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The trajectory of inclusive beliefs in beginning teachers

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Inclusive education is supported by the belief that all students belong and are valued members of their neighborhood school communities. Teachers must possess beliefs that support inclusion before they are able to develop the knowledge and skills necessary to implement effective inclusive practice. Using The *Beliefs About Learning and Teaching Questionnaire (BLTQ)*, 396 participants were followed for 4 years, from their initial year in preservice teacher education through to their second year of teaching to determine the trajectory of the development of inclusive beliefs. Distinct groups were identified. Those who began with lower inclusive beliefs that tended to decrease over time were more likely to be male. Those who began with higher inclusive beliefs that remained stable were more likely to be in the elementary panel and have greater professional experience. In addition, those with higher inclusive beliefs were more likely to have greater personal experience and weeks on practicum when they began their first course in inclusive education. Results are discussed with respect to teacher education for inclusive education.

KEYWORDS

inclusive education, beliefs, beginning teachers, pre-service teachers, teacher education

Introduction

Inclusive education is supported by the belief that all students belong and are valued members of their neighborhood school communities (Porter and Towell, 2017). Systematic reviews of the research in inclusive education (e.g., Hehir et al., 2016) indicate that inclusive education offers positive benefits academically and socially for all children. Teachers play an essential role in implementing effective inclusive education; however, they often report significant barriers (Sokal and Katz, 2015). For example, Canadian teachers commonly perceive a lack of resources and report feeling that their training did not provide them with the skills needed to teach in inclusive classrooms (Sharma et al., 2007; McCrimmon, 2015; Sokal and Katz, 2015). As schools become more diverse, the need to graduate teachers that believe they are capable and competent educators is

paramount. Sharma (2018) presents the 3H Framework as a way to prepare teachers to be effective inclusive educators.

The 3H Framework (Sharma, 2018) states that preparing teachers for inclusive education must involve the development of beliefs, knowledge and skills, and practical application. These are referred to as the heart, head, and hands of inclusive education, and all three must work together for successful inclusion. Beliefs form the heart of inclusion and provide the foundation upon which the head and hands will flourish. Based on this framework, teachers must possess beliefs that support inclusion before they are able to develop the knowledge and practical skills necessary to be effective inclusive educators.

Belief is a complex construct that exists at the core of all people, guiding attention, information processing, decision making, and behavior (Kagan, 1992; Fives and Buehl, 2012). A belief is something that has specific meaning, is concrete, can be communicated in words, and is assumed to be true (Connors and Halligan, 2015). A person's assumption that their beliefs represent an objective truth allows them to evaluate and understand their world and subsequently make decisions. Beliefs create consistency for people (Connors and Halligan, 2015). In the way that a compass helps people find direction and navigate unfamiliar spaces, beliefs provide the context in which a person can understand their world (Kagan, 1992; Pajares, 1992; Fives and Buehl, 2012).

Perhaps one of the most significant features of beliefs is the role they play in people's actions and behaviors. Beliefs are generally stable, which is significant because people can use them to evaluate information and make decisions. This process ultimately leads to reliable and predictable patterns of behavior (Funkhouser, 2017). The function of beliefs is especially important when people encounter unfamiliar or ambiguous situations because it provides the intuition or instinct that people rely on to make sense of the situation (Pajares, 1992).

Unlike facts or knowledge, beliefs typically do not arise from formal teaching and learning. Instead, the development of beliefs is grounded in experience and the informal process of observing, imitating, and participating in life and culture (Pajares, 1992). This process occurs effortlessly, and people often acquire beliefs without even realizing that it is happening. The earliest beliefs that people develop are called core beliefs, and they are generally the most stable and resistant to change (Wyer and Albarracín, 2005). As people acquire more beliefs, they begin to form a network that branches out from the core beliefs (Kagan, 1992; Pajares, 1992). While beliefs originate with little-to-no effort on the part of the individual, the process of adjusting or changing pre-existing beliefs is much more difficult, and newly acquired information that contradicts a pre-existing belief is easily dismissed (Jordan and Stanovich, 2004).

As more beliefs get added to the network, they become more nuanced and content specific. Beliefs about teaching and learning are an example of specific beliefs that exist within a broader network of beliefs. For teachers, these beliefs serve as a unique lens through which they understand elements of the classroom (e.g., student characteristics and instructional tasks). A teacher's unique understanding of classroom elements influences the decisions they make about instructional practices and interactions with students, which in turn has an influence on student outcomes (Kagan, 1992; Jordan and Stanovich, 2004).

Teachers' beliefs are especially important for students identified with diverse learning needs and inclusive education. When teachers possess beliefs that support inclusive education, they are more likely to feel responsible for meeting the learning needs of students with disabilities and will invest more effort to do so (Daniels et al., 2016; Jordan, 2018). These teachers also tend to value the learning process, are less concerned about students meeting rigid standards, and prefer that students receive specialized support within the regular classroom as opposed to being pulled out for instruction (Jordan and Stanovich, 2004; Silverman, 2007; Glenn, 2018). Without inclusive beliefs, teachers are likely to abandon inclusive practices in the face of challenges (MacCormack et al., 2021).

Inclusive teachers have a particular set of beliefs related to teaching and learning (Jordan, 2018). They tend to believe that challenges associated with disability are the result of the student's interaction with the environment and associated expectations. Not surprisingly, these beliefs are related to teachers' preferred practices in the classroom. Inclusive teachers work with students in small groups and provide individual instruction more often than less inclusive teachers; specifically working with academically at-risk students more than less inclusive teachers. Their instruction is more cognitively engaging and leads to better outcomes for all students.

Jordan and colleagues used extensive interviews and classroom observations to assess these qualities, and developed the Beliefs About Teaching and Learning Questionnaire (BLTQ) as a result of this work. The BLTQ is a 20-item self-report measure that collects information about the teacher's view of their role in the classroom, the goal of teaching and learning, as well as beliefs about ability. The items of the BLTQ are represented by four subscales: Teacher-Controlled Instruction, Entity-Increment, Student-Centred Instruction, and Attaining Standards (Glenn, 2018).

The Teacher-Controlled Instruction subscale reflects beliefs that are considered "traditional" and less inclusive. A high score on this factor represents the idea that teachers control what and how students learn. The Student-Centred Instruction subscale reflects beliefs that teachers should provide students with choice and flexibility in their learning while providing guidance and support. Teachers who endorse beliefs that instruction should be student-centered tend to be more inclusive (Glenn, 2018). The Entity-Increment subscale reflects teachers' beliefs about ability. A low score on this subscale represents entity beliefs, meaning that ability is viewed as a fixed and stable trait. A high score on this subscale represents increment beliefs, which refers

to the notion that ability is fluid, evolving, and responsive to instruction. Teachers with entity beliefs about ability are typically less inclusive, and teachers with incremental beliefs about ability are more inclusive (Jordan et al., 2010; Glenn, 2018). Finally, the Attaining Standards subscale reflects the belief that correct results are a valued part of education and getting good grades is what motivates students to work hard and do well in school. High scores on the Attaining Standards subscale of the BLTQ are associated with less inclusive beliefs and practices (Glenn, 2018).

Fostering inclusive beliefs is thus an essential part of teacher education, however it tends to get overlooked and we know less about developing inclusive beliefs than we do about knowledge, skills, and practical application. Past research has examined changes in beliefs about learning and teaching over short periods of time (e.g., before and after a specific course or practicum experience) and has identified a combination of personal and professional experiences that contribute to the development of beliefs (Lanterman and Applequist, 2018; Delorey et al., 2020). The current study expands on this literature by examining the development of these beliefs from the beginning of teacher education through to the first 2 years of teaching. Our research asks the following question: are there trajectories of inclusive beliefs that can be tracked in beginning teachers? Given that such trajectories exist, we also ask if there are differences between the groups on characteristics that have been shown to differentiate more and less inclusive beliefs in past research (i.e., gender, grade level taught, experiences with people with diverse needs, and time spent teaching students with diverse needs). By determining the ways in which beliefs develop, we can begin to understand how to influence those within initial teacher education resulting in more inclusive teaching and better student outcomes.

Materials and methods

Participants

Participants were recruited at the beginning of their teacher education programs during their first course on inclusive education. Initially, 2,187 participants from faculties of education across Canada agreed to participate, but only 396 people from 11 faculties of education agreed to be followed for the longitudinal portion of the study. The resulting longitudinal sample consisted of 80% female teachers and 60% indicated an intent to teach in the elementary stream. With respect to experience with people with diverse learning needs at the beginning of their program, 42% identified having little or no personal experience and 46% identified as having little or no professional experience. The average number of weeks spent in practicum was 1.59 (*SD* 2.35). With attrition, by year 4,

164 participants remained with 81% female and 59% teaching in the elementary system. With respect to initial responses of experience and weeks on practicum, 45% indicated little or no personal experience with people with diverse learning needs, 43% indicated little or no professional experience, and the average number of weeks spent in practicums was 1.62 (*SD* 2.11). To assess attrition bias (see **Supplementary Tables 1, 2**), Year 1 characteristics of participants who did and did not indicate interest in participating longitudinally were compared using the following effect sizes: Cohen's d (for continuous variables), Phi (φ; for binary variables) or and Cramer's V (for ordinal variables). Similarly, we compared the Year 1 characteristics of those who completed Year 4 and those who did not. Effect sizes were interpreted as small effect (d = 0.20; φ = 0.10; V = 0.06), moderate effect (d = 0.50; φ = 0.30; V = 0.17), and large effect (d = 0.80; φ = 0.50; V = 0.29). All effect sizes were small or negligible.

Measures

The (*BLTQ*; Glenn, 2018) assesses teachers' beliefs about their own roles and responsibilities for inclusive practice. It consists of four subscales and a total of 20 questions, rated on a 6-point Likert-scale (1 = *strongly disagree* to 6 = *strongly agree*). The Student-Centred Instruction subscale measures the extent to which teachers believe that students' needs within the learning process are the focus of instructional decision making in the classroom (e.g., Good instruction relates learning material to things students are interested in outside of school; Good teachers give students choices in their learning tasks). The Attaining Standards subscale measures the extent to which teachers believe that the primary motivator for learning are external rewards, such as high grades (e.g., All of my students would do well if they worked hard; The more students are concerned about grades and performance, the more they learn). The Teacher-Controlled Instruction subscale measures the extent to which teachers believe that their primary role is transmitting information (e.g., It is important for students to complete assignments exactly as the teacher planned; It is important for teachers, not students, to direct the flow of a lesson). The Entity-Increment subscale indicates the extent to which teachers believe that students' learning ability is more stable and fixed, rather than highly responsive and reflective of instructional contexts (Note: these items are reverse coded. e.g., The ability to learn is something people have a certain amount of and there isn't much they can do to change it; There will always be some students who simply won't "get it" no matter what I do). High scores on the Student-Centred Instruction and Entity-Increment scales and low scores on Teacher Controlled Instruction and Attaining Standards scales are indicative of beliefs consistent with inclusive education. Cronbach alphas for each scale ranged from 0.62 to 0.65.

In addition to the BLTQ (Glenn, 2018), participants indicated their age, gender, the grades they were intending to teach (elementary or secondary). Participants also were asked about their personal and professional learning experience with individuals who have been identified with diverse learning needs on a 4-point scale (0 = *none*, 1 = *little*, 2 = *moderate*, 3 = *extensive*), and the number of weeks to date that that they had spent in a teaching practicum.

Procedure

Ethical approval was obtained from each of the University Research Ethics Boards participating in the study. All procedures followed ethical principles for research with human participants. Participants first completed a pen-and-paper copy of the demographic questionnaire and the BLTQ which were distributed in-class during their first course on inclusion in their teacher education programs. This course was either in the first or second term of the 4-term program. Participation in this study was not mandatory and did not have an impact on any outcomes of the course. Their instructors were unaware of their participation. Participants indicated if they wished to continue participating in the study on a separate sheet stapled to the package of questionnaires. If they consented to be contacted for future studies, a unique anonymous ID number was assigned to their data and the results of their surveys were input into a database. Participants who indicated an interest to continue were sent an online version of the BLTQ at three additional time points after their first survey which was completed in year 1 of the program. Year 2 was 1 year after their initial survey and corresponds to near the end of their initial teacher education program. Year 3 was 2 years after the initial survey and corresponded to their first year of teaching. Year 4 was 3 years after their initial survey and corresponded to their second year of teaching.

Analyses

Analyses were conducted using SAS 9.4 (SAS Institute Inc., Cary, NC, United States). Means and standard deviations (SD) were used to describe continuous variables, and proportions and percentages were used to describe categorical variables.

The trajectories of Teacher Controlled Instruction, Entity Increment, Student Centred Instruction, and Attaining Standards, over time were jointly estimated using multigroup latent class growth models (Nagin et al., 2018) with the Proc Traj macro (Jones et al., 2001). This approach aims to identify unique subgroups of participants that share similar trajectories across multiple outcomes. A censored normal model was used, with parameters estimated using the maximum-likelihood approach with the assumption that data were missing at random. A probability of belonging to each group is assigned

to each participant, and the participant is assigned to a group based on the highest probability value. Following established guidelines (Jones et al., 2001; Nagin, 2005; Nagin et al., 2018), we first estimated a trajectory model for each outcome separately, starting with quadratic trajectories for one group, and adding additional groups until the model worsened. The number of trajectory groups was guided by overall model fit as assessed by the Bayesian Information Criterion (BIC), average posterior probability, odds of correct classification, and the proportion of individuals in each group. Next, non-significant quadratic terms were removed for model parsimony. Results were consistent when a different set of start values were used. Once the optimal model for each outcome was identified, outcomes were jointly modeled (Nagin et al., 2018).

Once the trajectories were finalized, characteristics of the participants in each trajectory group were compared. Analysis of variance and *post hoc* Tukey correction was used for continuous variables, and chi-square test was used for categorical data. Multinomial logistic regression was used to identify independent factors associated with each trajectory group. Listwise deletion was used for missing data, as only 7% of the sample ($n = 28$) were missing data on the variables of interest. Personal and professional experience were treated as continuous variables to obtain a more parsimonious model.
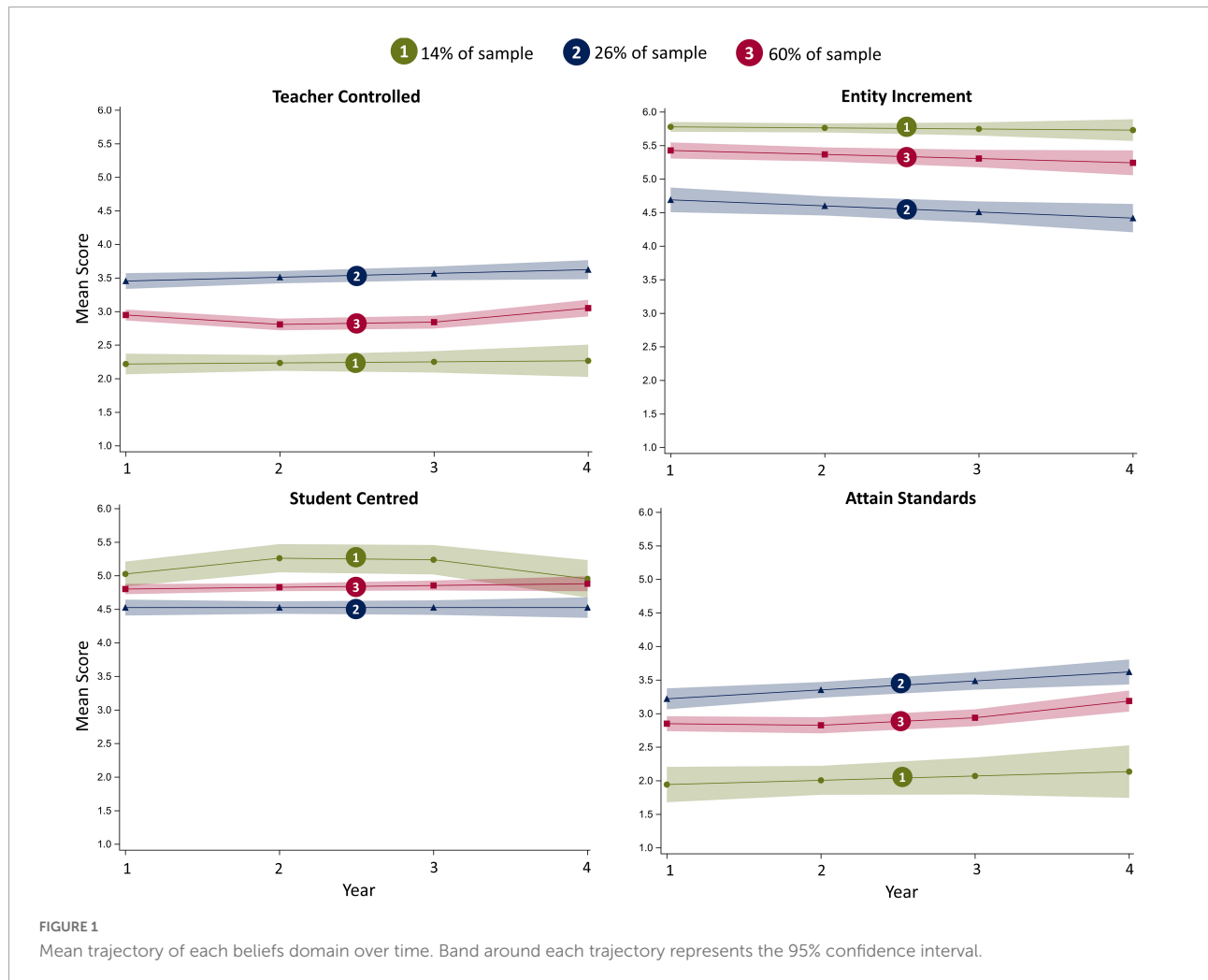
Results

Trajectories of beliefs

Sample size, mean, and standard deviation of each subscale on the BLTQ at each time point are presented in **Table 1**. The four subscales of the BLTQ were best modeled using three groups, whose trajectory is shown in **Figure 1** and model parameters are described in **Table 2**. **Supplementary Figure 1** additionally shows the trajectory of each participant, and **Supplementary Tables 3, 4** provide the details of the model fit and scores at each time point, respectively.

Group 1 was composed of 14% of the sample and was qualitatively labeled "higher in inclusive beliefs" given their relatively low scores on Teacher Controlled Instruction and Attaining Standards, and relatively high scores on Entity Increment and Student-Centered Instruction. Group 1 scored similarly across the 4 years for all domains. The opposite pattern was observed for Group 2, which was composed of 26% of the sample and qualitatively labeled "lower in inclusive beliefs" given their relatively high scores on Teacher Controlled Instruction and Attaining Standards, and relatively low scores on Entity Increment and Student Centred Instruction. Group 2 showed significant, though modest, declines in Entity Increment and an increase in Attaining Standards; scores on Teacher Controlled Instruction and Student Centred Instruction remained stable over the 4 years. Lastly, Group 3 was composed of 60% of the sample and was qualitatively labeled

TABLE 1 Sample size, mean, and standard deviation (SD) at each time point.

	Teacher controlled		Entity increment		Student centred		Attain standards	
	n	Mean (*SD*)	*n*	Mean (*SD*)	*n*	Mean (*SD*)	*n*	Mean (*SD*)
Year 1	378	2.97 (0.67)	389	5.28 (0.66)	390	4.75 (0.55)	392	2.8 (0.8)
Year 2	268	2.88 (0.62)	272	5.24 (0.69)	266	4.87 (0.58)	267	2.87 (0.8)
Year 3	124	2.95 (0.67)	124	5.1 (0.74)	123	4.79 (0.61)	126	2.92 (0.85)
Year 4	163	3.12 (0.65)	160	5.08 (0.71)	160	4.78 (0.47)	163	3.19 (0.78)

FIGURE 1
Mean trajectory of each beliefs domain over time. Band around each trajectory represents the 95% confidence interval.

"intermediate inclusive beliefs" given that they scored in the intermediate range (relative to Groups 1 and 2), and scored similarly across the 4 years.

Characteristics associated with each trajectory

Table 3 summarizes the Year 1 characteristics of participants in each trajectory group. Relative to all other groups,

participants in Group 2 (lower in inclusive beliefs) were more likely to be male, and those in Group 1 (higher in inclusive beliefs) were more likely to be in the elementary panel and have more professional experience. In addition, those in Group 1 (higher in inclusive beliefs) were more likely to have more personal experience and weeks on practicum, relative to Group 2. Using a multivariable model to control for the effects of other variables yielded similar results (**Table 4**). The odds of being in Groups 1 and 3 (relative to Group 2) were 2.86 (95% CI 1.03, 7.91) and 2.18 (95% CI 1.23, 3.86) times higher for

TABLE 2 Estimates of beliefs trajectory parameters.

Group	Parameter	Teacher controlled		Entity increment		Student centred		Attain standards	
		β (SE)	P-value	β (SE)	P-value	β (SE)	P-value	β (SE)	P-value
1	Intercept	2.22 (0.07)	<0.001	5.78 (0.11)	<0.001	5.03 (0.08)	<0.001	1.91 (0.10)	<0.001
	Linear	0.02 (0.05)	0.74	−0.04 (0.07)	0.62	0.39 (0.15)	0.010	0.07 (0.06)	0.26
	Quadratic	–	–	–	–	−0.14 (0.05)	0.007	–	–
2	Intercept	3.45 (0.06)	<0.001	4.70 (0.08)	<0.001	4.53 (0.06)	<0.001	3.22 (0.08)	<0.001
	Linear	0.06 (0.03)	0.07	−0.09 (0.04)	0.023	0.00	0.99	0.13 (0.04)	0.002
	Quadratic	–	–	–	–	–	–	–	–
3	Intercept	2.95 (0.04)	<0.001	5.52 (0.05)	<0.001	4.80 (0.03)	<0.001	2.85 (0.05)	<0.001
	Linear	−0.23 (0.07)	0.002	−0.08 (0.03)	0.007	0.03 (0.02)	0.22	−0.09 (0.10)	0.34
	Quadratic	0.09 (0.02)	<0.001	–	–	–	–	0.07 (0.03)	0.036

SE, Standard error.

TABLE 3 Characteristics in Year 1 of participants in each trajectory group.

	Group 1 (n = 55)	Group 2 (n = 103)	Group 3 (n = 238)	F/χ^2 (p-value)	Contrast[b]
Sex, n female[a]	49 (89%)	70 (68%)	197 (83%)	13.02 (0.002)	1.3>2
Panel, n elementary	43 (78%)	51 (50%)	145 (61%)	12.40 (0.002)	1>2.3
Personal experience				3.36 (0.036)	1>2
None	3 (5%)	5 (5%)	13 (5%)		
Little	13 (24%)	47 (46%)	84 (35%)		
Moderate	24 (44%)	35 (35%)	100 (42%)		
Extensive	15 (27%)	14 (14%)	40 (17%)		
Professional experience				5.61 (0.004)	1>2.3
None	1 (2%)	8 (8%)	15 (6%)		
Little	14 (25%)	47 (46%)	95 (40%)		
Moderate	29 (53%)	36 (35%)	102 (43%)		
Extensive	11 (20%)	11 (11%)	25 (11%)		
Weeks on practicum	2.35 (2.55)	1.33 (2.19)	1.53 (2.34)	3.59 (0.029)	1>2

Mean (Standard Deviation) or n (%) are presented.

[a]Two students (in Group 2 and 3) reported Trans or Other, and we removed from this comparison.

[b]Denotes significant pairwise contrasts (at p < 0.05), e.g., 2.3 > 1 indicates that Group 2 and 3 are significantly larger (or have higher scores) than Group 1.

females. Additionally, the odds of being in Group 1 (relative to Group 2) were 2.49 (95% CI 1.13, 5.50) times higher for the elementary panel. Lastly, the odds of being in Group 1 were 1.15 (95% CI 1.00, 1.31) and 1.11 (95% CI 1.00, 1.25) times higher for each week in practicum relative to Group 2 and 3, respectively.

Discussion

The results of this study show that most people entering the faculty of education endorse inclusive beliefs about learning and teaching, and importantly, these remain stable throughout their program and first few years of teaching. This is not too surprising perhaps given that beliefs are difficult to change. What is perhaps more concerning is that about one-quarter of the future teachers are not as inclusive and become less so as they move through

their teacher education programs and in to the first 2 years of teaching.

In response to our research question about trajectories, the analysis indicated three trajectories of development of inclusive beliefs from the beginning of teacher education through to the end of the second year of teaching. Group 1 began their teacher education program with high inclusive beliefs and those remained fairly stable over the subsequent 4 years. They comprised the smallest group of participants; only 14%. This group already had the beliefs that teaching and learning is student rather than teacher centered, and that the measure of learning is not necessarily determined by the mark received. They see ability as something that is malleable and over which they have the ability to increase in students. Jordan (2018) summarizes decades of her research that supports these beliefs as being indicative of effective teachers in inclusive classrooms. Group 2 comprised 26% of the participants and showed the opposite trajectory of belief developments. This group began

TABLE 4   Odds of belonging to each trajectory group. Odds Ratio (OR) and 95% Confidence intervals are presented.

	P-value of overall effect	Group 1 (ref = group 2)	Group 3 (ref = group 2)	Group 1 (ref = group 3)
Female	0.015	**2.86 (1.03, 7.91)**	**2.18 (1.23, 3.86)**	1.31 (0.50, 3.49)
Elementary panel	0.08	**2.49 (1.13, 5.50)**	1.24 (0.75, 2.04)	2.01 (0.98, 4.13)
Personal experience	0.44	1.34 (0.84, 2.13)	1.16 (0.84, 1.61)	1.15 (0.76, 1.73)
Professional experience	0.14	1.58 (0.96, 2.61)	1.03 (0.73, 1.44)	1.54 (0.99, 2.40)
Weeks on practicum	0.10	**1.15 (1.00, 1.31)**	1.03 (0.92, 1.15)	**1.11 (1.00, 1.25)**

Bolded term highlights significant ($p < .05$) values.

the teacher education program with relatively less inclusive beliefs compared to the other two groups. Relative to the other groups, they tended to believe that teachers ought to control the learning and that marks were the measure of learning that was important. Their belief about teacher control remained stable and their belief about marks as indicative of learning increased. They tended to come into their initial teacher education with less student centered learning ideas. They saw ability as more of a fixed trait and that belief seemed to be more entrenched at the end of their first 2 years of teaching. We know that these early years are key to forming their practice (Schuck et al., 2018) and if their beliefs are becoming less inclusive, it is likely that so too is their instruction (Jordan, 2018). That is a great concern given that schools are becoming more diverse. The question might be whether there is a possible way to address these less inclusive beliefs and help them become more, rather than less, inclusive. Delorey et al. (2020) asked preservice teachers at the end of their initial teacher education what experiences supported their development of inclusive beliefs. They found that practicum experiences were listed as the most important especially around the ability to witness inclusive education in practice and to collaborate with the staff in the schools. Personal and work experiences with diversity were also listed as important. Teacher candidates that identified themselves or others in their family as having been identified with diverse learning needs or working with children and adults who have disabilities were key in helping their beliefs. Their education program was also important. It would be important to determine what experiences contribute to beliefs in the first few years of teaching as has been done with preservice teachers. Perhaps positive experiences can support inclusive beliefs, but negative experiences are enough to make people with less inclusive beliefs become less inclined to buy in to that system. Future research investigating the experiences of people that start lower in inclusive beliefs would help shed light on this question. Finally, Group 3 was more moderate in their beliefs compared to the other two groups. They represented the largest group (60%) and when investigating their mean scores, they tended more toward inclusive beliefs that remain from the beginning of their teacher education to the end of the first 2 years of teaching.

Characteristics associated with each trajectory

In answering the research question about characteristics associated with each trajectory, a number of differences emerged between the groups. The beginning teachers in Group 2 who tended to have less inclusive beliefs were also more likely to be male and work in secondary. Specht and Metsala (2018) found that male secondary school preservice teachers that believed learning was more of a fixed trait tended to be less efficacious about their inclusive practice. Perhaps targeting men who plan to teach in secondary and determining ways to increase their inclusive beliefs would be a useful endeavor. At the very least, more research should look at this question.

An interesting finding is that those with more practicum experience early on were more likely to endorse inclusive beliefs. These people would have had some practicum experience before taking their first course in inclusive education. This finding is similar to that of Charles et al. (2022) who found that participants with a higher number of weeks on practicum experienced growth in self-efficacy for inclusive practice. Perhaps early experiences within teacher education are the ones that are important in forming beliefs, which may become more entrenched over time. Research should investigate further whether the placement of practicum within a teacher education program in relation to coursework in inclusive education can influence inclusive education practice.

Findings from the current study should also be considered in the context of its limitations. First, the trajectories identified represent an approximation of a more complex reality and are not necessarily distinct entities. Second, given the long-term follow-up of this study, attrition was inevitable. However, it is important to note that those lost to follow-up were similar to those who completed follow-up across a variety of characteristics at the initial survey, and the analyses utilized data from the full sample (not just those with complete data at each follow-up). Finally, the reliability analysis of the BLTQ indicates that potentially there are issues with internal consistency. The small number of questions in each subscale may be deflating the Cronbach alpha. Hair et al. (2010) state that while a value of 0.70 is generally agreed upon as an acceptable value, and values as low as 0.60 may be acceptable for exploratory research. Given

the strong and consistent factor structure that has been noted in previous research using this measure (Specht et al., 2016; Glenn, 2018), we believe it to be useful at this early stage of research on teachers beliefs about learning and teaching in inclusive classrooms.

Conclusion

This study is the first of its kind to investigate the trajectory of beliefs over the period of initial teacher education and in to the first few years of teaching. Our findings illustrate that there are distinct groups of people with respect to inclusive beliefs about learning and teaching. Those in elementary, and who are women have stable inclusive beliefs. Those who have more personal and professional experience when entering their initial teacher education program have the highest and stable scores across all 4 years. The main concern lies with those that came in with less inclusive beliefs which became more negative over the 4 years of the research. The question is whether they will continue to become more negative. A better understanding of the experiences of the groups and how those experiences contribute to inclusive beliefs may help us determine how to support our early career teachers in becoming the most effective teachers they can be for students in the diverse classrooms of today.

Data availability statement

The datasets presented in this article are not publicly available as it was not requested by the researcher in the letter of information. Requests to access the datasets should be directed to corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by Western University Non-medical Ethics Research Board. The patients/participants provided their written informed consent to participate in this study.

Author contributions

JS, JD, and KP worked collaboratively on developing the idea for the manuscript and in writing and editing various sections. JS wrote the first draft of the manuscript. KP performed the analyses. 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.

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2022.928505/full#supplementary-material

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