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# When L1 takes precedence: revisiting semantic acquisition in diverse L2 learners

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This paper investigates the interaction between the Semantic Subset Principle (SSP) and first language (L1) influence in second language (L2) acquisition, focusing on ambiguous linguistic structures that involve subset-superset readings. Based on findings of a series of experimental surveys, this paper proposes that first language knowledge significantly impacts L2 semantic acquisition, often overriding the predictions of SSP. Learners tend to rely on the narrower interpretations present in their L1 when acquiring L2 structures, particularly in the absence of sufficient positive input for alternative readings in L2. The findings highlight challenges faced by culturally and linguistically diverse learners, including those with developmental language disorders, who may be particularly vulnerable to L1 interference. This paper proposes the updated First Language Interpretation Priority Principle (FLIPP), which posits that learners' successful acquisition of subset-superset distinctions in an L2 is contingent upon these distinctions existing in their L1 and being reinforced by positive input from the L2. Implications for theory, practice, and policy-making are discussed, calling for inclusive and targeted pedagogical and clinical interventions to support diverse learners in multilingual settings.

## KEYWORDS

semantic subset principle, first language transfer, second language acquisition, developmental language disorder, culturally and linguistically diverse learners, language ambiguity, positive input, language pedagogy

## 1 Introduction

Sentence comprehension in child learners is strikingly different from that of adults, particularly when it comes to understanding complex linguistic elements like universal quantifiers. Since the seminal work of [Inhelder and Piaget \(1958, 1964\)](#), researchers have noted that children often respond in ways different from those of adults to quantifier-based questions—a phenomenon known as “quantifier spreading.” For instance, children aged six to seven were found to consistently deny the statement “Every boy is riding a pony” when shown a drawing of three boys, each of them riding a pony, with an additional pony left unriden. This happens because children tend to apply the quantifier more broadly, expecting it to cover all entities present, including the unriden pony. [Philip \(1995\)](#) termed this response “symmetrical,” indicating that children interpret universal quantifiers to include every visible element in a context, rather than appropriately restricting the quantification. [Brooks and Sekerina \(2006\)](#) suggest that these errors arise not

from issues with syntactic structure but from challenges in selecting the correct domain of quantification—a process that differs fundamentally from adults who narrow down relevant participants in an event. In contrast, adults tend to rely on more straightforward and contextually grounded interpretations, following what is referred to as the Principle of Referential Success (Crain et al., 1994). In unambiguous situations, adults typically resolve sentence meaning by referring to entities directly present in the context. Children, on the other hand, do not always follow this principle, even in unambiguous contexts. For example, Crain et al. (1992) experimented to explore how children interpret exclusivity. In their experiment, children were shown a picture of a cat and a dog, each holding a balloon, and a bird holding both a balloon and a flag. The children, aged between 3 and 6 years old, were then asked to evaluate a couple of sentences (examples 1–3 below) about the picture. Interestingly, only one out of ten children was able to correctly accept the first sentence and reject the second and third. Most notably, sixty per cent of the children incorrectly accepted all the sentences by attributing the word “only” to the subject noun phrase (NP) “the bird,” thereby failing to grasp its true scope. Meanwhile, thirty per cent rejected all of the sentences, interpreting “only” as applying to the object NP “a flag.”

1. Only the bird is holding a flag.
2. The bird is holding only a flag.
3. The bird is only holding a flag.

Additionally, adults tend to adopt interpretations that require the fewest assumptions about absent information, preferring simpler or “weak readings”, which is known as the Principle of Parsimony (Crain et al., 1994). For instance, an adult speaker most likely will interpret the sentence “The fireman is only holding a hose” (example 4) as meaning that “A hose is the only thing the fireman is holding.” Similarly, they would interpret “John speaks French or Spanish” (example 5) as indicating “John speaks either French or Spanish, but not both” (adapted from Paterson et al., 2003; Paterson et al., 2006). In contrast, child speakers—guided by the constraints of the Subset Semantic Principle (SSP) (Crain, 1992)—are more likely to interpret “The fireman is only holding a hose” as meaning “Holding a hose is the only thing the fireman is doing,” emphasising the action itself. Similarly, they are prone to interpret “John speaks French or Spanish” as meaning “John speaks both French and Spanish”, therefore, overlooking the implicature of exclusivity. This difference highlights the more expansive focus often applied by children when interpreting sentences, as opposed to the minimalistic approach favored by adults.

4. The fireman is only holding a hose.
5. John speaks French or Spanish.

The theoretical distinction between the SSP and the Principle of Parsimony is crucial in understanding how ambiguities are processed, as different predictions result from the two principles regarding the preferred interpretations of children and adults. While much of the existing evidence focuses on the role of SSP in first language acquisition (FLA), second language acquisition (SLA) presents an interesting context for further exploration. Unlike first language (L1) learners, who start as a “tabula rasa,” second language

(L2) learners come with prior linguistic knowledge, which may influence their learning process. Thus, investigating SSP within SLA is not only of theoretical interest but also have practical implications for language education and both typical and atypical language development studies.

## 2 The semantic subset principle

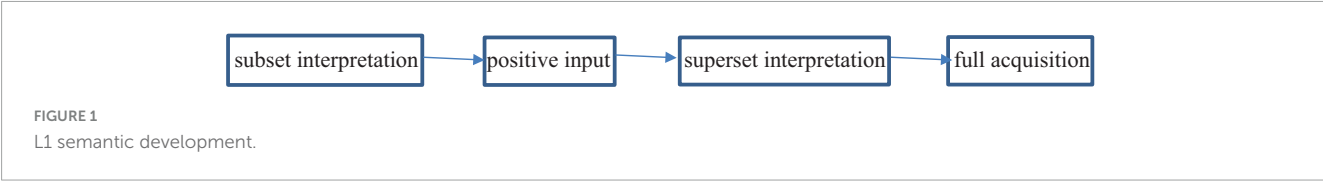
Generative theories of language development argue that syntactic acquisition is influenced by an innate learnability constraint known as the Subset Principle (e.g., Berwick, 1985; Pinker, 1995; Wexler and Manzini, 1987a,b). Building on such a hypothesis, Crain and colleagues (Crain, 1992; Crain et al., 1994; Crain and Philip, 1993; Crain and Thornton, 1998) proposed a similar mechanism for the acquisition of semantics, i.e., SSP, designed to address “semantic subset problems,” which arise when Universal Grammar (UG) allows multiple possible interpretations for certain structures that stand in a subset-superset relationship. Specifically, if a language permits only the narrower subset reading while the broader superset reading is excluded, learners face a semantic subset problem. In such cases, the SSP guides learners to initially adopt the narrower interpretation, which applies in the smallest possible set of circumstances. For instance, suppose UG provides two interpretations (A and B) for a sentence (S). The SSP suggests that if interpretation A applies to a more restricted set of scenarios than interpretation B, learners will initially hypothesise interpretation A before considering B (Crain and Thornton, 1998, p. 118).

To test this hypothesis, Crain et al. (1994) experimented with preschool-aged children (mean age: 4 years, 9 months). The children were presented with an image that included an elephant painting a car and holding a balloon, and a dinosaur painting a house while also flying a kite. The researchers then asked the children to evaluate sentence (6), which could be interpreted in two ways: the weaker subset reading (6a) and the stronger superset reading (6b). As the SSP predicted, most of the children rejected (6) as an accurate description of the picture, reasoning that the dinosaur was also flying a kite—an action that was not captured by (6a).

6. The dinosaur is only painting a house.
- 6a. The only thing the dinosaur is doing is painting a house.
- 6b. The only thing the dinosaur is painting is a house.

These findings led Crain et al. (1994, p. 456) to conclude that in FLA, “the semantic subset principle compels children to initially hypothesise the (a) reading... At a later point in development, the (b) reading will become available in response to (the) input.” This developmental progression illustrates how learners start with a restricted hypothesis, consistent with the subset reading, and eventually expand their interpretations based on further linguistic input, as depicted in Figure 1.

The viability of SSP is supported by the assumption that UG structures syntax in a layered manner, rather than a flat one. For example, sentence (7) would yield only (7b) under a flat analysis, but the layered analysis allows for both (7a) and (7b). The fact that



native speakers tend to favor the subset reading in (7a) (Musolino, 2006) supports the psychological validity of the layered approach.

7. John read an interesting article and Jane read one too.  
7a. John read an interesting article, and Jane read an interesting article too.  
7b. John read an interesting article, and Jane read an article too.

In the layered analysis, sentence (8) should be interpreted as (8a) because the quantifier “every” takes scope over “not,” as depicted in (9). The scope principle dictates that an operator like “every” governs the interpretation of other elements within its scope. In (8), “not” falls within the scope of “every,” hence the (8a) reading.

8. Every horse didn’t jump over the fence.  
8a. No horse jumped over the fence. (every > not)  
9. IP[NP Every horse [I’ didn’t [VP jump over the fence]]].

However, an alternative interpretation, (8b), is also possible.

- 8b. Not every horse jumped over the fence. (not > every)

The key to resolving this ambiguity lies in syntactic movement. According to the VP Internal Hypothesis, the subject is base-generated in the Spec-VP position and then moves to Spec-IP (Carnie, 2003). In this case, the subject “every horse” in (8) is base-generated in Spec-VP, beneath the negation “not,” and moves to Spec-IP. However, it leaves behind a trace (*t*), which allows for the possibility of alternative interpretations, as outlined in (10) and (11).

10. IP[NP Every horse[I’ didn’t[VP[NP *t*] jump over the fence]]].  
11. IP[NP Every horse[I’ didn’t[VP[NP every horse] jump over the fence]]].  
11a. IP[NP Every horse[I’ didn’t[VP[NP every horse] jump over the fence]]].  
(Logical Form Structure:  $\forall x[\text{horse}(x) \rightarrow \neg \text{jump over the fence}(x)]$ ).  
11b. IP[NP Every horse[I’ didn’t[VP[NP every horse] jump over the fence]]].  
(Logical Form Structure:  $\neg \forall x[\text{horse}(x) \rightarrow \text{jump over the fence}(x)]$ ).

The logical relationships between these interpretations are summarised in (11c).

TABLE 1 SSP predictions vs. empirical data.

|                                                  | SSP            | Actual finding |
|--------------------------------------------------|----------------|----------------|
| 13. Some girls won’t ride on the merry-go-round. | $\neg \exists$ | $\exists \neg$ |

11c.  $\forall x[\text{horse}(x) \rightarrow \neg \text{jump over the fence}(x)] \models \neg \forall x[\text{horse}(x) \rightarrow \text{jump over the fence}(x)]$ .

Crain et al. (1994, p. 454) clearly articulated that “the principle [SSP] orders children’s semantic hypotheses in advance, as follows: Default hypotheses are those that will not require revision (i.e., they are universally realised), while additional, language-specific hypotheses are introduced based on positive input evidence.” However, empirical findings appear to contradict its predictions (e.g., Gualmini and Schwarz, 2009; Musolino, 1998, 2006; Musolino et al., 2000; Musolino and Lidz, 2006). One notable critique comes from Musolino’s (2006) “absence-of-superset-reading” argument. According to SSP, the “strong” subset reading should entail the “weak” superset reading, and the absence of the superset reading would create a semantic subset problem. Musolino illustrates this with a Chinese translation (12) of the English sentence (8) and points out that in sentences like (12), while the subset reading remains the same as in (8a), the superset reading (8b) is missing. Consequently, since the “not > every” reading should theoretically be true when the “every > not” reading is true, the absence of the superset reading leads Chinese learners to incorrectly assume the validity of the “not > every” reading, which can never be falsified. As Musolino concludes, Chinese speakers “would fail to converge on the target grammar” (p. 210).

12. mei pi ma dou mei tiao guo langan.  
every Quantifier horse all not jump over fence

Musolino (1998) further found that children’s actual preference for sentence (13) in Table 1 aligns with the “some > not” ( $\exists \neg$ ) reading, rather than the SSP-predicted “every > not” ( $\neg \exists$ ) reading. While, logically, “not > some” ( $\neg \exists$ ) does not always equate to “every > not”, within the subset-superset framework, “every > not” is the subset reading for “not > some” as the superset reading.

Therefore, it is important to differentiate semantic and pragmatic boundness. For example, an existential quantifier such as “some” is semantically lower-bounded (meaning “more than none”), but it is also pragmatically upper-bounded (“not all”) (Horn, 1972). This upper bound meaning is typically realised through quantity-based scalar implicatures (Drozd, 2006), where the negation of “some” implies a “Not-(...just some...)” reading (also see Davis, 2011). In natural settings, due to different pragmatic competence, children may use the semantic and pragmatic boundness differently than the adults. For example, Papafragou

and Schwarz (2006) found that children assign unilateral instead of bilateral semantics to existential quantifiers. As a result, children do not interpret (13) as simply as SSP would predict. Gualmini and Schwarz's (2009) study supports the argument that children's semantic acquisition requires more than just the syntactic or semantic rules. Their findings indicate that the primary linguistic data children have access to frequently include evidence as a result of the computation of conversational implicatures, suggesting that the necessity for SSP may be overstated. Specifically, SSP's prediction for sentences like (13) might be overly simplistic, failing to account for the more nuanced ways in which children derive meaning through implicature.

These counterarguments urge us to look beyond syntactic and semantic computations and consider additional factors that influence language acquisition. A promising direction lies in exploring the interaction between existing L1 knowledge and similar L2 structures in SLA (Han, 2024). By examining how learners apply their L1 knowledge and how input from the L2 influences their comprehension, we can better understand the underlying mechanisms of the acquisition process and its diverse outcomes.

### 3 L1 influence on L2 learnability: scope and ambiguities

The scope ambiguities in equivalent structures across different languages do not always align, as illustrated in examples (12) and (8). In SLA, it is generally believed that the greater the linguistic differences between L1 and L2, the more likely learners are to transfer their L1 knowledge to the L2 (Whitley, 2002). Unfortunately, much of this transferred knowledge often results in "negative transfers" or "interference," leading L2 learners to either overuse L1-like structures that do not align with L2 or struggle to acquire L2 structures that are absent in their L1 (see Bransford et al., 2000; Jarvis and Pavlenko, 2008; Nitschke et al., 2010). This poses a theoretical dilemma. On one hand, SLA research showed that L1-specific linguistic features strongly influence L2 cognitive processing, resulting in learners depending heavily on L1-based sentence processing strategies (Haynes and Carr, 1990). On the other hand, SSP posits that learners universally acquire the subset semantics of certain structures before acquiring the superset semantics to avoid subset semantic issues in the target language.

Such a dilemma raises an important question: In SLA, are learners primarily influenced by L1 interference when there is a discrepancy in the semantics of the same structures in L1 and L2, or do they follow SSP predictions and acquire the L2 semantics independently of L1 influence? This question remains central to understanding the competing effects of native language transfer versus universal learning mechanisms in SLA.

To explore this question, Han (2014a,b, 2015, 2016a,b, 2018, 2020, 2024) conducted a series of surveys examining L2 (English) semantic awareness of scope-ambiguous structures involving "every," "only," and negation-raising predicates, all of which are interpreted differently in the learners' L1. As shown in examples (8) and (12), the subset reading of negation involving the universal quantifier "every" (i.e., "every > not") should be universally acquired before the superset reading ("not > every"). However,

TABLE 2 L2 semantic awareness survey: "every".

|                                                                                    | CSLL   | ESLL          |
|------------------------------------------------------------------------------------|--------|---------------|
| (8) Every horse didn't jump over the fence<br>a. "Every > not"<br>b. "Not > every" | ✓<br>✓ | ✓<br><u>X</u> |
| (12) meipima dou mei tiaoguo langan<br>a. "Every > not"<br>b. "Not > every"        | ✓<br>? | ✓<br>X        |

the superset reading is absent in Chinese for structures like (12). Although the absence of the superset reading is not falsified by input, Chinese L1 speakers would never interpret structures like (12) with a "not > every" reading.

These studies employed acceptability judgment tasks specifically designed to examine how learners interpret ambiguous subset-superset structures across their L1 and L2. Participants were verbally presented with sentences in their native language first, followed by equivalent structures in their second language. They were then required to indicate verbally or by pointing gestures whether particular interpretations were acceptable or unacceptable within given contexts. The design intentionally avoided response time constraints to minimise potential cognitive stress or processing biases, especially considering the young age and linguistic diversity of participants. Control sentences with clear, unambiguous interpretations were included to confirm that all participants adequately understood the task and sentence structure, thus reinforcing task validity.

Additionally, categorical coding (acceptable/unacceptable) of participants' responses was conducted. To maintain reliability and objectivity, two trained researchers independently coded the data, achieving an inter-rater reliability of above 90%. Any coding discrepancies were resolved through subsequent discussion until full consensus was reached. This methodological approach ensured clarity, consistency, and robustness in evaluating the complex interplay of L1 influence and SSP-guided interpretations during L2 acquisition.

Han (2014b, 2015, 2016b) surveyed two groups: English learners whose native language was Chinese (ESLL<sup>1</sup>;  $n = 39$ ; mean age = 9 years, 8 months) and Chinese learners whose native language was English (CSLL<sup>2</sup>;  $n = 46$ ; mean age = 11 years, 1 month). The acceptability of both subset and superset readings of sentences (8) and (12) were judged by the participants. They were first presented with the sentence in their native language and then with its L2 equivalent. The results, *chi-square* tested, are displayed in Table 2 (a tick indicates significant acceptance of reading ( $p = 0.05$ ), a cross indicates significant rejection ( $p = 0.05$ ), and a question mark indicates no significant difference).

Noteworthy are the results in Table 2. Most of the CSLLs accepted both the subset and superset readings for the English sentence, consistent with SSP predictions. However, not all accepted the "not > every" reading for the corresponding Chinese

1 ESLL is short for English as a Second Language Learners. In this paper ESLLs have Chinese as their L1.

2 CSLL is short for Chinese as a Second Language Learners. CSLLs have English as their L1 in this paper, while their L1 Chinese refers to Mandarin (unless specified).

TABLE 3 L2 semantic awareness survey: “only”.

|                                            | CSLL     | ESLL     |
|--------------------------------------------|----------|----------|
| (6) The dinosaur is only painting a house. | ✓        | <u>X</u> |
| a. Wide focus                              | ✓        | ✓        |
| b. Narrow focus                            |          |          |
| (14) konglong zhi hua fangzi.              | <u>X</u> | ?        |
| a. Wide focus                              | <u>X</u> | ?        |
| b. Narrow focus                            | ✓        | ✓        |

structure, likely due to the L1 interference. Conversely, none of the ESLLs accepted the “not > every” reading for the Chinese sentence. These ESL learners also rejected the superset reading for the English sentence, despite positive input in the target language—suggesting that L1 interference overrode SSP on this occasion.

While these results may appear inconsistent with the theoretical predictions, they still align with one key hypothesis of SSP: that the subset interpretation of an ambiguous structure is the “default” during acquisition. Further, the same groups of learners were asked to judge two possible readings of example (6) and its Chinese equivalent (14) (where the (a) readings represent a wide focus, and the (b) readings are a narrow focus). Table 3 shows the results.

The results in Table 3 resemble those in Table 2: The CSLL group accepted both readings for the English sentences, as SSP predicted, but rejected one reading for the Chinese sentence due to insufficient positive input on that reading in their L1. Meanwhile, the ESLL group rejected one reading for the English sentence, even though positive input in the target language was present. However, the reading rejected in the L2 in this case is the subset, instead of the superset. For the Chinese equivalent of (6), there were not enough native speakers to significantly endorse the wide-focus reading. This pattern, once again, aligns with the theory of L1 negative transfer: the fact that the superset reading precedes the subset reading in the SLA context suggests that native language transfer may indeed supersede SSP.

## 4 Logical form variations in L2 acquisition

In the case of L2 logical form acquisition, further complexities arise within language-internal structures that share similar forms. A prime example of this is the negation-raising (Neg-R) structure, which can exhibit either a Neg-R reading (logically marked as  $\neg$ Ba) or a Non-Neg-R reading ( $Ba\neg$ ), where the  $Ba\neg$  reading forms the subset and the  $\neg$ Ba reading forms the superset (see Bartsch, 1973; Heim, 2000; Hintikka, 2002; Portner, 2009 for formalised explanations). For instance, in English, the sentence “x does not believe that S” can have the same form as “x believes that not S”, which involves negation-raising predicates (NRP) like “believe.” In contrast, non-negation-raising predicates (NNRP), such as “be certain,” do not behave the same syntactically.

In structures with NRPs, therefore, both Neg-R and Non-Neg-R readings are possible, while NNRP structures only allow the Non-Neg-R reading. For instance, while sentence (15) can be interpreted as (15a), sentence (16) cannot be interpreted as (16a).

15. I didn’t think it was a case of Developmental Language Disorder.
- 15a. I thought it was not a case of Developmental Language Disorder.
16. I didn’t decide it was a case of Developmental Language Disorder.
- 16a. I decided it was not a case of Developmental Language Disorder.

Crosslinguistic variation further complicates the issue of Neg-R predicates. For example, while “hope” is not a negation-raising predicate in English, its German counterpart “hoffen” is, and Latin “sperare” also exhibited Neg-R behavior, whereas French “espérer” does not (Horn, 1989). This is also evident in Chinese (Mandarin), where sentences like (17) are (18) cannot be interpreted as either (17a) or (18a).

17. wo bu renwei zhe shi tedingyuyansunshang.  
I not think this BE Developmental Language Disorder  
‘I didn’t think it was a case of Developmental Language Disorder.’
- 17a. wo renwei zhe bu shi tedingyuyansunshang.  
I think this not BE Developmental Language Disorder  
‘I thought it was not a case of Developmental Language Disorder.’
18. wo bu jue ding zhe shi tedingyuyansunshang.  
I not decide this BE Developmental Language Disorder  
‘I didn’t decide it was a case of Developmental Language Disorder.’
- 18a. wo jue ding zhe bu shi tedingyuyansunshang.  
I decide this not BE Developmental Language Disorder  
‘I decided it was not a case of Developmental Language Disorder.’

Shanghai Wu, though considered a dialect of Chinese, presents a different picture than Mandarin. In the Shanghaiese equivalent of (17) and (18), both (19) and (20) can be read with either the Neg-R reading or the Non-Neg-R (19a and 20a) reading.

19.  $\eta u^{23}$   $v\partial^{?12}$   $go^{?12}za^{?12}$   $g\partial^{?12}$   $za^{23}$   
 $d\partial^{?12}din^{23}jy^{23}ji^{23}son^{34}s\partial p^{53}$ .  
I not think this BE Developmental Language Disorder  
‘I didn’t think it was a case of Developmental Language Disorder.’
- 19a.  $\eta u^{23}$   $go^{?12}za^{?12}$   $g\partial^{?12}$   $v\partial^{?12}$   $za^{23}$   
 $d\partial^{?12}din^{23}jy^{23}ji^{23}son^{34}s\partial p^{53}$ .  
I think this not BE Developmental Language Disorder  
‘I thought it was not a case of Developmental Language Disorder.’
20.  $\eta u^{23}$   $v\partial^{?12}$   $t\epsilon y\partial^{?55}din^{23}$   $g\partial^{?12}$   $za^{23}$   
 $d\partial^{?12}din^{23}jy^{23}ji^{23}son^{34}s\partial p^{53}$ .  
I not decide this BE Developmental Language Disorder  
‘I didn’t decide it was a case of Developmental Language Disorder.’
- 20a.  $\eta u^{23}$   $t\epsilon y\partial^{?55}din^{23}$   $g\partial^{?12}$   $v\partial^{?12}$   $za^{23}$   
 $d\partial^{?12}din^{23}jy^{23}ji^{23}son^{34}s\partial p^{53}$ .  
I decide this not BE Developmental Language Disorder  
‘I decided it was not a case of Developmental Language Disorder.’

TABLE 4 L2 semantic awareness survey: Neg-R.

|                                                                                                                                                                                                                                                 | CSLL          | ESLL          | ESLL-SH       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|---------------|
| (15) I didn't think it was Specific Language Impairment.<br>a. Ba¬<br>b. ¬Ba                                                                                                                                                                    | ✓<br>✓        | ✓<br><u>X</u> | ✓<br><u>✓</u> |
| (16) I didn't decide it was Specific Language Impairment.<br>a. Ba¬<br>b. ¬Ba                                                                                                                                                                   | ✓<br>X        | ✓<br>X        | ✓<br><u>X</u> |
| (17) wo bu renwei zhe shi tedingyuyansunshang.<br>a. Ba¬<br>b. ¬Ba                                                                                                                                                                              | ✓<br><u>?</u> | ✓<br>X        |               |
| (18) wo bu jue ding zhe shi tedingyuyansunshang.<br>a. Ba¬<br>b. ¬Ba                                                                                                                                                                            | ✓<br>X        | ?<br>X        |               |
| (19) ʈu <sup>23</sup> və <sup>112</sup> go <sup>112</sup> zɑ <sup>112</sup> go <sup>112</sup> zɿ <sup>23</sup> də <sup>112</sup> din <sup>23</sup> jɿ <sup>23</sup> ʃi <sup>23</sup> sən <sup>34</sup> səp <sup>53</sup> .<br>a. Ba¬<br>b. ¬Ba  |               |               | ✓<br>✓        |
| (20) ʈu <sup>23</sup> və <sup>112</sup> cyə <sup>255</sup> din <sup>23</sup> go <sup>112</sup> zɿ <sup>23</sup> də <sup>112</sup> din <sup>23</sup> jɿ <sup>23</sup> ʃi <sup>23</sup> sən <sup>34</sup> səp <sup>53</sup> .<br>a. Ba¬<br>b. ¬Ba |               |               | ✓<br>✓        |

Han (2014a, 2016a, 2020) tested these examples with Shanghainese speakers who were also English learners (ESLL-SH;  $n = 21$ ; mean age = 11 years, 9 months). The methodological framework employed in these studies also relied on acceptability judgment tasks, which provided participants with carefully constructed sentence pairs illustrating variations in logical form: negation-raising and non-negation-raising predicates across different languages (English, Mandarin, Shanghainese). Participants evaluated each interpretation verbally, with no strict response time limits imposed, ensuring participants had sufficient processing time and reducing biases that could arise from task pressure or performance anxiety. Explicit control conditions featuring unambiguous sentence interpretations were again implemented to validate participants' comprehension of the linguistic forms tested, thereby safeguarding against potential confounds related to task misunderstanding or confusion.

Furthermore, to uphold methodological rigour, categorical response coding was conducted by two independent researchers, ensuring high inter-rater reliability ( $> 90\%$ ) and resolving disagreements through structured discussions. This enabled clear identification of how logical form variations interact with L1 knowledge in shaping L2 interpretation preferences, which further ensures that the conclusions drawn about cross-linguistic influences and the acquisition of ambiguous semantic structures are empirically sound and reliable.

The results, summarised in Table 4, show patterns similar to those found in Tables 2, 3. The CSLL group did not accept the ¬Ba reading for (17) due to a lack of positive input in the target language, even though they accepted it for the English example (15). Conversely, with positive input (e.g., from explicit instructions in the ESL class), the ESLL group rejected the ¬Ba reading for the English sentence (15), a reading non-existent in their L1. The ESLL-SH participants, however, accepted all readings for (19) and (20), though they accepted the ¬Ba reading only for (15) and not for (16). These results indicate that positive input in L1 for corresponding readings in the target language plays a crucial role in shaping L2 acquisition.

To summarise, L2 learners' pre-existing L1 knowledge may take precedence over SSP in logical form acquisition, and positive input in L2 is a facilitator.

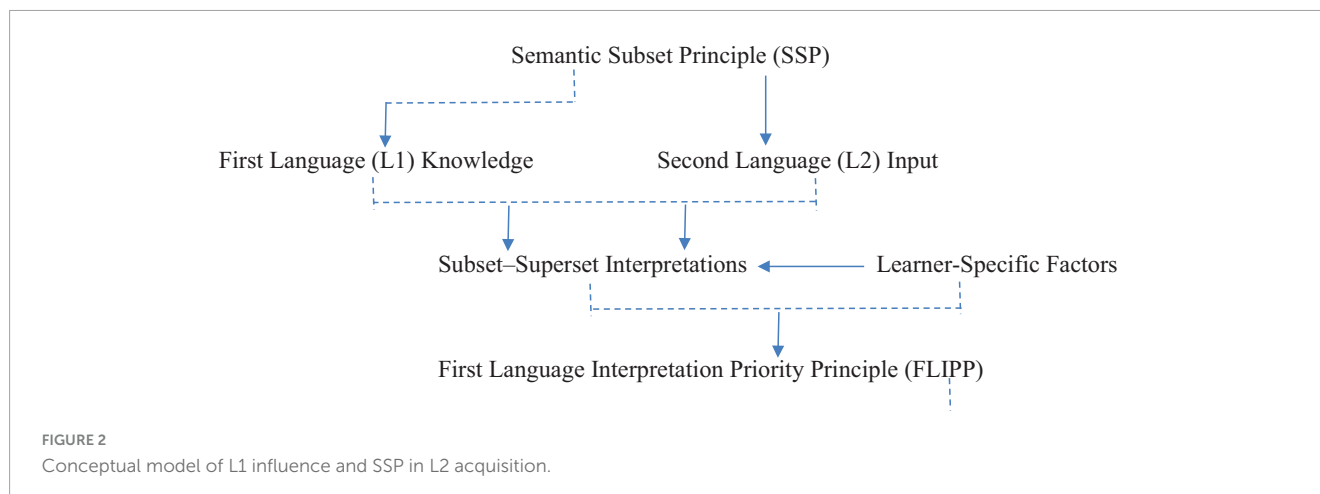
## 5 The role of L1 knowledge and input in L2 acquisition

While there is not a universal explanation for why language transfer occurs (Ellis, 2008, p. 397), it is commonly accepted that cross-linguistic influence plays a significant role in either facilitating or inhibiting the process of SLA. Neurolinguistic studies indicate that while FLA and SLA may be represented differently in the brain (Sakai, 2005), cross-linguistic knowledge often operates as an interconnected system (Cook, 1992).

The findings reported in this paper show that when substantial differences exist between L1 and L2, and when positive language transfer is inevitable, L2 learners often default to the "narrower" interpretation or form shared between both languages. In the context of SSP, this means that if the L2 interpretation is simpler, learners may abandon the broader meanings present in their L1. Conversely, if the L1 reading is narrower, learners are likely to retain only that narrow interpretation in the L2. This corroborates Sasaki (1991, p. 61) that transfer tends to occur more readily when learners move from less syntax-focused situations to those requiring greater syntactic specificity.

It is evident that L2 learners' interpretation preferences are influenced by their L1. English L2 learners, for example, are affected by the scope of interpretation possibilities embedded in their native language (Asadollahfam, 2010). The question is how deeply L1 knowledge impacts the actual acquisition of L2 structures, particularly when the target language involves syntactic-semantic distinctions that may be either narrower or broader compared to L1.

One fundamental difference between FLA and SLA is that L2 learners begin with an established understanding of at least



one language—often referred to as the “L1 initial stage” (Grüter et al., 2010). There are several competing theories regarding L1 influence at the initial stage in SLA. The “Full Access without Transfer” theory posits that L1 influence at this stage is minimal and that learners primarily rely on L2 input without needing to reference L1 knowledge (e.g., White, 2003). Therefore, the differences between L1 and L2 should not present major obstacles to acquisition; providing there is sufficient input, L2 learners will eventually acquire subset-superset distinctions just as native speakers do. In contrast, the “Full Transfer Hypothesis” (e.g., Bohnacker, 2006) contends that the entirety of L1 grammar is carried over as the initial state of L2 learning, and input is of limited influence. This hypothesis suggests that L1 has a maximal impact on L2 acquisition, heavily shaping the early stages of learning. The “Interface Hypothesis” (Sorace and Filiaci, 2006, p. 340) suggests that while L2 learners can acquire narrow syntactic properties, interface properties—those involving broader cognitive domains beyond pure syntax—remain difficult to fully master. This hypothesis acknowledges that L1 may influence SLA differently depending on whether the properties in question are strictly syntactic or relate to more complex, cross-domain interactions.

The findings of this study point toward a more nuanced understanding of SLA, where both L1 initial knowledge and positive L2 input are crucial factors. The interplay between existing linguistic knowledge and new input appears to determine the ultimate success of L2 acquisition, particularly when dealing with ambiguous structures and subset-superset relationships.

This paper, therefore, provides a balanced perspective. Both L1 knowledge and positive input in L2 are crucial in SLA. The acquisition of subset or superset readings for certain structures depends first on whether the corresponding readings exist in L1. If the reading exists in L1, successful acquisition then depends on the availability of positive input in L2. Thus, successful acquisition occurs when the target reading exists in L1, and positive input is provided in L2. Based on Han (2016b), this paper proposes the updated First Language Interpretation Priority Principle (FLIPP):

21. First Language Interpretation Priority Principle (FLIPP): Superset-subset meanings associated with specific linguistic structures can be acquired in an L2 if such superset-subset distinctions are present for those structures in the learner’s L1.

In summary, the conceptual framework presented in Figure 2 illustrates the interplay between the SSP, L1 knowledge, L2 input, and learner-specific factors. According to this model, SSP guides how subset-superset interpretations may be acquired. However, the actual acquisition process in L2 learners is mediated by their existing L1 knowledge and the availability of appropriate L2 input. Learner-specific factors (e.g., age, language exposure, cognitive abilities, etc.) further interact with these interpretations, influencing how learners ultimately process and understand semantic ambiguities. The interaction among these components collectively leads to the formulation of the FLIPP, highlighting the essential role of L1 knowledge as one significant factor that shapes semantic interpretation in second language acquisition.

## 6 Practical considerations

While the studies reviewed primarily illustrate the dominant role of L1 in shaping second-language semantic interpretations, future research could beneficially explore scenarios in which SSP-guided interpretations prevail despite conflicting L1 patterns, even when L2 input is limited. Investigating conditions under which learners successfully override their native-language biases to adopt interpretations consistent with SSP would provide deeper insight into the underlying cognitive mechanisms governing semantic acquisition. Such research could enhance theoretical clarity by determining precisely when and why universal linguistic principles, rather than L1 influences, might dominate semantic processing in second language learners.

Despite the findings and implications on L1 transfer and L2 SSP acquisition FLIPP proposes, as highlighted by the learner factors in Figure 2, several theoretical concerns remain, particularly when considering L2 learners with developmental language disorder (DLD), in terms of age, language exposure and language ability (McMillen et al., 2023), language dominance (Peña Elizabeth et al., 2023), and effects of language experience and genuine impairment (Hamdani et al., 2024). The interaction between L1 knowledge and L2 acquisition is well-established, but the dynamics become more complex when language disorders are involved. These learners often face additional challenges that go

beyond typical L1 transfer issues, such as difficulties with syntactic and semantic processing, which complicates the acquisition of complex linguistic structures like those governed by SSP. Understanding these conditions could also inform pedagogical strategies and clinical interventions, offering a more nuanced approach to supporting diverse learner populations, including culturally and linguistically diverse (CALD) learners with or without DLD.

Despite the recognition of the critical influence of L1 transfer on L2 acquisition, current theoretical frameworks do not sufficiently address how DLD interact with cross-linguistic transfer processes. Typical L2 learners may depend heavily on familiar L1 interpretations when confronted with ambiguous linguistic structures, but learners with language disorders, such as DLD, may struggle even more significantly due to additional cognitive and linguistic processing challenges. These learners might either show exaggerated reliance on L1 transfer or, conversely, may bypass certain complex semantic distinctions altogether, employing compensatory strategies or simplifications that remain poorly understood. This uncertainty presents a substantial theoretical gap: To what extent do learners with language disorders rely on universal linguistic principles like SSP compared with typical L1 transfer strategies, particularly under conditions of insufficient or ambiguous input?

Addressing these issues necessitates a deeper exploration into the nature and extent of positive L2 input required for learners with DLD. For example, it remains unclear whether these learners require more explicit and systematic interventions or whether they benefit equally from implicit, input-rich approaches tailored to their unique linguistic profiles. Furthermore, educators and clinicians worldwide face considerable uncertainty regarding how pedagogical strategies should be adapted to support linguistically diverse learners, especially in inclusive educational contexts where language differences intersect with language disorders. Given the increasing diversity in educational settings globally, resolving these gaps is not merely a theoretical exercise—it carries profound practical implications for fostering equitable learning environments that support all learners, particularly those facing compounded linguistic and cognitive challenges.

In terms of pedagogical and clinical applications, therefore, future research should aim to provide concrete evidence on how specific interventions addressing L1 influence can enhance the semantic acquisition outcomes for diverse L2 learners, including those with language disorders. It would be beneficial to empirically test intervention methods that explicitly leverage learners' L1 knowledge—for example, through L1–L2 comparative strategies, multilingual instructional approaches, or enriched positive input tailored to learners' linguistic profiles. Moreover, policy-level initiatives advocating the integration of L1-inclusive curricula and diagnostic tools sensitive to language transfer effects would represent significant steps toward more equitable educational and clinical practices. Empirical evaluations of these interventions could offer clearer guidance for educators, clinicians, and policymakers working with linguistically diverse populations, including those with developmental language disorders.

Taken together, the current body of evidence strongly suggests the need for future research aimed explicitly at bridging

the gap between second language acquisition theories, clinical practices for language disorders, and the real-world experiences of culturally and linguistically diverse learners. Longitudinal research studies, for instance, could track CALD learners with DLD over time, investigating precisely how their L1 knowledge interacts dynamically with L2 input and universal language acquisition principles like SSP. Such investigations could also clarify the circumstances under which these learners might successfully overcome native-language biases or alternatively remain entrenched in L1 interpretations despite positive L2 exposure. Additionally, qualitative research methodologies (e.g., interviews, case studies, or ethnographic approaches) may provide valuable insights into the lived experiences and unique compensatory strategies employed by these learners.

Addressing these theoretical and practical gaps could significantly improve targeted interventions, helping educators and clinicians develop explicit, evidence-based strategies to facilitate successful semantic acquisition in multilingual learners with DLD. Finally, policymakers would benefit from this deeper understanding, enabling them to establish inclusive language education policies and practices that actively account for linguistic diversity, thereby supporting equitable and effective learning outcomes for all students.

## 7 Conclusion

This paper has presented a hypothesis and theory-driven discussion of how the SSP interacts dynamically with the L1 knowledge during the L2 acquisition process, particularly concerning ambiguous linguistic structures with subset-superset interpretations. The theoretical synthesis provided here suggests that L1 knowledge frequently takes precedence over universal linguistic principles, guiding learners towards interpretations that align more closely with their native language. This dominant role of L1 is especially evident when L2 learners encounter semantic complexities without sufficient positive input to facilitate alternative interpretations. In proposing the FLIPP, this paper contributes significantly to theoretical understandings of semantic acquisition by explicitly articulating conditions under which L1 transfer either facilitates or constrains the acquisition of semantic structures in L2 contexts.

Practically, this discussion has important implications for pedagogy, clinical practice, and policy-making, especially for CALD learners, including those with developmental language disorders. It underscores the need for instructional strategies and clinical interventions that explicitly consider learners' existing L1 knowledge and provide enriched, tailored input to facilitate the acquisition of complex linguistic structures. Moreover, this paper calls for educational and clinical policies to embrace multilingual and inclusive frameworks that acknowledge the nuanced interplay between universal linguistic principles and language-specific influences. Future research guided by the FLIPP hypothesis should continue exploring conditions under which learners can effectively leverage universal semantic principles despite strong L1 influences, ultimately contributing to equitable language learning outcomes for diverse populations.

## Data availability statement

The raw data supporting the conclusions of this article will be made available upon request with permission of the third party.

## Ethics statement

The studies involving humans were approved by the Flinders University Human Research Ethics Committees (HRECs). The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

## Author contributions

WH: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

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## Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## Generative AI statement

The authors declare that no Generative AI was used in the creation of this manuscript.

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