sludge. If we are making people less rational, perhaps by inhibiting their metacognitive abilities to monitor their own intuitions appropriately, then influencing others via the FLE might qualify as manipulating others, in part by diminishing their abilities rationally make autonomous decisions, for the sake of the ends of the ones doing the influencing. There are ethical arguments to be had about when, if ever, bypassing others' autonomy is appropriate for the greater good (Savulescu, 2007). Similarly, one can debate the benefits of PPIs and weigh them against bypassing autonomy, but this must be done explicitly and with a full hearing from those who doubt that PPIs outweigh potential costs. At the very least, the exuberant recommendations to think in a non-native language to be rational or a rush to institute widespread green nudging deserves more scrutiny and ethical consideration.

DIRECTIONS FOR FUTURE RESEARCH

The question of where FLE might work best as a nudge toward positive outcomes is difficult to judge, as it depends on when nudges in general are effective, when the FLE is effective, and what happens when nudges and the FLE intersect. In this section, we will discuss how different lines of research could help to address whether (and how) the FLE can be used as a nudge.

The first consideration is that, as mentioned in previous sections, researchers do not yet have a full grasp of when the FLE appears and when it does not. Actively thinking in one's non-native language affects loss aversion but appears not to influence people's thinking with respect to the conjunction fallacy. And we do not know exactly why, with no mechanism for the FLE sufficiently confirmed at the moment. Further research needs to be done to understand the mechanism underlying this effect.

Another consideration for future research relates to language proficiency. Keysar et al. commonly assert that the FLE works most effectively, or even perhaps exclusively works, for unbalanced bilinguals – those who learned their non-native language in a different context than they acquired their native language (c.f. Hadjichristidis et al., 2019a). The implication is that native-like mastery of a non-native language (e.g., as in the case of balanced bilinguals) may not be conducive to the FLE. Proficiency could also play a role when native-like mastery has not been achieved. For example, beginning language learners with low proficiency may not fully comprehend cases presented in their non-native language. So, clearly, a language learner must have a certain level of proficiency in order to reason effectively in their non-native language. However, while a larger role for proficiency (or context of learning) has theoretical merit, up until this point we are unaware of any research confirming this. If it is true, for example, that the context of learning is important to whether the FLE works or not, then we may have a better understanding of the mechanism underlying the effect and a better understanding of how it could be used as a nudge. This could even inform language pedagogy, as it may be advisable for individuals to learn another language later in life.

Additionally, we do not have a firm grasp of some other temporal properties of FLE interventions. We do not yet have enough information regarding how long after beginning to use a non-native language it takes for the FLE to kick in or how long the effects last afterward. Another question to consider is whether there a minimum amount of time one must think in a non-native language to produce the FLE. The temporal aspects of the FLE is an area where more research would be valuable.

A separate question relates to perceiver effects. If you know that you are using the FLE in order to nudge yourself, will it still work? Most research on the FLE does not consider a speaker's awareness of the effects of the FLE. Perhaps knowing that one is attempting to be more rational via the FLE will cause one to believe one is more rational, even when one isn't. Or perhaps believing that one is being more rational will cause the FLE to be a placebo-like effect, causing a change in speakers' choices, but without the FLE itself being responsible for those changes. At this point, this matter remains unclear, and, if we want to use the FLE as a self-directed nudge for our own self-interest, it must be efficacious when we have knowledge of the effect.

The FLE as nudge is probably most likely to be effective when a slight shift in perspective while looking at the same picture changes the choice outcome. After all, it would be very strange if you developed a radical change in your preferences and values just by switching to a non-native language. A common feature of many scenarios where the FLE is found is that the relevant properties of both choices are apparent from the start. For instance, the odds in the coin-tossing loss aversion experiment, the numbers of who will be saved and who will die in the framing experiments and moral dilemmas, more. In short, the FLE is commonly found in dilemmas where the consequences are clear, beforehand, and multiple options have some sort of appeal to them. All participants are already split, to some extent. But relevant properties become just a bit more salient, enough to sway the overall decision. In hard cases, or in cases where it easy to miss important features, it is not clear what purchase the FLE might have.

CONCLUSION

We have examined the prospects of using the foreign-language effect as a nudge. The evidence so far is mixed, but there may be the potential to use the effects of actively thinking in a non-native language for our own good. Future research should investigate the exact mechanism through the FLE works. If the metacognition disruption account is correct, and the FLE distorts our ability to recognize conflicts in intuitions, then using the FLE could be as likely to act as a "sludge" as it is to work as a nudge. If the reduced emotion account is correct, then we ought to be careful to use the FLE as a nudge only in cases where increased emotion is harmful, and it is very challenging to systematically predict when these cases occur. Further research is also needed to determine the limits on the FLE's effective capacity to change how we reason and for how long.

Positive psychology has identified several factors that contribute to an individual's happiness, well-being and/or positivity. Some of these factors include establishing and maintaining healthy relationships and exercising. In addition, engaging in appropriately challenging tasks that require a higher level of skill has been shown to positively impact one's level of personal satisfaction. Similarly, learning and using a non-native language may have additional benefits beyond its intrinsic value. If the FLE can be used as a nudge, then learning a non-native language can help us lead happier, more successful lives.

AUTHOR CONTRIBUTIONS

SM had the original idea for this article. All authors contributed equally to the research for and writing of this article. All authors contributed to the article and approved the submitted version.

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Interacting With Competence: A Validation Study of the Self-Efficacy in Intercultural Communication Scale-Short Form

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Self-efficacy encompasses the professional and personal language goals of learners as their progress depends upon a strong motivation to put practical language skills to use when the real world requires it. Intercultural communication and effectiveness are of interest to the professional and personal language goals of learners as their progress depends upon a strong motivation to put practical language skills to use when the real world requires it. Studying or working abroad and engaging in intercultural training are two such contexts that bind research in learner characteristics between applied linguistics and positive psychology as they provide a substrate of concrete interactions, transformative experiences characterized by opportunities for changes in self-concept, negotiations with values and authenticity, and forms of interpersonal development underwritten by intercultural communication as an ability. A tool to capture this domain-specific intercultural communication was previously developed with sojourner educational professionals for use among English speaking populations. However, the original study lacked confirmatory analyses of internal and external validity that would clarify model identification and applicability for research that deals with intercultural communication competence across populations with diverse sample characteristics. A total of 876 teachers (*M* age = 37.48, *SD* = 10.81) and 266 university students (*M* age = 19.48, *SD* = 0.74) in Japan responded to items from the SEIC instrument. Acceptable model fit was supported for the eight-item short form. Metric invariance was observed for individuals from a sample of sojourning English language teachers similar to the original validation and a nationwide survey of Japanese teachers of English, offering indications of cross-cultural validity. Degrees of equivalence were also found for the Japanese items as extending fitness for use to students from two universities in Japan. Concurrent validity was supported for SEIC measured by the

scale with intercultural effectiveness competencies and speaking and listening self-efficacy constructs used in classroom contexts. Together, this study offers a tool of valid indicators for researchers and practitioners who aim to observe self-efficacy in positive education, intercultural training, or international programs that intersect with language learning and intercultural communication.

Keywords: self-efficacy, intercultural communication, self-regulated learning, L2 motivation, sojourner self-efficacy in communication

INTRODUCTION

Communicative competence is a penultimate goal for language learners. Numerous theories have been posited for its instructional and developmental processes, but tools for applications, such as simulations and learning experiences designed to augment communicative competence mediated by language, require added considerations for domain specificity. While some instruments have been established, they typically aim to capture micro processes from classroom use cases or higher-order macro beliefs about sociocultural adjustment. Thus, many constructs lack the needed focus for a mid-level construct that considers situated interactions with interlocutors marked with sociocultural proficiency. Gains in self-efficacy in communication and language can be made from experiential learning, which serves as a connective tissue for work in education with positive outcomes. A nomological net for self-efficacy in intercultural communication (SEIC) was carefully identified with convergent and discriminant analytic techniques by Peterson et al. (2011), which provides a framework rooted in social cognitive theory and a mid-level construct recognized as necessary for practitioners (Lake, 2016). Their study showed potential applications for SEIC in a sample of professionals with overseas sojourning and teaching experience. However, the original scale development attempt used a relatively modest sample size (N = 213) of former sojourning teachers and ended with preliminary checks for internal validity, likely contributing to some hesitancy to select or adopt the instrument in related assessment research (Goldstein, 2015). This report offers numerous positions in favor of the approach and instrument taken by Peterson et al. (2011) with further theoretical support due to the usefulness of an SEIC construct in applied settings and addresses questions of validity to evaluate its potential as a tool for evaluators and educators.

Overall Communicative Competence and Intercultural Learning

Long been the target of classroom instruction, overall communicative competence is theorized as the chief goal for learners in terms of function, discourse, register, non-verbal human communication and linguistic negotiation (Yorio, 1976; Paulston, 1992; Brown, 2000). Constructivist theories emphasize the role and dynamism of interactions (Long, 1996) as a matter of language transactions and extend such notions to include key elements of awareness, autonomy, and authenticity in theories of practice for pedagogical design (Van Lier, 2014). Speakers and listeners chisel and achieve competency through interactions and their feedback. Furthermore, cultural knowledge and awareness enhance the resolution of the available and practical language lexicon and contextualizes it with ecologically valid situational knowledge (Sample, 2013; Rebstock, 2017; Yoshida et al., 2018). In this way, skilled flexibility, variability, and familiarity with language features such as style and register are needed for communicating with attendant illocutionary force (Brown, 2000).

Intercultural learning allows for individuals to become competent with these features by being aware of multiple perspectives and facilitating long-lasting personal growth. Simulation activities such as "Rocket" (Hirshorn, 2009; Kirchhoff and Yabuta, 2017) or exercises with active learning and discussion of critical incidents are rich in implementation fidelity, structured instruction, and the ability to grant learners with unique opportunities to obtain intercultural awareness (Wilson, 2017; Yoshida et al., 2018). Among developmental events for emerging adults, the study abroad or sojourn experience is considered prototypically "life-changing" as it provides genuine opportunities for individuals to negotiate meaning through engagement with their own mind and body against the backdrop of a given surrounding culture, society, and its members. Insights from the psychology of happiness through travel support the notion that international sojourns affect personal growth through multicultural encounters in a transformative fashion (Couper, 2001; Filep, 2009), and transformative experiences are associated with esthetic appraisals and the virtue of transcendence in applied positive psychology (Keltner and Haidt, 2003; Lomas et al., 2014). In reference to the conceptual map of applied positive psychology by Lomas et al. (2014), the sojourn specifically offers paths to subjective well-being through encounters with material substrates in the built environment (e.g., architectural marvels) as physical objects with collectively shared meaning, as well as new interpersonal encounters mediated *via* communication (e.g., everyday transactions with others from immersion into the host culture) as relational experiences. Other implicit judgments and interpersonal interactions are known to provide instrumental outcomes and exposure to norm representations from feedback after immersive experiences (Morris et al., 2015). In this way, sojourns provide those with values or strengths such as open-mindedness, curiosity, love of learning, or others (Deardorff, 2006) the opportunity to negotiate expectancies and arbitrate their signature status and perhaps even develop their sense of authentic personality (Wood et al., 2008) through expansions in cultural understanding from interactive behavior. In this manner, expanding cultural understanding through awareness, knowledge, emotions, and skills is a strong precursor to the

sojourner efficiency and experiential learning that stands as an exemplary feature of intercultural training (Rebstock, 2017; Yoshida et al., 2018).

Intercultural Communicative Competence With Interlocutor Interactions as Integral Domain

The strides in self-concept made from exposure to new environments and perspectives through interactive behaviors come from concrete experiences under intercultural circumstances, and these inform beliefs about the competence that an individual possesses to navigate communicative encounters with aplomb. Researchers have dubbed this ability *intercultural communication competence* (ICC). According to the definition by Fantini and Tirmizi (2006), ICC represents "the complex of abilities needed to perform effectively and appropriately when interacting with others who are linguistically or culturally different from oneself" (p. 12; Godwin-Jones, 2013). Properties of ICC were carefully qualified using the Delphi technique (Deardorff, 2006) and categorized into 24 agreed-upon components. These were summarized into a conceptual pyramid that builds upward from a substrate of diffuse attitudes and coalesces into degrees of acquired knowledge of culture and language skills, leading into internalized adaptations of new communicative styles, and ultimately peaks with an actualized ability to demonstrate effective and appropriate behavior *vis-à-vis* communication within and between cultures. The components have been operationalized for assessing student outcomes (Deardorff, 2011) and paved the way for efforts to capture and track changes in intercultural effectiveness (Nguyen, 2017) from an inventory of global competencies (Mendenhall and Osland, 2002). A process model of ICC utilizing the same components as the pyramidal model was also conceptualized to illustrate the objects of incremental and cyclical ICC development. Notably, researchers have called for more contextually diverse explorations into ICC due to the general locus of input from Western institutions (Deardorff, 2015; Deardorff and Arasaratnam-Smith, 2017) and expressed concern that "current models of intercultural competence do not sufficiently address the role of language competence in intercultural competence" (Deardorff and Arasaratnam-Smith, 2017, p. 299). In contrast, the SEIC covers both aspects of these competencies and incorporates ICC content in Deardorff (2006) that encompasses sociolinguistic awareness. Additionally, the instrument project by Peterson et al. (2011) was explicitly cited as one of the few examples of communicative studies where sojourners underwent supervision overseas in a non-Western host culture (Simmons, 2014).

Studies have clarified that desired internal and external outcomes exist for gains in sociocultural understanding such that "effectiveness" in communication is informed by culturally attuned knowledge and manifested behaviorally by achieving goals (i.e., the Pyramid Model of Intercultural Competence; Deardorff, 2006) but also by demonstrating the zenith of communicative behavior (Yashima et al., 2016). Development of the SEIC was originally based on the suppositions of intercultural transformation theory (IFT) to which communicative encounters are thought to be evaluated as beliefs about competence while under the duress of intercultural interactions. IFT draws strong parallels from the cyclical process model of stress-adaptation-growth by Kim (2001) and advances the notion that intercultural interactions that do not conform to sojourner expectations become a wellspring for intercultural growth. Non-conforming interactions lead to disequilibration (e.g., stress), to which the sojourner responds to new and alternative cultural norms and is faced with the choice to integrate them into their intercultural repertoire (e.g., growth) as a matter of adaptive behavior. As the iterations of non-conforming intercultural interactions mount over time, greater degrees of adaptation hypothetically build within the sojourner. In a more countable fashion, each iteration of non-conforming interaction is essentially an appraised stressor that Experiential Learning Theory (ELT) by Kolb (1984) would define as a *concrete experience* that invites sojourners to reflect, reconceptualize, and experiment with their understanding the next time that they find themselves in a similar situation.

Nguyen (2015) recognized and illustrated that the longitudinal stress-adaptation-growth cycle and more cross-sectional ELT cycle contain substantial and intuitive theoretical overlap vis-à-vis concrete experiences. The primary commonality across the aforementioned models (intercultural competence, ELT, stress-adaptation-growth) for beliefs in linguistic capability among sojourners is the notion that episodes of interpersonal engagement are critical to initiate possible growth within individuals. ELT, as a cyclical theory, requires such experiences to begin a cycle and stipulates that students take ownership of the learning experience. In study abroad experiences, especially, building diverse learning relationships with individuals while abroad is emphasized as a means to "promote growth and movement through the learning spiral" (Passarelli and Kolb, 2012, p. 156). Analogously, the everyday nature of human concerns is argued as a key advantage for leveraging techniques in *positive education*, as the topics of positive psychology encompass the emotional lives of students whose personal experiences and positive emotions can be called upon for reflection in expressive ways (Biswas-Diener and Patterson, 2014). In this way, positive education is similarly experiential and reliant on learner emotions and beliefs as a basis for awareness and self-regulation. Managing learner emotions was directly targeted in work on emotional regulation strategies in language learning with vignettes (Gkonou and Oxford, 2016) and even investigated for implementation fidelity with techniques in Cognitive Behavioral Therapy (CBT) (Curry et al., 2020). Moving beyond the classroom, positive education applications to intercultural communication competence would be salient for the transformative experiences that are thought to accompany sojourning for work or study, calling upon methods in reflective and experiential learning (Kolb et al., 2001).

Psychological adjustment is well-understood by stress and coping frameworks (Li and Gasser, 2005), and IFT appears adequate in its approach to capturing elements of the stress-adaptation-growth cycle. However, we also advocate for contemporary research that more explicitly integrates the notion of a substrate of interactions with Kolb's experiential

learning cycle (Passarelli and Kolb, 2012) and an addendum that engaging in interactions requires a willingness to communicate (WTC). Proponents of WTC contend that linguistic variables (communicative competence, L2 self-confidence, and state-communicative self-competence) and social and situational variables (intergroup climate, social situation, intergroup attitudes, intergroup and interpersonal motivation, and the desire to communicate with a specific person) form the interactive substrate for these outcomes (MacIntyre et al., 1998). In the Japanese context, self-perceived communicative competence was the most robust correlate with WTC in English (r = 0.56) among Japanese undergraduates (Yashima, 2002) and was the only statistically significant correlate (r = 0.46) among Japanese high school students preparing to study abroad for a year (Yashima et al., 2004). Spoken WTC was found to be significantly influenced by the perceived ability to speak in English among a sample of 1,789 Japanese university students, and differences were discovered to depend on the type of interlocutor (Japanese student, Japanese teacher, non-Japanese student, non-Japanese teacher) encountered (Weaver, 2010). Each of these studies offers support for the WTC model, and lends credence to the notion that state-like components of L2 self-efficacy are integral in the choice of whether to engage in an interaction. Additionally, research on language learning holds sufficient promise as a concrete stressor for appraisal and coping in the specified domain but requires further rigor in approaches to measurement of constructs with cross-cutting and positive trait-related implications (Lazarus, 2003; Dewaele et al., 2019).

Interacting With Competence: Learning Through Self-Efficacy and Intercultural Communication

Evaluating language and intercultural competence requires a belief in one's capability to perform effective communication. Peterson et al. (2011) recognized that one of the most appropriate and available areas of focus for communicative competence that binds the relevant disciplines and research programs was through examinations of *self-efficacy*, a core construct that weaves between cross-cultural research in educational settings. Situated along the framework for the social cognitive theory of learning provided by Albert Bandura in the 1970s, self-efficacy encompasses a wide array of psychosocial components that incrementally contribute to levels of attainment toward goals. The first relates to modeling and obtaining experiences of mastery through direct engagement with tasks or their vicarious observation. The second involves the influence of positive or negative feedback of people in interpersonal interactions regarding the skill at hand, especially such that the communication emphasizes social persuasion. The last major component relates to the process of evaluating and regulating markers of internal or physiological states from the body while performing the skill or behavior (Bandura, 1997). Mak and Tran (2001) assigned direct applications of self-efficacy to language and intercultural competence according to the criteria put forth by Bandura (Li and Gasser, 2005), such that domain-specific self-efficacy for language learners involves engaging actively in controlled cross-cultural interactions of social significance, observing peers perform in these interactions, seeking constructive feedback, and overcoming emotional arousal to enhance performance. Self-efficacy has also been tagged as a factor influencing sojourner and intercultural adjustment (Hechanova-Alampay et al., 2002) for both domestic and international sojourners (Goldstein, 2015). In a meta-analysis reporting a moderate effect size, cross-cultural self-efficacy change from intercultural adjustment was observed longitudinally and opposed measures of anxiety (Wilson et al., 2013), indicating its crosscutting role as a situational factor in these applications.

Numerous theories of motivation in language learning have adopted components relevant to self-efficacy—from goal setting (Lee and Bong, 2019), self-regulation (Kim et al., 2015), notions of personal investment (King et al., 2019), and value expectancy (Mori, 2002; Loh, 2019) to the four skills in languages such as English (Wang et al., 2013). Beliefs about language aptitude have been tied to self-efficacy in communication (Yang, 1999), and a self-efficacy model of interpersonal communication competence was developed by Rubin et al. (1993), whose study provided concurrent relationships between self-efficacy and satisfying communication such that levels of self-efficacy affected ratings of interpersonal communication competence as a belief in one's skill. In other areas of applied linguistics, the WTC model has been studied extensively and in conjunction with measures of L2 self-confidence, which scholars like Dörnyei and Kormos (2000) have argued is a form of task-related or state-specific self-efficacy, especially in a study that showed L2 self-efficacy and relationship to the interlocutor positively correlated with the frequency of turn initiation in L2 discussions (Dörnyei and Kormos, 2000). However, L2 self-confidence and self-efficacy contain differences in the scope of content validity and the desired use by practitioners. The need for capturing an intermediate construct level domain for L2 self-efficacy was identified as a potential crossover construct by Dewaele (2012) and underscored in the work by Lake (2016). In terms of practical need for instructors and researchers of simulations, formal frameworks with common constructs have been similarly dubbed lacking and necessary for endpoint evaluation and evidence-based use of the exercises (Wiggins, 2012).

Training simulations extend to professional settings and serve as a throughline for ability benchmarking and intercultural skill acquisition. Professional self-efficacy is a key factor in theories of burnout (Maslach et al., 2001) that has received attention in research on teacher emotions (King et al., 2020). SEIC could be a target outcome for classroom contexts but also professional settings. The original sample population from Peterson et al. (2011) was composed of alumni participants of the JET Program. Thus, the SEIC study explored by Peterson et al. (2011) harnesses a strength in application in the form of its original focus on overseas professionals in educational settings. Continuing to secure a population with this upper bound might allow for observations of latent changes along the longitudinal arc of college student outcomes into ICC for educational professionals. For those earlier in training such as students obtaining work experience, service learning is a growing area where linguistic competence is meaningfully applied (Rebstock, 2017) and could

be observed as a factor sensitive to longitudinal change. In fact, such implications for professional self-efficacy were a point of reference in a study of relevant attitudes by Harrison (2006), who acknowledged relationships between cultural connectivity and professional development, and in another study by Goldstein (2015) who reported shortcomings in variable selections from an implemented reliance of a general rather than domain-specific self-efficacy scale, specifically citing Peterson et al. (2011) as a logical next step for investigation. This is in line with the fact that, while formulations of the theory of self-efficacy have been pursued as a general capacity, task-related self-efficacy in applied psychology contexts is especially endorsed (Carr, 2013) and has been key for aligning with Bandura's prescription that self-efficacy beliefs are best delineated under specific domains (Bandura, 2006). Overall, self-efficacy is an integral factor across these studies and research programs, and applications to intercultural communication further specify the domain. In this sense, SEIC is a versatile construct that spans the relevant disciplines and the expectations of learner gains. SEIC could conceivably find application inside formal classroom settings through formal instruction plans or outside of them in the form of real-life encounters (McEown and Oga-Baldwin, 2019) and even to professional development settings.

The Present Study

In light of this reading of the literature, it is suggested that SEIC is a valuable domain and credible source of application to both professional and educational settings. However, the tool developed to evaluate SEIC only went through initial stages of validation with a limited sample size. The preliminary validation steps used principal axis factoring and Cronbach alpha-based reliability estimate comparisons to extract a measurement model of the items (Peterson et al., 2011) in a relatively modest sample (N = 213). The authors made efforts to establish an exploratory factor analysis-based structure, to which an eight-item short form of the instrument was established but noted that future studies remained necessary for confirming the factor structure and its generalizability.

Here, we apply the eight-item version proposed by Peterson et al. (2011) from data of teachers who sojourned to currently sojourning and host culture teachers and the 34-item original item version in a first-time application for undergraduate students. Our study is therefore motivated to address these areas of validation by (1) securing careful confirmatory analysis of the eight-item short form in a study design that shares sample characteristics of sojourning language teachers and extends beyond a single-language instrument through adaptation to another sample of Japanese teachers; and (2) attempting to replicate good fit for psychometric properties and nomological networks in samples of undergraduate students from two universities in Japan that would serve as targeted populations for the use of the instrument. These analyses are framed to posit that the construct can be attenuated in use cases of students motivated to benefit from sojourns but not necessarily exclusive to them as SEIC could extend to outcomes of intercultural training (e.g., simulations), calling for a localized form of the instrument that captures SEIC as a learner belief of interest to research and practice in applied positive psychology and linguistics.

MATERIALS AND METHODS

Procedures and Study Participants

This study used cross-sectional survey designs to provide snapshots of relevant constructs for examining validity among a sample of native English language teachers sharing the characteristics of the original sample validation as well as native speakers of Japanese language who received and responded to Japanese adaptations of the items.

Sample of Teachers for Language Adaptation and Structural Validity

Paper-and-pencil questionnaires containing the short-form items proposed by Peterson et al. (2011) were distributed by postal mail to assistant language teachers (ALTs) and Japanese Teachers of English (JTEs) throughout Japan. A total of 876 teachers (M age = 37.48, SD = 10.81) responded to the survey section that included the eight-item short form instrument. Data from this sample were used only to examine questions of internal validity, to which listwise deletion for completed responses left 264 participating ALTs and 597 participating JTEs for analysis (N = 861). Sample details are depicted in **Table 1.1**.

TABLE 1.1 | Demographic and descriptive information for the study variables for study participants from mail-in questionnaire data of the teachers.

Study variable	Sojourning Assistant Language Teachers (ALTs)	Japanese Teachers of English (JTEs)
Gender *(N,% Female)*	261* (48.66%)	590* (60%)
Female	127	354
Male	134	258
Age (*M*, *SD*)	28.7 (6.4)	41.3 (10.1)
Education (Highest Level Completed; *N*,%)		
Bachelor's	225 (86.21%)	451 (76.44%)
Master's	33 (12.64%)	107 (18.14%)
Doctorate	2 (0.77%)	6 (1.02%)
Years of experience (*M*, *SD*)		
Teaching	3.77 (3.67)	16.65 (10.21)
Team teaching	3.06 (2.97)	13.22 (9.09)
Currently team teaching (%)	96.55%	90.68%
Grade level teaching (*N*,%)		
Junior high school	118 (45.21%)	258 (43.73%)
High school	143 (54.79%)	332 (56.27%)
Self-Efficacy in Intercultural Communication (*M*, *SD*)	3.69 (1.20)	3.54 (0.82)

**Demographic data were missing or incomplete for three ALTs and seven JTEs, respectively. Item-level data of the fully completed SEIC items were retained for the analysis of structural validity. Average Self-Efficacy in Intercultural Communication (SEIC) scores were calculated for the eight-item version that was distributed to the samples of teachers.*

Demographic data were provided by 261 ALTs (48.66% female; n = 127). The mean age of ALTs was 28.7 years, and they had been teaching English for an average of 3.77 years and team teaching (presumably in Japan) for 3.06 years. At the time of completing the survey, 96.55% said they were currently engaged in team teaching of English classes. Regarding teaching context, 45.21% (n = 118) taught at junior high schools, and 54.79% (n = 143) taught at high schools, respectively. Finally, concerning the highest formal level of education completed, 86.21% (n = 225) had completed a bachelor's degree, 12.64% (n = 33) had completed a master's degree, and 0.77% (n = 2) had completed a doctorate. The reliability coefficients for the SEIC among ALTs were $\alpha = 0.94$, $\omega = 0.94$.

Demographic data were provided by 590 JTEs (60% female; n = 354). The mean age of JTEs was 41.3 years, and they had been teaching English for an average of 16.65 years and team teaching for 13.22 years. At the time of completing the survey, 90.68% said they were currently engaged in team teaching of English classes. Regarding teaching context, 43.73% (n = 258) taught at junior high schools, and 56.27% (n = 332) taught at high schools, respectively. Finally, concerning the highest formal level of education completed, 76.44% (n = 451) had completed a bachelor's degree, 18.14% (n = 107) had completed a master's degree, and 1.02% (n = 6) had completed a doctorate. The reliability coefficients for the SEIC among JTEs were $\alpha = 0.90$, $\omega = 0.90$.

Sample of University Students as Target for Instrument Use

To investigate and validate relationships in a sample population targeted for use of the instrument, 266 students (M age = 19.48, SD = 0.74) from two different universities in Japan responded to questionnaires. Data were distributed and collected *via* an online survey research platform as a part of a pre–post study design akin to Nguyen (2017) to observe possible changes in intercultural effectiveness upon short-term study abroad program participation (duration: 2 weeks). Data from these samples were used to evaluate internal and external validity. All participants included gave their informed consent to participate and allowed the use of their data for analysis.

Analytical Plan

Confirmatory factor analysis (CFA) is an approach to providing measurement models that systematically examine the structural validity of latent constructs (Brown, 2014). Continuing the next step in the validation process as acknowledged in the concluding sections of Peterson et al. (2011), CFA-based cross-validation was chosen to examine the generalizability of the factor structure of the short form of the SEIC.

Measurement invariance (MI) is an analytical approach that tests the degree of equivalence in relationships between responses to items and their associated latent constructs across groups (Pendergast et al., 2017). The three major steps of MI include checks for configural invariance, or whether the items are measuring the same factors across groups, metric invariance, or the degree that magnitudes of item–construct relationships are equivalent across groups, and scalar invariance, or whether the loadings and "threshold" intercepts are equivalent between groups (van de Schoot et al., 2012; Pendergast et al., 2017) for direct comparisons. MI was tested to determine degrees of internal and cross-cultural validity for the eight-item short-form instrument across groups.

Correlational analysis is used to understand convergent and divergent forms of external validity from the magnitude and direction of relevant latent constructs (DeVellis, 2016). Relationships between SEIC, language proficiency scores, and intercultural effectiveness at pretest as a cross-section were compared to further establish the content domain of the construct measured by the SEIC instrument. Coefficients above or between 0.2 and 0.4 were evaluated against theoretical assumptions and those especially exceeding 0.3 were deemed sufficient as intercorrelations (Boateng et al., 2018). Investigations of construct validity were also performed for SEIC to meaningfully overlap with self-efficacy constructs for listening and speaking skills typically used in classroom contexts (Hunsley and Meyer, 2003).

Measures

Self-Efficacy in Intercultural Communication (SEIC; Peterson et al., 2011)

The full version of the SEIC is a 34-item self-reported measure that attempts to inductively summarize a domain of self-efficacy as it relates to intercultural communication. The original English version of the items was distributed to the assistant language teachers as native speakers of English, while the Japanese items were adapted, backtranslated into English, and distributed to the Japanese teachers of English and undergraduate students at two Japanese universities. The English and Japanese items used for the short form are available in **Table 2**, and the full form is available in **Supplementary Material 1**.

All items in the study by Peterson et al. (2011) began with "*How well can you. . .*," and utilized a seven-point response scale semantically labeled at the poles, with 1 equating to "*not well at all*" and 7 equating to "*very well*" (personal communication with the authors, 2017). In this study, a six-point scale ranging from "*I definitely cannot do this*" to "*I can do this very well*" semantically labeling with all points along the scale was employed. This departure from the original study was made for three reasons. First, item response theory-based empirical evidence suggests deviation in psychological distance estimations between response categories increases as the number of response categories available increases, and that this deviation influences item values (Wakita et al., 2012). Second, the degree to which a neutral response option actually indicates a neutral response has been called into question (Kulas and Stachowski, 2009, 2013), and some Japan-based researchers explicitly advise against neutral response options and eliminate them from Likert-style instruments (Nemoto and Beglar, 2014). Third, the L2 Speaking Self-Efficacy and L2 Listening Self-Efficacy scales (described subsequently) each employ six-point response scales, without a neutral option, and with each point on the response scale explicitly labeled. As each of these instruments was delivered as part of a single

survey battery, we determined that consistent use of a six-point response scale for the entire battery was both intuitive and methodologically sound.

L2 Speaking Self-Efficacy (S-SE; Hicks and McLean, 2014)

The S-SE is a 20-item instrument developed with Japanese university students. Technical item quality was evaluated with Rasch principal components analysis, and nomothetic span was investigated against the WTC model and constructs in its validation. In addition, external validity was previously investigated and supported for the items to discriminate from foreign language speaking anxiety. Items include can-do statements such as "I can respond in English to greetings from international students on campus." Participants responded to a six-point scale ranging from "*I definitely cannot do it*" to "*I can definitely do it*."

L2 Listening Self-Efficacy (L-SE; Kramer and Denison, 2016)

The L-SE is a 14-item L2 domain-specific instrument drawn from items by Burrows (2012) and fitted with Bandura (2006) prescriptions for self-efficacy scale development. The scale was validated for Japanese ESL learners achieving elements of content relevance from interview data, technical item quality from Rasch rating scale modeling, convergent validity through moderately positive correlations with vocabulary knowledge and divergent validity through moderately negative correlations with foreign language listening anxiety. Sample items include "If I heard an English conversation at the level of a junior high school textbook, I would understand it," and "If I watched the news in English, I would understand it." A six-point response scale ranging from "*I definitely cannot do it*" to "*I can definitely do it*" was used.

Intercultural Effectiveness (IES; Mendenhall et al., 2008)

The IES is a 60-item self-report measure developed to evaluate the overall competency of individuals when interacting with those from cultures that are different from their own. The IES was created as a simplified version of the Global Competencies Inventory (GCI), a line of research in which Mendenhall and Osland (2002) distilled the dozens of competencies hypothesized to influence global leadership effectiveness to a core set of six dimensions. Three of these dimensions (cross-cultural relationship skills, traits and values, and cognitive orientation) were found to overlap with the competencies critical to expatriate adjustment to living and working in a foreign country. The IES is simply a "less complex version of the GCI" (Mendenhall et al., 2008), comprised of three dimensions that each contain two subfactors. *Continuous Learning* ($\alpha = 0.85$), which is operationalized as "the degree to which individuals engage the world by continually seeking to understand themselves and also learning about the activities, behavior, and events that occur in the intercultural environment" is comprised of the two subscales of Self-Awareness ($\alpha = 0.76$) and Exploration ($\alpha = 0.82$). *Interpersonal Engagement* ($\alpha = 0.85$) is operationalized as "the ability to develop positive relationships with host-nationals" and is comprised of the two subscales *Global Mindset* ($\alpha = 0.84$) and *Relationship Interest* ($\alpha = 0.80$). Lastly, *Hardiness* ($\alpha = 0.84$), operationalized as "people's ability to effectively manage their emotions and stress, along with their ability to view other cultures and people from those cultures in positive ways and to be non-judgmental about ideas and behaviors that are new" is comprised of two subscales called Positive Regard ($\alpha = 0.79$) and Emotional Resilience ($\alpha = 0.81$). As the IES is a proprietary instrument, sample items are restricted from third-party reproduction. Participants responded to a five-point Likert scale that ranges from "*Strongly Disagree*" to "*Strongly Agree*."

RESULTS

Sample Characteristics and Reliability Analysis

The descriptive statistics and reliability of the study variables were calculated in JASP (JASP Team, 2018). Participants who fully completed the survey were retained, of which 266 participants were used for the examination of internal validity, while listwise deletion left 240 university students (53 males, 187 females) for analysis of external validity (University 1: $N = 161$, 67% female; University 2: $N = 79$, 100% female). According to conventional guidelines for reliability as estimated by Cronbach's α and McDonald's ω, values greater than 0.7 were favored and internal consistency was supported for the self-efficacy study variables (SEIC: $\alpha = 0.88$; $\omega = 0.87$; S-SE: $\alpha = 0.96$; $\omega = 0.96$; L-SE: $\alpha = 0.92$; $\omega = 0.88$).

Confirmatory Factor Analysis

Confirmatory factor analysis was performed using the *lavaan* package (Rosseel, 2012) to evaluate structural validity. Listwise deletion to retain fully completed item-level response data left 861–876 teachers for the CFA. The default maximum likelihood estimator was used. Fit indices and information criteria were compared as model selection measures. The one-factor model with eight items as originally proposed as the short form from the sample of assistant language teachers as sojourners in Peterson et al. (2011) was fit for the present sample of teachers, and the original 34-item full form and eight-item short form were examined for the new targeted sample population of university students. Several indices of model fit were considered, namely, the chi-square (χ^2), Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Goodness of Fit Index (GFI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA). **Table 1.2** displays the fit indices from each procedure and sample configuration. Acceptable model fit was determined from a combined consideration of the incremental (CFI, TLI, GFI), absolute (SRMR), and parsimonious fit indices (RMSEA), such that CFI, TLI, and GFI values reached above 0.90 but especially exceeded 0.95, SRMR values were less than or close to 0.06, and RMSEA values were close to or less than 0.80 (Brown, 2014). Model comparison suggested that the one-factor

TABLE 1.2 | Fit indices from confirmatory factor analysis of the SEIC in the samples of teachers and university students.

Model		*df*	Minimum Function Test Statistic (χ^2)	χ^2 *p*-value	CFI	TLI	GFI	SRMR	RMSEA (CI)
Sojourning Assistant Language Teachers (264)	8-item short-form model	20	63.867	0.000	0.973	0.962	0.943	0.028	0.091 (0.067–0.117)
Japanese Teachers of English (597)	8-item short-form model	20	100.813	0.000	0.965	0.951	0.961	0.033	0.082 (0.067–0.099)
Total Teachers (861)	8-item short-form model	20	129.452	0.000	0.973	0.963	0.967	0.026	0.078 (0.065–0.091)
Undergraduate Students (266)	34-item full model	527	1511.733	0.000	0.788	0.775	0.602	0.065	0.107 (0.100–0.113)
	8-item short-form model	20	74.791	0.000	0.919	0.887	0.901	0.050	0.129 (0.099–0.161)

SEIC, Self-Efficacy in Intercultural Communication; CFI, Comparative Fit Index; TLI, Tucker-Lewis Index; GFI, Goodness of Fit Index; SRMR, Standardized Root Mean Square Residual; RMSEA, Root Mean Square Error of Approximation.

TABLE 2 | Standardized loading estimates for the SEIC eight-item short form for a cross-cultural sample of adult teachers and undergraduate student participants.

Item	SEIC Short Form	Teachers (*n* = 861)		Undergraduate Students (*n* = 266)	
	English and Japanese	*Standardized Loading*	*Standardized Error*	*Standardized Loading*	*Standardized Error*
1	How well can you think possible outcomes through before you speak? 話をする前に起こりうる結果を十分に考える	0.73	0.02	0.75	0.04
2	How well are you able to adapt to an interaction in which the topic changes from familiar to unfamiliar territory? トピックが馴染みのあるものからそうでないものに移行した時, 会話についていく	0.79	0.01	0.80	0.03
3	How well can you communicate with people who are in positions of authority? 権威的地位にある人達とコミュニケーションを図る	0.80	0.01	0.76	0.04
4	When in a face to face conversation, how well can you gauge what another person wants you to communicate? 面と向かって話をする時, 相手があなたと話したい事が何かを判断する	0.80	0.01	0.77	0.04
5	How well can you recognize subtle shades of meaning in an interaction? 対話の中で, 曖昧な意味を理解する	0.77	0.02	0.79	0.03
6	How well can you communicate in impromptu situations? 準備のできない状況 (即興) で, コミュニケーションをとる	0.80	0.01	0.71	0.04
7	How well can you build consensus when you communicate? 意見交換の際, 意見をまとめ一致に導く	0.79	0.02	0.70	0.04
8	How well can you communicate with people you don't like? 嫌いな人とコミュニケーションを図る	0.59	0.02	0.50	0.06

SEIC, Self-Efficacy in Intercultural Communication.

model with eight items proposed by Peterson et al. (2011) provided acceptable fit for the ALTs (CFI = 0.973, TLI = 0.962, GFI = 0.943, SRMR = 0.028, RMSEA = 0.091), JTEs (CFI = 0.965, TLI = 0.951, GFI = 0.961, SRMR = 0.033, RMSEA = 0.082), and good fit for the teachers in total (CFI = 0.973, TLI = 0.963, GFI = 0.967, SRMR = 0.026, RMSEA = 0.078). While relatively higher RMSEA values were observed, model evaluation was considered in terms of overall goodness of fit. Extending to the desired sample of instrument use with university students, and in direct test of the proposed full-form and short-form structure by Peterson et al. (2011), the eight-item model (CFI = 0.919, TLI = 0.887, GFI = 0.901, SRMR = 0.050, RMSEA = 0.129) offered indications of better model fit over the 34-item model (CFI = 0.788, TLI = 0.775, GFI = 0.602, SRMR = 0.065, RMSEA = 0.107) in terms of model coverage and complexity, with the exception of RMSEA. The standardized factor loading estimates for the best fitting eight-item model are provided in **Table 2**. Loadings ranged from 0.50 to 0.80, suggesting factor determinacy among both samples of schoolteachers and university students. The full form of translated items and standardized loading estimates for the 34-item model are provided in **Supplementary Material 1**.

Measurement Invariance

Data from all samples were cross-validated through multigroup CFA-based MI procedures. For comparison of cross-cultural

TABLE 3.1 | Fit indices for equivalence testing of the SEIC between ALTs and JTEs.

Measurement Invariance	*df*	AIC	BIC	χ^2	χ^2 difference	*df* difference	Pr (> χ^2)
Configural	40	17,896	18,124	162.11			
Loadings	47	17,896	18,091	176.22	14.105	7	**0.04935***
Intercepts	54	18,014	18,175	307.82	131.597	7	**<2e-16*****
Means	55	18,015	18,172	311.00	3.181	1	0.07450

*Smaller values in information criteria support the level of measurement equivalence attained. Coefficients in bold *p < 0.05, ***p < 0.001. SEIC, Self-Efficacy in Intercultural Communication; ALT, assistant language teacher; JTE, Japanese Teacher of English; AIC, Akaike Information Criterion; BIC, Bayesian Information Criterion.*

TABLE 3.2 | Fit indices for equivalence testing of the SEIC between ALTs and JTEs.

Measurement Invariance	CFI	RMSEA	Δ CFI	Δ RMSEA
Configural	0.969	0.084		
Loadings	0.967	0.080	0.002	0.004
Intercepts	0.936	0.105	0.032	0.025
Means	0.935	0.104	0.001	0.001

Smaller values in information criteria support the level of measurement equivalence attained. SEIC, Self-Efficacy in Intercultural Communication; ALT, assistant language teacher; JTE, Japanese Teacher of English; CFI, Comparative Fit Index; RMSEA, Root Mean Square Error of Approximation.

TABLE 3.3 | Fit indices for equivalence testing of the SEIC between JTEs and university students who both responded to the items adapted in Japanese.

Measurement Invariance	*df*	AIC	BIC	χ^2	χ^2 difference	*df* difference	Pr (> χ^2)
Configural	40	17,788	18,016	208.35			
Loadings	47	17,784	17,979	219.03	10.675	7	0.1534464
Intercepts	54	17,798	17,960	246.78	27.755	7	**0.0002436*****
Means	55	18,015	18,034	327.38	80.595	1	**<2.2e-16*****

*Smaller values in information criteria support the level of measurement equivalence attained for the Japanese-adapted instrument. Coefficients in bold ***p < 0.001. SEIC, Self-Efficacy in Intercultural Communication; JTE, Japanese Teacher of English; AIC, Akaike Information Criterion; BIC, Bayesian Information Criterion.*

TABLE 3.4 | Fit indices for equivalence testing of the SEIC between JTEs and university students.

Measurement Invariance	CFI	RMSEA	Δ CFI	Δ RMSEA
Configural	0.949	0.099		
Loadings	0.948	0.092	0.001	0.007
Intercepts	0.941	0.091	0.036	0.001
Means	0.917	0.107	0.024	0.016

Smaller values in information criteria support the level of measurement equivalence attained. SEIC, Self-Efficacy in Intercultural Communication; JTE, Japanese Teacher of English; CFI, Comparative Fit Index; RMSEA, Root Mean Square Error of Approximation.

equivalence between the Japanese and English items, the *lavaan* package was applied to the data for ALTs and JTEs, with ALTs as the reference group. The results for model fit comparison can be seen in **Table 3.1**. Determination of the level of equivalence established was based on the smallest values for each information criterion. The values were lowest at the test of equal factor loadings [Akaike Information Criterion (AIC) = 17,896; Bayesian Information Criterion (BIC) = 18,901]. Further examination of model fit was conducted and depicted in **Table 3.2**. Comparative fit supported the level of loadings (CFI = 0.967; RMSEA = 0.080) over intercepts (CFI = 0.936; RMSEA = 0.105). Together, these results indicated support for adopting a level of metric invariance and comparable factor loadings between ALTs and JTEs and their respective language versions of the items.

To investigate the levels of equivalent measurement and performance of the Japanese items between JTEs as older adult teaching professionals and Japanese undergraduate students as younger emerging adult learners, another multigroup CFA-based MI procedure was conducted. The results for model fit comparison can be seen in **Table 3.3**. Again, determination of the level of equivalence established was based on the smallest values for each information criterion. The values were lowest at the test of equal factor loadings for the AIC (AIC = 17,784) but not the BIC (BIC = 179,179), which was lowest for the test of equal intercepts (BIC = 17,960). Thus, further model fit comparison was conducted and depicted in **Table 3.4**. A conservative interpretation of comparative fit suggested supporting the level of loadings (CFI = 0.948; RMSEA = 0.092) over intercepts (CFI = 0.941; RMSEA = 0.091). As the change in RMSEA was negligible, the change in CFI was used to arbitrate model selection, which favored support of equivalent loadings (ΔCFI = 0.001) over intercepts (ΔCFI = 0.036), in line with recommendations for ΔCFI as a goodness-of-fit index in MI (Cheung and Rensvold, 2002). Together, these results indicated support for adopting a level of metric invariance and comparable factor loadings for the eight indicators in Japanese between adult teaching professionals and emerging adult university student learners.

Correlational Analysis

An initial correlational procedure was opted for examining the coverage of the short-form instrument in comparison to the original scale. As a result, the eight-item version strongly correlated with the full 34-item version ($r = 0.94$), suggesting that it could capture a majority of the variance in the parsimonious set of items proposed by Peterson et al. (2011). Next, Pearson's correlation coefficients were examined for the study variables for the student dataset ($N = 240$). The results are depicted in **Table 4**. TOEIC scores as a measure of language proficiency did not correlate with the SEIC short form on factors of intercultural effectiveness ($r = 0.08$). Overall Intercultural Effectiveness moderately correlated in the positive direction for the short-form SEIC ($r = 0.40$), indicating valid overlap in the relevant domain of beliefs in intercultural competencies. Specifically, SEIC correlated with *Continuous Learning* ($r = 0.36$) and *Interpersonal Engagement* ($r = 0.37$) as component factors of the IES, but not with *Hardiness* ($r = 0.06$), suggesting boundary separation in the

TABLE 4 | Pearson's correlation coefficients for the proposed self-efficacy in intercultural communication short-form instrument and study variables for the university students (n = 240).

Measure	1	2	3	4	5	6
(1) Self-Efficacy in Intercultural Communication	—					
(2) TOEIC Total Score	0.08	—				
(3) *Continuous Learning*	**0.36*** **	**0.15***	—			
(4) *Interpersonal Engagement*	**0.37*** **	**0.16***	**0.43*** **	—		
(5) Hardiness	0.06	0.08	**0.15***	0.03	—	
(6) Overall Intercultural Effectiveness	**0.40*** **	**0.19***	**0.78*** **	**0.76*** **	**0.49*** **	—
M	2.92	585	3.60	3.03	2.86	3.17
SD	0.82	147	0.42	0.46	0.36	0.29

*Coefficients in bold *p < 0.05, ***p < 0.001.*

TABLE 5 | Pearson's correlation coefficients for the proposed self-efficacy in intercultural communication short-form instrument and study variables for undergraduate students from University 2 (n = 79).

Measure	1	2	3	4
(1) Self-Efficacy in Intercultural Communication	—			
(2) TOEIC Total Scores	0.08	—		
(3) Speaking Self-Efficacy	**0.28***	**0.64*** **	—	
(4) Listening Self-Efficacy	**0.42*** **	**0.49*** **	**0.75*** **	—
M	3.71	469	2.78	3.19
SD	0.84	173	0.79	0.81

*Coefficients in bold *p < 0.05, ***p < 0.001.*

nomothetic span of the construct measured by the SEIC. Further examination of construct overlap was conducted. Correlations were compared for divergent and convergent relationships in a set of data from University 2 (N = 79) simultaneously allocated to measure L-SE, S-SE, and SEIC. The results are given in **Table 5**. Supported positive correlations were observed for L-SE (r = 0.42) and S-SE (r = 0.28), indicating that the listening self-efficacy skill domain demonstrated particular magnitude in the strength of the relationship for the sample.

DISCUSSION

This paper set out to address areas of validation for eight item indicators culled and explored by Peterson et al. (2011) by (1) securing internal validity considerations with careful confirmatory analysis of the eight-item short form in a study design that shares sample characteristics of culturally diverse sojourning language teachers and a new context of Japanese teaching professionals; and (2) attempting to localize and replicate good fit among psychometric properties and nomological networks in samples of undergraduate students from two universities in Japan that would serve as targeted populations for the use of the instrument. SEIC was examined with respect to relevant constructs for external validity.

Internal Validity

As seen in the results for the standardized factor loadings suggesting factor determinacy, the eight items proposed as the short form by Peterson et al. (2011) yielded acceptable overall model fit (**Tables 1.2**–**3.4**). A notable caveat emerged in regard to RMSEA values, which exceeded recommended cutoff criteria for the university students. As the other indices were strongly within ranges that suggest good model fit, we surmise that this might be amenable to sample size limitations as our university student sample (N = 264) was relatively smaller, and higher RMSEA values can occur in spite of other strong indicators of overall model fit due to relatively smaller sample sizes (Brown, 2014). Moreover, the level of metric invariance suggested by the smallest fit indices also shows that the items perform comparably between sojourning teachers and Japanese schoolteachers, as well as between adult teaching professionals and emerging adult student learners. As acceptable fit was observed for the versions administered in English for ALTs and in Japanese for JTEs, the results offer a degree of multilingual forms support for the items as well as a degree of cross-cultural validity for the factor structure between groups (Aresi et al., 2018). This observation of structural validity extended from teachers to students as well, supporting the form of the instrument adapted for Japanese students. Furthermore, the eight-item version highly correlated with the 34-item full version administered to students, indicating that most of the variance was recoverable in a smaller subset of items as proposed by Peterson et al. (2011). For students whose model fit was acceptable for many fit indices, but marginal in regard to RMSEA, the full list of Japanese items has been appended (**Supplementary Material 1**) for future researchers to examine characteristics of the factor structure in larger samples of target groups (i.e., to find better parsimony among university student samples). Overall, the factor structure was specified and confirmed by these findings in new data of teaching professionals in intercultural contexts as proposed in the original validation and even supported with degrees of observable measurement equivalence, which suggests that the eight-item instrument possesses internal validity.

External Validity

For external validity, the SEIC as a latent variable demonstrated moderately positive intercorrelations with two out of the three primary factors of intercultural effectiveness (*Continuous Learning* and *Interpersonal Engagement*) measured at pretest to a study abroad tour, but not with self-reported TOEIC as a measure of language proficiency (**Table 4**). Correlations with Overall IES as a standard measure also showed that elements of this domain can be captured parsimoniously with these eight independently derived items. This indicates that the SEIC construct measured connects to theoretically justified content domains in the nomological net of constructs related to beliefs of intercultural effectiveness. Furthermore, in a check of concurrent

validity from the sample of university students from an all-female university, the construct moderately correlated with the L-SE as a measure of beliefs about receptive skills and S-SE as a measure of beliefs about productive skills (**Table 5**). These findings suggest that the SEIC as a construct measurably overlaps with self-efficacy competencies for language skill domains. The following sections discuss the implications of these findings for self-efficacy in intercultural communication for applied disciplines.

Self-Efficacy in Intercultural Communication as Competency in Positive and Educational Psychology Settings

As positive traits and abilities form one of the pillars of positive psychology (Seligman, 2004), SEIC showed some evidence of spanning relevant content domains as a competency belief. The correlational findings for the IES (**Table 4**), L-SE, and S-SE (**Table 5**) thus provided insights for theorizing and modeling efforts and applications to positive education, simulations, and intercultural communication programming contexts.

Overall IES positively correlated with SEIC with a moderate magnitude indicating nomothetic span and provided indications of factor specificity with implications for applied positive psychology constructs. *Continuous Learning* consists of the subfactors self-awareness and exploration. Respondents with higher self-awareness typically possess an acute understanding of that which they can and cannot do, and this understanding informs their capacity to continuously, and strategically, acquire new skills. In this way, the content of *Continuous Learning* overlaps with task related self-efficacy as control over learning, and provides a straightforward interpretation for the content of the SEIC. The relationship between the SEIC and *Continuous Learning* suggests that the construct might suitably be applied to self-regulated learning contexts for intercultural communication skills. The correlation between student SEIC and *Interpersonal Engagement* is suggestive as the underlying dimension in the latter consists of two subfactors: *Global Mindset* and *Relationship Interest*. Those with higher *Global Mindset* scores are essentially those who have a stronger interest in actively expanding their knowledge of other cultures, as well as a sense of cosmopolitanism that facilitates their adjustment to a foreign culture. *Relationship Interest* involves actively choosing to build meaningful relationships with people from cultures outside our own. *Interpersonal Engagement* as a measure of positive relationships and interactions with host nationals suggests that the "R" positive psychology domain in the PERMA profiler and its framework extensions and configurations might be a source of positive construct representation.

In contrast, the IES factor of *Hardiness*, which contains straightforward positive psychology elements such as positive self-regard and emotional resilience, did not show a strong supported relationship to SEIC and shows an almost discriminant and lowly supported pattern away from content domains that would typically be represented by self-concepts in applied positive psychology. This is a surprising inferential distinction given the self-oriented evaluative nature of self-efficacy and suggests that SEIC is limited in its scope as a positive learner belief. However, the IES approach to measuring *Hardiness* might differ from the measurement philosophy of constructs such as grit, which leave the door open to investigating SEIC with conventionally operationalized positive traits.

The lack of association might also suggest that the domain captured for pre-study abroad Japanese students is specified not at the level of *Hardiness* as a dispositional characteristic but at the level of component communication skills, as evinced by relationships to L-SE and S-SE in **Table 5**. The observed delineation for relative contributions of the L-SE and S-SE self-efficacy domains is particularly salient considering Fantini's (2009) argument that intercultural communicative competence "may be defined as complex abilities that are required to perform effectively and appropriately when interacting with others who are linguistically and culturally different from oneself. . . whereas effective reflects the view of one's own performance in the target language-culture. . . [and] appropriately reflects how natives perceive such performance" (p. 458). Thus, intercultural communicative competence is typified by a dynamic set of skills, rather than the skills in isolation. Language and culture are frequently inseparable in cross-linguistic and cross-cultural interactions, where effectiveness is determined by the self and appropriateness is determined by others. In this manner, this relational dynamic supports the notion that the "R" component of the PERMA model for interpersonal relationships in applied positive psychology is a likely candidate for counterpart considerations in applied linguistics extending to the crossover construct of the SEIC and might play a role in the reason for the low strength in relationship to measured levels of *Hardiness* relative to other factors operationalized by the IES. However, the factor itself may not show differences in study abroad exposure. Notably, Nguyen (2017) did not observe changes in *Hardiness* from a short-term study abroad pre–post design, suggesting that the competency factor may not be sensitive to change in these contexts or could depend on factors that rely on a depth of sociocultural adjustment.

Students who have been studying English with some sense of purpose and an eventual goal of studying abroad are represented in our samples. It may be possible that students are motivated to use learned languages effectively and study abroad to compare their experiences in self-concept with those of the outside world as a form of adolescent development or sociocultural identity affirmation or formation. Classroom experiences meeting real-world experiences then serve to connect and reinforce these outcomes especially related to linguistics skill competence, whose outcomes harmonize with those described as desired by policy-making institutions as a "fundamental competency for working people" (Yonezawa, 2014). We argue that SEIC is a construct that crosses the borders between the disciplines, and the presented findings suggest coverage of the SEIC for interpersonal outcomes as a noted advantage among such samples as the likely population for instrument use. Intercultural training through simulations

and positive education designs for lessons or programs in cultural competence might benefit from examinations of SEIC, and the construct might extend to signature strengths such as transcendence and aesthetic appreciation (Seligman, 2004) in the event of traveling abroad. It seems plausible that transformative experiences from exposure to the expansions in worldliness associated with sojourns could meaningfully relate to the domain of SEIC and spiral upward in relationships to desired global competencies.

Overall, at present, our findings indicate some potential for the SEIC to identify individuals who might possess higher baseline IES dimensions of *Continuous Learning* and *Interpersonal Engagement*, which are hypothesized to map on to traits such as openness to, respect for, and curiosity about other cultures, and are widely believed to be conducive to developing intercultural competence (Deardorff, 2006). Future research perhaps using goal-related theories like self-determination theory (Lee and Bong, 2019; McEown and Oga-Baldwin, 2019) more conventionally measured positive psychology constructs (Dewaele et al., 2019) plausibly extending to authentic personality for students (Wood et al., 2008) or PERMA in the workplace (Watanabe et al., 2018) for professionals might be useful directions to further investigate these relationships.

Self-Efficacy in Intercultural Communication as Positive Trait in Applied Linguistics

The four skills of reading, writing, listening, and speaking encode and decode language in ways that convey intelligible meaning to interlocutors under the duress of the specious present. For receptive skills, verbalized strategies for listening from social modeling have been put forth as a mechanism for augmenting self-efficacy (Schunk and Rice, 1984). Listening-related self-efficacy was also proposed to boost confidence in parsing and responding to authentic oral input for students learning English for academic purposes, especially in lessons that incorporated feedback and interpersonal skills with reflective or dialogic approaches (Graham, 2011). The results in **Table 5** for correlations with S-SE and L-SE suggested that the construct measured by the SEIC could extend its incremental validity through established relationships to classroom-relevant self-efficacy content domains, which crucially contain granular opportunities to build linguistic skill competence and experience with intercultural communication.

The relationship between SEIC and the S-SE points to transactional acts of communication as the items involve the respondent's capacity to produce language given a context in which there is a goal, but the interlocutors are static in terms of attitudinal and sociolinguistic features. The items included on the L-SE instrument frame the respondent as a passive consumer of information they hear, rather than as part of an active conversation. As mentioned, the SEIC correlations with L-SE with S-SE are an important indicator of skill overlap. However, while the S-SE and L-SE were found to correlate convergently, we did not observe a significant correlation between SEIC and self-reported TOEIC. This reveals the possibility that student respondents may not conflate their TOEIC score or their domain-specific, language-skills-in-a-vacuum sense of speaking or listening self-efficacy, with the intermediate order level of real-world SEIC that the SEIC scale measures. An explanatory model of moderating factors with structured equations or regression analysis might be especially insightful to test the directions of these relationships and is planned for future research.

LIMITATIONS AND FUTURE DIRECTIONS

Real-world interaction is dynamic, requiring both listening and speaking skills to be utilized simultaneously, frequently under temporal, emotive, and sociocultural pressures, with consequences for the relative success or failure of the interactive sequence. Thus, as intercultural communication, speaking and listening do not occur in a vacuum, an observation of changes in SEIC over time remains the most pressing need for future research on the construct (Hammer, 2012; Vande Berg et al., 2012; Varela, 2017). Whether or not the construct is sensitive to post-sojourn or post-positive intercultural education program change is the major limitation in this report (Green and Olson, 2008; Deardorff and Arasaratnam-Smith, 2017; Varela, 2017). Additionally, while the correlations to relevant constructs such as L-SE and S-SE especially suggested theoretical overlap, the present study focused on especially pre-study abroad-bound students and differences in the relationships or dynamics of the SEIC construct might emerge in explicitly classroom-centered contexts. Further investigations of predictive validity remain necessary to determine whether individuals can undergo meaningful changes in their SEIC from learning experiences such as travel featuring high doses of L2 interactive behavior or upon engaging in classroom activities that place a heavy emphasis on intercultural interactions. Future studies might implement cross-lagged study designs that control for gradations in exposure to programs like study abroad, intercultural simulations, or collaborative online international learning and track changes in SEIC. For example, these lines of inquiry might situate the construct as useful to test the *investment* component of the EMPATHICS model by Oxford (2016), such that modeling could find that sojourners with higher (or lower) SEIC scores choose to engage more (or less) while abroad in a dose-responsive manner. Additionally, future studies could use the SEIC short form to determine whether aspects of personality as independent variables (Dewaele, 2012) are responsible for fostering greater or lesser engagement with host-nationals or interacting partners in intercultural learning programs. Investigators of the role of SEIC as a factor in professional self-efficacy and positive psychology might also meaningfully apply the tool with PERMA profiler and framework for the workplace (Watanabe et al., 2018). In sum, while more validation remains to be done, the present study offers degrees of internal and external validity for the domain of interest to SEIC.

CONCLUSION

This study validated many open questions on the properties of the SEIC and offers a tool with valid indicators for researchers and practitioners who aim to observe self-efficacy in positive education and international programs that intersect with the domain of language learning and intercultural communication. The instrument is fit and the construct is poised for the domain as L2 intercultural communication has many opportunities for experiencing enhancement and mastery in linguistic skill competence as a positive learner competency. The observed relationships for SEIC suggest that task-related speaking and listening activities could make it outside of the classroom and into in-the-wild instances of intercultural communication that might occur in transformative learning experiences such as study abroad. We offer our localized adaptation of the tool as a valid instrument for further research and assessment purposes with these intentions, especially in Japan. For research purposes, this would make the instrument and construct a plausible candidate for experimental manipulation in programming with learning experiences that center around opportunities to develop positive traits especially tailored for university students.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

RK served as the primary author of the manuscript, contributed to conceptualization, methodology, software, formal analysis, validation, original draft preparation, data curation, and review and editing. AS provided funding acquisition, project administration, investigation and data collection, formal analysis, and revisions. Both authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fpsyg.2020.02086/full#supplementary-material

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Self-Views and Positive Psychology Constructs Among Second Language Learners in Japan, Taiwan, and the United States

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The present study is the first to empirically test a hierarchical, positive-oriented model of the self and its relationship to second language (L2) achievement motivation, and compare it in three different cultural contexts of Japan, the United States, and Taiwan. Based on the L2 self-model (Lake, 2016), three levels of constructs were developed: *Global Self* (i.e., Flourishing, Curiosity, and Hope); *Positive L2 domain self* (i.e., interested-in-L2 self, harmonious passion for L2 learning, and mastery L2 goal orientation); and *L2 Motivational Variables* (i.e., reading, speaking and listening self-efficacy). A total of 667 students participated in this study, including 181 first-year college students in Japan, 159 high school students in Taiwan, and 327 community college students in the United States. All the participants were learning L2 in school. Results showed that the measures of positive global self, L2 domain self, and L2 motivational self all had a stronger relationship within their respective levels, and progressively weaker relationships as level of generality/specificity became more distal. Furthermore, the relationships among measures varied in the differing cultural contexts with the Japan-based student participants relatively lower on all measures. Implications for teacher educators in the L2 context have been discussed.

Keywords: cross-cultural study, self-concept, second language learning, motivation, positive psychology

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INTRODUCTION

The field of positive psychology (PosPsy) has grown rapidly in the past decade. While the traditional psychological view focuses on negatives or deficits that need remediation, positive psychology focuses on how people can live optimally and therefore seeks to enable people to grow and reach their full potential (Seligman and Csikszentmihalyi, 2000; Seligman, 1999, 2002, 2011). In psychology, there has been a shared a concern for psychological growth, for example, Maslow (1968) and Rogers (1980), and the humanistic psychology movement have expressed an interest in positive growth. However, much of this work relied on case studies and anecdotal evidence with few empirical studies that would make the psychological constructs more generalizable. Seligman and Csikszentmihalyi (2000) emphasized that positive psychology should be based on empirical data and scientific methods that aim to make research results more replicable and cumulative; the positive focus "does not rely on wishful thinking, faith, self-deception, fads, or hand waving" (p. 7). With this empirical emphasis, the field has incorporated numerous scales to measure positive

psychological constructs (e.g., Lopez and Snyder, 2003; Ong and Van Dulmen, 2007), along with bringing older concepts under the positive psychology umbrella.

Positive Self-Identity in Second Language (L2) Learning

A similar process is taking place within the L2 learning domain as new ideas from positive psychology are combined with previous concepts to create a vibrant subfield with deep roots and a bright future (MacIntyre and Mercer, 2014; MacIntyre et al., 2019). Interest in applying positive psychology to education is a more recent development (White and Murray, 2015). A few researchers have applied positive psychology to the field of L2 learning in a variety of contexts and a range of identity or self-levels from general trait-like to the specific state-like (e.g., Lake, 2013, 2016; MacIntyre and Mercer, 2014; Gabryś-Barker and Gałajda, 2016; MacIntyre et al., 2016; Mercer et al., 2018).

In an article that took a broad look at self-concept and some of the criticisms of it, Swann et al. (2007) argued that self-concepts and outcomes need some sort of contextualization. They point out that broad attitudes and traits were critiqued decades ago for not predicting specific behavior. Now, attitude and trait researchers still use these broad personality constructs with the understanding that there might be mediator or moderator variables in between the broad construct and any particular behavior that determines how predictive of behavior these constructs can be. In the case of self-views, meta-cognitive aspects such as strength of the self-view can bolster predictive validity. Strength of self-view might be indicated by importance, certainty, clarity, extremity, accessibility, temporal stability, or goal-relatedness. To show relationships among variables, researchers need to consider the specificity among the variables with the understanding that there are stronger relationships with variables of similar levels of specificity and less as the relationship in specificity differs (Swann and Bosson, 2010).

Three-Level Positive Self-Model

Figure 1 below illustrates in the most abstract case where the structural relations are directed from the global self, to the domain-specific self, to particular motivations. The global level is general in that it relates to the whole self and is relatively stable and trait-like. The middle level is less general and relates to a particular domain or individual interest in life. The domain level relates to a relatively enduring disposition in a particular field or sphere of activity. The achievement motivation level is highly specific to a particular task or set of tasks.

Figure 2 shows an application of the more abstract case of **Figure 1**. In **Figure 2**, the structural relations are similarly directed from global, to domain, to particular motivations, but the content is more specific because only the positive dimensions are modeled and a particular domain, L2, is specified.

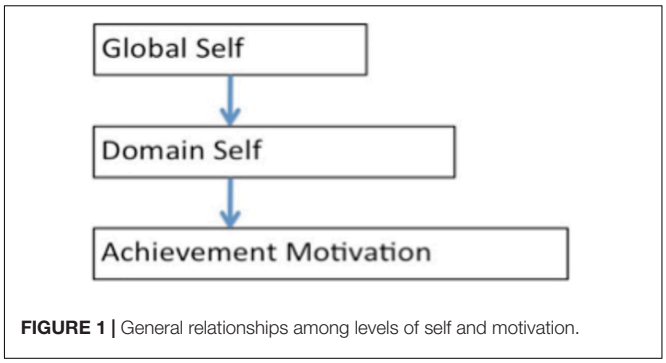

FIGURE 1 | General relationships among levels of self and motivation.

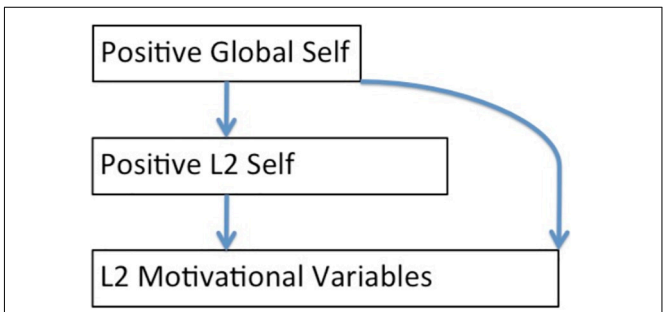

FIGURE 2 | Relationships among levels of positive selves and motivation.

LITERATURE REVIEW

Lake (2013, 2016) developed the L2 positive-self model and empirically examined the model constructs and measures in Japan. He found that positive global self-measures, positive L2 self-measures, and L2 self-efficacy measures had stronger relationships not only within a specificity level but also relationships between levels. In the model, *global positive self-constructs* of flourishing, curiosity, and hope, and *positive L2 self-constructs* of interest, passion, and mastery goal orientations are integrated with *L2 self-efficacy* in listening, reading, and speaking. The constructs used were selected within the context of an academic learning environment. Accordingly, flourishing, curiosity, hope, interest, passion, mastery goal orientation, and self-efficacy are situated in the present but are oriented to the future. These differ from constructs such as self-esteem, subjective happiness, positive social relationships, satisfaction in life, and positive and negative trait effects that are situated in the present but are oriented to the past. Although constructs oriented toward the past and the future correlate, the setting of a learning context implies that youthful participants are more oriented toward the future (Lake, 2013, 2014, 2016). Below are the descriptions of the selected variables in this study.

Positive Global Self

Flourishing

Flourishing is a psychological construct that refers to being psychologically healthy. Flourishing is a collection of positive wellness attitudes and behaviors that may persist over time and which signal that a person is prospering psychologically. Flourishing individuals have shown the highest levels of psychosocial functioning in a number of studies (Ryff and Singer, 1998; Keyes, 2002, 2007; Reschly et al., 2008).

Another perspective on flourishing comes from Seligman (2011). Seligman (2002) promoted a version of flourishing where happiness was central. In his 2011 reworking of positive psychology, he advocated for an updated model that focuses on wellbeing composed of five elements: positive emotion (of which happiness and life-satisfaction are aspects), engagement, relationships, meaning, and achievement (PERMA). For Seligman (2011), the target goal of positive psychology is a person who manifests flourishing meaning an individual who is functioning at the highest levels of PERMA.

Some theories of global self are more parsimonious with fewer elements; for example, Deci and Ryan (2000) proposed that differing dimensions of well-being could be subsumed by three basic psychological needs: autonomy, relatedness, and competence. Other theories are more complex and include more elements, for example, Keyes (2007) proposed 13 dimensions that can be loosely grouped into three categories: positive emotions (positive affect and avowed quality of life), positive psychological functioning (self-acceptance, personal growth, purpose in life, environmental mastery, autonomy, and positive relations with others), and positive social functioning (social acceptance, social actualization, social contribution, social coherence, and social integration).

Curiosity

Curiosity is a trait-level construct that is not focused on an object or skill and is distinctly different from enjoyment and happiness. That is, like other global self-concepts, the "object" is the self. This makes it clear that the variables in this study are all "subjective" except for the "objective" measure of L2 proficiency. Curiosity refers to "recognizing, embracing, and seeking out knowledge and new experiences" (Kashdan and Silvia, 2009, p. 988). In their study on the development of a curiosity measure, Kashdan et al. (2009) found that curiosity correlated positively with various other positive measures such as openness to experience, happiness, personal growth, autonomy, positive relations with others, and purpose in life. Curious people look for opportunities to acquire knowledge and pursue new experiences. Curiosity helps learners seek and fill in knowledge gaps, recognize potential learning material, and seek new learning situations thus leading to increased achievement and competence (Kashdan and Silvia, 2009).

Curiosity has been shown to have positive relationships to both well-being and learning. Kashdan et al. (2004) suggest that curiosity leads to personal growth through an orientation to stimuli that are novel and challenging, rewarding, and flow-like. In addition, they found measures of curiosity to have a relationship to measures of hope and wellbeing (see also, Kashdan, 2004, 2009). In another study, Kashdan and Yuen (2007) found that when the school environment was supportive of growth and learning, higher levels of curiosity were demonstrated to be associated with higher scores on national achievement exams and school grades. von Stumm et al. (2011) conducted a meta-analysis and found that curiosity had as much influence on academic achievement as intelligence. In brain imaging studies, curiosity has been shown to enhance learning by improving memory by consolidating new information (Kang et al., 2009). Curiosity also activates areas in the brain associated with reward systems so that learning new information can create a stimulus for further learning, that is, "prime a hunger for knowledge" (p. 971).

Hope

The hope construct is composed of the elements of clearly defining goals, thinking about ways to achieve those goals, and motivating one to act toward goals. Hope can be characterized and measured as either a trait or state. In this study, hope is measured at the trait level. Hope is composed of two subcomponents that act toward goals, agency or agentic thinking, and pathways or pathway thinking. Agency refers to the belief that one has the ability to initiate, act, persist, and exert effort toward valued goals. It is the belief that one has volition and is in control of making progress toward goals. Sometimes agentic thinking is called willpower. Pathways refer to one's perceived ability to produce a way or multiple ways to reach a goal, even in the face of obstacles. Sometimes pathway thinking is called *waypower*.

Hope has been associated with wellbeing and learning in a number of studies. Curry et al. (1997) found that hope in college students predicted athletic performance beyond training, academic ability, and global self-worth. Among college students, Chang (1998) found that hope had a positive influence on well-being. Ciarrochi et al. (2007) tested hope, self-esteem, and attribution style for effects on academic achievement and well-being and found that hope had the strongest effect in predicting high school grades and was the only variable to have predictive utility across all outcome measures. Schmid et al. (2011) similarly, found that hope was a better predictor than self-regulatory skills when examining a trajectory of positive youth development.

Positive L2 Self

As mentioned above, self-concept can refer to different levels of specificity. Components of positive L2 self are composed of L2 domain level dispositional constructs that are positively related to both well-being and second language learning. Constructs at this level are specific to the academic domain or academic language-learning domain, but they are more general than classroom situations and specific language skills and tasks. For the purpose of understanding aspects of the psychology of the language learner relating to positive psychology and learning L2, based on Lake's (2016) model of positive L2 self, three core aspects of a positive L2 self are elaborated: an interest-in-L2 self, a harmonious passion for L2 learning, and mastery L2 goal orientation.

Interested L2 Self

Interested L2 self is short for *an interest-in-L2 self* as a domain-specific mid-level self-concept that can be defined as the disposition to find learning a second language interesting and enjoyable. It is a consequence of believing that one is competent in the L2 and experiencing repeated positive experiences of discovering novel aspects of the language and successfully learning them. The interested L2 self-construct differs from trait-level interest or curiosity, in that trait curiosity does not

necessarily have a domain or an object. Interested L2 self also differs from more specific interest states where interest comes first, triggering learning, and then enjoyment comes from having learned. Instead, after frequent instances of state interest and subsequent positive affective states, a more solidified mid-level dispositional interest develops (Silvia, 2006). It is only at the mid-level that interest has a domain and is diffuse enough to overlap with enjoyment and be interpreted as a unitary construct. In other words, feelings of interest and enjoyment at the domain level intertwine. This domain level interest is also similar to the construct of flow, but interested L2 self is a longer-term, more general cognitive and affective dispositional structure that may produce states of flow. Hunter and Csikszentmihalyi (2003) found that for adolescents, there was a strong association between interest and well-being.

Harmonious Passion for L2 Learning

The harmonious passion for L2 learning construct has similarities to, but is different from, the interested-in-L2 self. Passion is defined as a strong inclination toward activities that are liked or loved. Where interest theory developed over time from the "bottom-up" based on decades of empirical research, passion theory was created "top-down" from self-determination theory. The model developed by Vallerand et al. (2003); Vallerand (2010) who posited two types of passions, a more self-determined harmonious passion and a more self-uncontrolled obsessive passion. Harmonious passions are associated with adaptive behaviors and obsessive passions with maladaptive behaviors. Passions differ from interests because they trigger activities in which time and energy are spent. Interests might or might not be valued and the time and energy are unspecified. Also, as in self-determination theory, harmonious passions are developed under conditions of autonomy, positive relationships, and competence. Vallerand et al. (2007) found that harmonious passion predicted mastery goals, which, in turn led to deliberate practice and higher performance. Harmonious passion was also found to be related to subjective well-being. In the current study, the passion for L2 learning is short for *harmonious passion* for L2 learning while *obsessive passion* is not part of this study.

Mastery L2 Goal Orientation

Mastery goals, which are also known as learning goals, are based on goal orientation theory or achievement goal theory (Dweck and Leggett, 1988; Elliot, 2005) and have to do with building competence. Mastery goals are defined by the purpose or orientation toward absolute gains in learning within an individual. Mastery goal orientation is also called task or learning goal orientation and involves an orientation toward mastery of a task or learning domain (Anderman and Wolters, 2006; Meese et al., 2006). The focus is on learners "concerned with increasing their competence" (Dweck and Leggett, 1988, p. 256). Outcomes are measured as growth from self-comparisons of previous abilities with gained abilities. The second main type of orientation is known as performance goal orientation (also called relative, ego-involved, or competitive goal orientation), in which the focus is on demonstrating competence relative to the competence of others. Outcomes are measured as normative comparisons relative to the abilities of an identified group, such as in a classroom or school. Performance goal orientation is manifest when "individuals are concerned with gaining favorable judgments of their competence" (p. 256). Kaplan and Maehr (1999) found that mastery goal orientations were positively related to well-being measures and academic achievement. Woodrow (2006) found that mastery goal orientations correlated with speaking proficiency as measured by a section of the International English Language Testing System (IELTS). Thus, a mastery goal orientation that is associated with self-improvement, interest, effort, learning, and self-efficacy can contribute toward a positive self. A mastery goal orientation toward learning another language is an aspect of a positive L2 self.

L2 Self-Efficacy

Bandura (1977) posited self-efficacy as a person's belief in their ability to succeed, and it has been adopted as a construct in positive psychology (Maddux, 2002; Bandura, 2008). Linnenbrink and Pintrich (2002) note that, "Students who have more positive self-efficacy beliefs (i.e., they believe they can do the task) are more likely to work harder, persist, and eventually achieve at higher levels." (p. 315). In the field of foreign language learning Hsieh and Schallert (2008) found that among self and differing attribution beliefs, self-efficacy was the best predictor of achievement.

Reading Self-Efficacy

Lake (2013) found that L2 reading self-efficacy had positive relationships with positive self-concept variables, positive L2 self -variables, and L2 proficiency. Lake (2014) found that students who read extensively with graded readers gained L2 reading self-efficacy while those who used graded readers, but did not read extensively showed no gains. In addition, gains in L2 reading self-efficacy was shown to have a relationship with gains in a positive reading self as measured by an L2 reading interest measure. In another study with French as a second language, Mills et al. (2006) found reading self-efficacy correlated positively with L2 reading proficiency, in other words, reading proficiency in French could be increased with reading self-efficacy. These few studies show that reading ability is related to an intrinsic factor of motivation and self-efficacy as in L1 reading contexts, but the limited number of studies along with the other studies reviewed support Grabe's (2009) contention that, "Much more research is needed on L2 reading motivation" (p. 190).

Speaking Self-Efficacy

Self-efficacy can be task or domain-specific, that is, it can refer to a particular task that is immediately present or a particular academic domain (Bandura, 1997). When self-efficacy is more general in nature, it becomes similar to the term confidence that is used more colloquially (Bandura, 1997). Lake (2013) found that L2 speaking self-efficacy had positive relationships with positive self-concept variables, positive L2 self-variables, and L2 proficiency.

Listening Self-Efficacy

Listening self-efficacy as used here refers to the belief in being capable of successfully listening and understanding at different levels to different sources of spoken language. Lake (2013) found that L2 listening self-efficacy had positive relationships with positive self-concept variables, positive L2 self-variables, and L2 proficiency. Mills et al. (2006) found that listening self-efficacy was associated with listening proficiency only for female, but not male participants in their study.

Aim of the Research

As mentioned above, Lake (2013, 2016) has examined positive psychology constructs and measures for L2 among Japanese students. He found that positive global self-measures, positive L2 self-measures, and L2 self-efficacy measures had stronger relationships not only within a specificity level but also relationships between levels. The goal of this study was to compare students learning L2 in different cultural contexts to determine whether they react differently to positive psychology constructs. In addition to cross-cultural differences in the interpretation to measures, the relationship between measures may vary according to cultural contexts. Therefore, the aim of the current study is to extend Lake's positive L2 model to two other cultural contexts—the United States and Taiwan. The research questions seek to explore the similarities and differences across participants in the three areas:

1. What are the relative differences among measures for the participants from the three different cultural contexts—Japan, Taiwan, and the United States?
2. What are the relations between positive self, L2 positive self, and L2 self-efficacy among students in a Japanese, Taiwanese, and American context?
3. If there are differences in the relationships across cultural contexts (Japan, Taiwan, and United States), what form do these differences take and what are the implications for L2 learning?

MATERIALS AND METHODS

The measurement instruments used in this study were analyzed using the Rasch rating scale model. The development of specific instruments was described in Lake (2013, 2016).

Participants

After receiving the approval from the participating schools, students were recruited randomly; those who were enrolled in a foreign/second language class at that time and voluntarily participated in the research were included into our sample. A total of 667 participants were recruited from three different national/cultural backgrounds—Japan, Taiwan, and the United States. Among participants, there were 181 first-year college students in Japan enrolled in English language classes, 159 participants were high school students in Taiwan studying English in afterschool programs, and 327 participants were community college students in the United States.

Measurement Instruments

In this study, all the measuring scales have been used consistently in the three cultural contexts. In order to avoid any language reading difficulties, the scales were administered in English (in the United States), or translated versions into Chinese (in Taiwan) or Japanese (in Japan). Using a back translation procedure all scales were first translated into Chinese or Japanese and then back-translated to their original language and checked to ensure translation accuracy (Brislin, 1970). All items on the scales were determined to be acceptable. Self-report instruments at three levels of specificity were used to measure components of positive self, positive L2 self, and motivational variables. In this study, a cross-sectional design was used where all scales were administered at the same time with the scale items randomly mixed together into a single questionnaire. All scales were modified or written to have six-item responses that ranged from: *Definitely not true of me; Not true of me; Slightly not true of me; Slightly true of me; True of me; Definitely true of me*.

Measures for the Global Positive Self

The Curiosity and Exploration Inventory II (CEI-II; Kashdan et al., 2009) is a scale designed to measure trait curiosity. The CEI-II contains five items measuring a dimension of curiosity about seeking new knowledge and experiences (e.g., *I actively seek as much information as I can in new situations*) and five items that measure a dimension of curiosity about a general willingness to embrace the novel, uncertain and unpredictable in life (e.g., *I am the type of person who really enjoys the uncertainty of everyday life*). Kashdan et al. (2009) reported alpha reliabilities of 0.85 and 0.86. They also suggested that because the two dimensions strongly correlate (r = 0.79), the 10 items might be used together as a single scale. The alpha reliability for the present study was 0.90.

The Hope scale (Snyder et al., 1991; Snyder, 2000) is an eight-item scale that measures trait-level hope. The hope construct consists of two factors. Four items reflect agentic thinking about one's goals (e.g., *I meet the goals that I set for myself*) and four items reflect a pathways thinking about the ways to achieve goals (e.g., *There are a lot of ways around a problem*). Reported alpha reliabilities have ranged from 0.74 to 0.88. The alpha reliability for the present study of the combined measure of hope (agency) and hope (pathways) was 0.90.

The Flourishing scale (Diener et al., 2010) consists of eight items describing aspects of positive functioning and human flourishing (e.g., *I actively contribute to the happiness and well-being of others*). The alpha reliability reported was 0.87, and for the present study, it was 0.91.

Measures for the Positive L2 Self

For the Interested L2 Self scale, seven adapted items from previous studies were used (e.g., *English is an interesting field of study* (Lake, 2013, 2016). The reliability from previous studies was 0.91 and 0.92 (Lake, 2013, 2016). The alpha reliability for the measure in the present study was 0.93.

For the L2 Mastery Goal scale, seven adapted items from previous studies were used (e.g., *I like learning difficult things in*

this class; Lake, 2013, 2016). The reliability from previous studies was 0.87 and 0.94. For the seven items in the present study, the alpha coefficient was 0.94.

Lake (2013, 2016) adapted items (e.g., *I am passionate about learning English*) from the Harmonious Passion subscale (Vallerand et al., 2003) to create a Passion for L2 scale that he used with students in Japan learning English. The scale reliability in previous studies was 0.90 and 0.90 (Lake, 2013, 2016). The scale used in this study with the Japan sample consisted of seven items; however, the scale used with the Taiwan and United States group had six items. Five of the items were similar to all three groups. The alpha reliability for the present study was 0.79.

Measures of L2 Self-Efficacy

The L2 self-efficacy variables are specific to L2 learning, skills, and tasks. Variables at this level are more dynamic or less trait-like because of their specificity and the situational nature of the contexts, processes, and specific tasks. The self-efficacy items were taken from previous studies (Lake, 2013, 2016).

The Speaking Self-Efficacy scale consisted of nine items that were adapted from previous studies (e.g., *I can give a speech in English*). The reliability was 0.90 in an earlier study (Lake, 2016). The alpha reliability for the present study was 0.96. The Listening Self-Efficacy measure used nine adapted items in this study (e.g., *I can understand the main ideas when listening to English songs*); reliability was 0.89 (Lake, 2016). For the present study reliability was 0.96. The Reading Self-Efficacy measure used seven adapted items in this study (e.g., *I can read and understand a menu in English*). The alpha reliability was 0.89. For the present study, alpha was 0.97.

Procedures

Students in Japan were given a paper-pencil survey questionnaire, while students in Taiwan and the United States completed an online Qualtrics survey during or after class time. The different modality of instrument used in each area was based on the available access method provided by the participating schools. On average, participants took approximately 20–25 min to complete the questionnaire. Prior to distributing the survey, our research was approved by the review committee of the university. All participants were informed about the nature of the study and told that participation was voluntary. Participants have the right to stop at any time. Rasch analysis was done to get measures in logits for each student and then to examine the relationships.

The analysis was done in two steps. First, the measures were analyzed with the total participants (n = 667). This was done to get the relative mean and standard deviation statistics. Second, the measures were analyzed by cultural context to determine relationships among measures within each participant group.

RESULTS

Descriptive statistics for the measures in logits and alpha reliabilities are presented in **Table 1**. The items and scale measures met the assumptions of the Rasch rating scale model for a well-formed scale. In other words, item fit statistics were acceptable, average measures advanced monotonically with categories, step calibrations or thresholds advanced with appropriate higher values, and no additional dimensions to each measure were found to suggest violations of unidimensionality. For more information about measure construction and Rasch rating scale development, please see literature (e.g., Bond and Fox, 2015; Boone et al., 2014; Engelhard and Wind, 2018).

TABLE 1 | Descriptive Statistics of measures in logits used in this study.

Measures	M	SD	Alpha
Curiosity	0.70	1.30	0.90
Flourishing	1.16	1.67	0.91
Hope	1.25	1.62	0.90
Interested in L2 Self	1.87	2.40	0.93
Mastery Goal Orientation	2.21	2.64	0.94
L2 Harmonious Passion	1.62	2.26	0.79
L2 Reading Self-efficacy	1.07	3.62	0.97
L2 Listening Self-efficacy	1.09	3.25	0.96
L2 Speaking Self-efficacy	0.88	2.95	0.96

n = 667.

In the next step of the analysis, logits were computed for all measures for each of the three cultural groups in the study. **Table 2** shows the relative values for each measure, in logits, by cultural context. Correlations were next estimated for each measure by three cultural contexts (area groups).

The results of these analyses were shown in **Table 3**.

Finally, in **Table 4**, correlations were calculated to show average relationships within and between levels for each cultural (area) group. The average correlations within levels are in the diagonal, and those between levels are below the diagonal.

DISCUSSION AND IMPLICATIONS

Looking at the measures analyzed show that each measure had a high alpha reliability (+0.90) except for the L2 harmonious passion measure (0.79), which while still within the acceptable range, is lower than the other variable. Due to an error in administering the items, the Japan group did not include one item included in the other two groups and the Taiwan and United States groups did not include two items included in the Japan group. The passion measure in this study then had five items in common which acted as an anchor with the omitted items treated as missing in the Rasch rating scale analysis for the combined groups. This caused no major adverse effects except for perhaps lowering the reliability slightly. However, at 0.79, the reliability for the combined groups is acceptable.

An examination of the means in differing cultural contexts in **Table 2** demonstrates that the Japanese group was lower on all measures. Possibly this suggests that the Japanese participants do not "self-enhance" (Leary, 2007) or under-report or "self-verify" (Swann et al., 2007) on self-report measures compared to United States-based participants. However, the

TABLE 2 | Mean and standard deviations for each measure in logits by cultural context.

Measures	M	SD
Curiosity		
Japan	−0.09	1.14
Taiwan	1.23	1.19
United States	0.88	1.23
Flourishing		
Japan	−0.29	0.96
Taiwan	1.54	1.54
United States	1.78	1.55
Hope		
Japan	0.01	1.43
Taiwan	1.75	1.25
United States	1.69	1.51
Interested in L2 Self		
Japan	1.38	2.52
Taiwan	1.95	2.37
United States	2.10	2.32
Mastery Goal Orientation		
Japan	0.34	2.37
Taiwan	3.11	2.39
United States	2.80	2.39
L2 Harmonious Passion		
Japan	0.44	2.05
Taiwan	1.95	2.19
United States	2.12	2.18
L2 Reading Self-efficacy		
Japan	−1.50	2.03
Taiwan	3.04	2.89
United States	1.54	3.83
L2 Listening Self-efficacy		
Japan	−1.42	1.50
Taiwan	2.28	2.96
United States	1.90	3.36
L2 Speaking Self-efficacy		
Japan	−1.27	1.53
Taiwan	1.79	2.81
United States	1.63	3.02

Japan N = 181; Taiwan N = 159; United States N = 327.

Taiwan group did not follow the same pattern suggesting that this is not simply an East-West dichotomy, but that perhaps other situational factors are coming into play. The Taiwan group with high school participants in after-school voluntary English classes, the Japan group with university students in mandatory English classes, and the United States group of young college adults enrolled in second/foreign language classes might have contributed to the effects of age or L2 interest.

Averages of intercorrelations in **Tables 3**, **4** show generally stronger intercorrelations in the Japanese group. This needs to be studied further, but we believe that possibly the Japanese students had developed a more mature understanding and commitment to learning L2 because of their instrumental interest in the subject matter of English or because of their interest in international careers. Thus, the Japanese students, because of their university status, may have developed to a higher level of self than the younger Taiwanese participants and the United States students enrolled in L2 classes. In other words, the Japanese students may have a more integrated sense of their positive "selves" because of a commitment to the L2 as an integral aspect of their career aspirations which demand knowledge of English, the language they were studying at the time of completing the survey.

Although the strength of the intercorrelations varied among groups as seen in **Tables 3**, **4**, patterns within and between levels were the same for all groups. In other words, in the diagonal, the intercorrelations or averages of intercorrelations demonstrate that within a level, measures correlate more highly than with other levels. For example, within the global positive self-level, curiosity, flourishing, and hope are positively correlated with each other. This result is consistent with previous literature that indicates that individuals who score higher on flourishing tend to have a higher sense of hope and are more curious (Gunderman, 2008) than individuals who are lower on the measure of flourishing. Conversely, with greater curiosity and hope, people are more likely to flourish and express a higher level of well-being (Keyes, 2007). This can be explained by the broaden-and-build theory (Fredrickson, 1998) that states that individuals who tend to be curious are more open to new experiences, possess more receptive attitudes toward new ideas, and accumulate new knowledge that adds to their personal resources (e.g., psychologically, cognitively), which enables them to cope better with uncertainty and more likely to flourish (Kashdan, 2004).

In addition, the global positive self-measures (i.e., curiosity, flourishing and hope) correlated with the L2 domain self-measures (i.e., interested in L2, mastery goal, and L2 passion) more strongly than the positive L2 self-efficacy measures (i.e., speaking, listening, and writing self-efficacy). The positive L2 domain self-measures in turn generally correlated more highly than the positive global measures with the L2 self-efficacy measures. The exception was for the Taiwan group with a very small (0.06) difference between the positive self-measures (r = 0.20) and L2 positive self-measures (r = 0.14). Overall, these results are consistent with previous literature. In other words, students scoring higher on the positive global self are also higher in the L2 self and on the L2 motivational variables (Lake, 2013). Furthermore, these results support the "specificity matching principle" (Swann et al., 2007, p. 87) showing that relationships among self-constructs will be stronger within a level of specificity and will weaken as levels of specificity become more distal. The difference across the three cultural groups could be due to a less differentiated self among the younger Taiwanese students.

The findings reported in this study have practical implications for L2 educators. We showed that a significant relationship exists between the positive self and L2 self among students who vary by age, reasons for studying L2, and across three different cultural and linguistic contexts

TABLE 3 | Correlations of measures by cultural context.

Measures	Context	1	2	3	4	5	6	7	8	9
						Positive Self Measures				
(1) Curiosity	Japan	1								
	Taiwan	1								
	United States	1								
(2) Flourishing	Japan	0.73	1							
	Taiwan	0.43	1							
	United States	0.54	1							
(3) Hope	Japan	0.82	0.86	1						
	Taiwan	0.61	0.67	1						
	United States	0.59	0.73	1						
						Positive L2 Self Measures				
(4) Interested in L2	Japan	0.60	0.54	0.58	1					
	Taiwan	0.26	0.33	0.32	1					
	United States	0.35	0.32	0.28	1					
(5) Mastery Goal	Japan	0.67	0.61	0.63	0.88	1				
Orientation	Taiwan	0.43	0.45	0.45	0.71	1				
	United States	0.45	0.47	0.42	0.70	1				
(6) L2 Passion	Japan	0.62	0.57	0.59	0.88	0.90	1			
	Taiwan	0.30	0.44	0.45	0.72	0.66	1			
	United States	0.35	0.34	0.27	0.73	0.70	1			
						L2 Motivation Measures				
(7) L2 Listening	Japan	0.55	0.52	0.52	0.62	0.68	0.68	1		
Self-efficacy	Taiwan	0.21	0.20	0.20	0.16	0.11	0.29	1		
	United States	0.16	0.11	0.16	0.14	0.25	0.27	1		
(8) L2 Reading	Japan	0.52	0.53	0.51	0.61	0.68	0.66	0.83	1	
Self-efficacy	Taiwan	0.23	0.23	0.19	0.19	0.08	0.08	0.88	1	
	United States	0.15	0.05	0.15	0.15	0.23	0.24	0.78	1	
(9) L2 Speaking	Japan	0.59	0.64	0.61	0.59	0.70	0.64	0.83	0.83	1
Self-efficacy	Taiwan	0.22	0.19	0.17	0.12	0.10	0.10	0.91	0.86	1
	United States	0.15	0.10	0.17	0.18	0.28	0.30	0.88	0.81	1

Japan N = 181, Taiwan N = =159, United States N = 327.

TABLE 4 | Average correlations within and between levels.

Average correlations	Positive self measures	Positive L2 self measures	L2 motivation measures
Positive Self Measures			
Japan	0.80		
Taiwan	0.57		
United States	0.62		
Positive L2 Self Measures			
Japan	0.60	0.89	
Taiwan	0.38	0.70	
United States	0.36	0.71	
L2 Motivation Measure			
Japan	0.55	0.65	0.83
Taiwan	0.20	0.14	0.88
United States	0.13	0.23	0.82

(i.e., Japan, Taiwan, and the United States). These findings support the applicability of Lake's (2013) theoretical model that argues that there are beneficial effects to be derived through the use of strategies for enabling L2 learners to increase their curiosity and hope that in studying L2 they can achieve their desired goal of becoming proficient in the L2. This supports a general self in L2 learning motivation through building positive self-concepts specific to the domain of L2 learning (e.g., interest in L2, passion, and mastery goal orientation). In addition, since

the patterns within and between levels were the same for participants in all three groups, this suggests that generally these intercorrelational effects are applicable among L2 learners regardless of differences in cultural and language contexts. Accordingly, we recommend that L2 educators would do well in their instructional practices to promote students' global well-being by creating positive L2 learning environments, such as setting up challenging but attainable goals that are matched to students' ability. Teaching L2 is more than just focusing on specific linguistic outcomes but is dependent also on aligning instruction with students' interests and using more mastery-oriented verbal compliments related to effort and persistence in class activities. The goal of such instruction is to promote students' curiosity, passion, and interest in L2 learning and, thereby, enhancing learners' sense of self-efficacy while studying the L2.

CONCLUSION AND LIMITATIONS

In sum, this study examined positive psychological self-constructs at three levels of generality, global self, and L2 domain self, and L2 motivational self-levels based on studies by Lake (2013, 2016). It was found that the Japan-based group was lower on all measures relative to the Taiwanese or United States comparison groups. The relationships among measures varied to a degree in the differing cultural contexts. However, it was found that the general pattern of relationships was similar, that is, positive global self, L2 domain self, and L2 motivational self-measures all had a stronger relationship within the levels and progressively weaker relationships as the level of generality/specificity became more distal. In addition, this study suggests that rather than broad cultural comparisons, it may be more meaningful to examine smaller cultural or situational contexts that may influence students differently (Holliday, 1999). This sheds light on the importance of analyzing the learning of L2 issues at a deeper level, instead of purely from the traditional lens of an East and West dichotomy. In addition to the broad cultural variables such as mandatory versus elective language (L2) classes, required language classes for field of interest versus non-major language classes, and age or developmental differences may play a greater role in how a student construes his/her self. Several possible limitations should also be recognized. First, the numbers of participants between Taiwan, United States, and Japan are not balanced. While the question of unequal sample sizes is not uncommon in comparative research such as this, it bears mentioning. Second, because of constraints of data collection across geographic areas, some potential factors of importance could not be considered such as language proficiency, level of motivation, specific learning contexts, and exposure to native English speakers. Third, the study relied on self-reports for all the measures across all national groups. In the future, more measurement tools need to be identified that do not rely exclusively on self-reports. For example, triangulating the data through interviews would shed more light on the richness of the results. Future studies might investigate some of the limitations of this study.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because confidential data. Requests to access the datasets should be directed to xjchen96@stanford.edu.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by University Human Subjects (IRB) – Research Compliance Office. Written informed consent to participate in this study was provided by the participants' legal guardian/next of kin.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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