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# Idiom Processing in Non-Native Languages: A theoretical review*

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## 1 INTRODUCTION

When people speak their native language, using idioms is a piece of cake. For second language (L2) learners, it is an elephant in the room; they often avoid using idioms and struggle to comprehend them (Irujo 1986). Often defined as frozen metaphors, idiomatic meaning is locked within the multi-word phrase and may or may not be related to its constituent words (Cieślicka 2015, Irujo 1986). Pragmatically, this suggests that idioms lie on a continuum, and depending on how often a phrase's idiomatic or literal meaning is inferred, may lead to faster processing of the frequent interpretation (Vega Moreno 2005). While this does not pose a problem for native speakers, who naturally acquire idioms at a young age, L2 learners must learn these phrases consciously, either part by part or as one multi-word expression. Even then, most L2 speakers either do not know what idioms are, are unable to produce examples, or mistake proverbs for idioms (Kim 2016). This suggests that L2 idiom acquisition and processing is different from first language (L1) learners.

Up until the last twenty years, most idiom research has focused on native speakers, aiming to explain how idioms are processed in a speaker's L1. In the early 2000s, researchers began including L2 idiom acquisition and processing, with three main models emerging: Liontas's Idiom Diffusion Model of Second Languages (2002), Abel's Model of Dual Idiom Representation (2003), and Cieślicka's Literal Salience Model (2006). These models agree that lexical items matter for idioms that compose their figurative meaning from their literal constituents (decomposable idioms); however, each model factors in non-decomposable idioms and overall, second language idiom processing (SLIP) differently. This study critically examines each theories' assumptions against current SLIP research, evaluating different methodologies, participant groups, and the extent to which context is included. I also take idiomatic properties including imageability, decomposability, frequency, etc. into account while evaluating SLIP models. To do this, I first outline the key terms and theoretical framework of both first and second language idiom processing, before offering a SLIP model comparison. Then, I systematically review recent studies against the models and consider areas for further exploration to provide a comprehensive explanation of SLIP. I ultimately illustrate that the Model of Dual

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Representation is the most comprehensive but should still be extended and adapted considering recent second language idiom processing studies.

## 2 Theoretical Background

This section outlines the theoretical background for the main models of first and second language idiom processing and compares them. To standardize language among the studies, I first define key terms before presenting and comparing the models.

Idioms are host to a variety of factors that may impact how they are processed in a first or second language and on a conceptual or lexical level. Conceptual processing is synonymous with overall idiomatic or figurative meaning and is not sensitive to individual words or phrases while lexical processing involves the meaning composed by constituent words. The affecting idiomatic factors, adapted from Hubers, Cucchiarini & Strik (2020), include the following:

1. Decomposability/Transparency: Ability to derive semantic meaning from an idiom's constituent words.
2. Imageability: Ability to visualize phrasal meaning regardless of the image's connection to the idiom.
3. Literality/Plausibility: Likelihood of interpreting an idiom according to its constituent (lexical) meaning.
4. Frequency: How often an idiom appears in natural language.
5. Familiarity: The extent of a speaker's knowledge of an idiom.

For example, 'kick the bucket' (KTB) and 'spill the beans' (STB) are similar verb phrase idioms in frequency and familiarity that have strong imageability and plausibility, though they differ in their decomposability. KTB (i.e. to die) is non-decomposable because death has nothing to do with kicking buckets (the literal/lexical meaning) while STB (i.e. to tell information) is decomposable as spilling maps onto telling and beans map onto the information told (Cieślicka 2015). Therefore, STB contains an innate metaphorical extension, relying further on pragmatics to incorporate a full idiomatic meaning and making it difficult to tell whether the speaker is processing the literal or conceptual. The pragmatics of metaphors oscillate between maxims, which dictate the literal route be followed first, and implicatures which can move straight to conceptual meaning, further complicating studies of idiomatic processing (Bambini & Resta 2012). Plausibility is affected as well, with idioms depending on context to distinguish between lexical and conceptual meanings, taking longer to process overall (Titone, Columbus, Whitford, Mercier & Libben 2015). However, with additional context, learners may be able to figuratively attune to the idiomatic meaning and process them more quickly, making it imperative to account for the above factors as well as the global context within which the idiom is situated.

First language models of idiom processing gauge these factors differently. Most idiom processing models agree that idioms are retrieved as lexical items; however, the contention comes from their decomposability, manipulation into novel forms, and their constituent processing (Titone et al. 2015). Using idioms creatively indicates that there is pragmatic flexibility in their figurative meanings (Vo 2011). For L1 speakers, Bobrow & Bell (1973) suggest two separate processing modes for literal and figurative interpretations of idioms, finding that with appropriate context, the suggested literal or figurative meaning will be primed. Swinney & Cutler (1979) instead propose simultaneous activation of literal and figurative meanings with a figurative advantage as their participants responded faster to idioms than control phrases when identifying acceptable English phrases.

More recently, Gibbs (1980) found that, with appropriate context, idiomatic meaning could be activated without constituent activation, though Cacciari & Tabossi's following Configuration Model argues that literal constituent meanings are continuously active and idiomatic meaning is only activated once the key idiomatic word is recognized (1988). In this case, their participants responded faster to idioms than control phrases, but only when the word that determined the phrase's identity as an idiom occurred before the end of the phrase. Titone et al. (2015) also illustrates a dual activation model that considers decomposability but prefers frequency and predictability as the main factors relating to idiomatic saliency. Giora (1997) offers a 'Graded Salience Hypothesis' which suggests that whichever meaning, literal or figurative, is more common, enjoys priority processing. Each model and hypothesis are supported by a variety of evidence, making it difficult to settle on one correct interpretation.

However, L1 models cannot apply directly to L2 learners. L1 speakers have prior constituent knowledge, frequent exposure to idioms, and are familiar with the cultural implications of idioms (Fleisig 2020). Frequency and familiarity matter as well, as it is difficult to understand and use unfamiliar words and phrases, particularly in an L2. If a speaker is unfamiliar with a word or phrase, they rely on previous experience and guessing as their main parsing strategy which can lead them to incorrect idiomatic interpretations (Cooper 1999, Fusté-Herrmann 2008, Keysar & Bly 1995, Suñer 2018). With guessing, literality and decomposability appear vulnerable in L2 populations due to said speaker tendency to lean into known idiom constituents rather than reflecting on pragmatic clues for figurative meaning. L1 speakers have the advantage of experience and do not need to rely as much on guessing idiomatic meanings. Furthermore, models that account for L2 idioms must also account for a sixth idiomatic factor: cross-linguistic difference, including structural (formal) and conceptual differences (Hubers et al. 2020). Thus, to properly gauge SLIP, L1 models must be extended, or new models created to account for these variations.

In the past two decades, three main SLIP models have emerged. These models often represent idioms as a two-step process; first, the literal processing of constituent words, and then idiomatic processing if the literal meaning does not make sense within context. In the Dual Idiom Representation (DIR) Model, Abel (2003) posits that decomposable idioms are represented in the brain literally and that non-decomposable idioms are represented as a singular lexical unit. Further, if a decom-

| Model/Study | Idiom Diffusion Model (ID) | Model of Dual Idiom Representation (DIR) | Literal Salience Model (LS) |
|---|---|---|---|
| Study | Liontas (2002) | Abel (2003) | Cieślicka (2006) |
| Assumptions | | | |
| | • Idioms have special processing in L2: separate modes for literal and idiomatic meanings.<br>• Lexical access = obligatory with literal meaning processed first<br>• Context and environment = obligatory for non-decomposable idioms<br>• 2 step process<br>a. Literal prediction<br>b. Confirmation or replacement | • Non-decomposable idioms = lexical entry; decomposable idioms = constituent entries<br>• Idiom frequency matters entry development<br>• Conceptual representations are accessed for decomposable idioms if they lack lexical entries.<br>• L2 speakers have fewer idiom entries than L1 speakers and rely more on constituents | • Literal meanings are more salient in decomposable idioms because acquisition requires lexical parsing first.<br>• Non-decomposable idioms also have a more salient literal meaning in L2 |
| Other Info | | | |
| | • Different processing depending on cross-linguistic similarities and L1 idiom knowledge | • Postulates that idioms have two levels of representation: lexical and conceptual<br>• Idioms and constituents have parallel existence at the lexical level.<br>• Few studies on L1 decomposability make comparison difficult | • Literal meaning processed first even with figurative context and idiom is well known to L2 learners |

**Table 1** Comparison of Idiom Models.

posable idiom is often used in its figurative meaning rather than its literal one, it is likely represented in the brain as one unit rather than constituents. Hence, the conceptual representation is accessed during SLIP rather than the lexical representation. Abel's model accounts for the differences between L1 and L2 processing, stating that L2 speakers have fewer idiomatic entries into their lexicon than L1 speakers likely due to frequency and familiarity issues. Liontas (2002) takes a similar view in the Idiom Diffusion (ID) Model. He states that instead of lexical and conceptual being used according to decomposability, L2 learners form hypotheses and test them for the literal and idiomatic phrasal meanings. In context, learners test the literal meaning and then refine their definition to the idiomatic meaning if that does not work. Cieślicka (2006) instead focuses on the literal meaning in her Literal Salience (LS) Model. Extending from Giora (1997), Cieślicka suggests, for L2 learners, literal meanings are always more salient even if the idiomatic meaning is known and the idiom is non-decomposable. These models are outlined in Table 1.

These models are not mutually exclusive. All agree that literal meaning is often the first thing accessed in SLIP when learners are unfamiliar with idioms. However, they differ in the next steps of learner processing and analysis. Liontas (2002) and Cieślicka (2006) require a two-step process while for Abel (2003), after a non-decomposable idiom entry is established in the mental lexicon, the literal first step

is no longer required.[1] However, context still matters until the idiomatic unit is complete. This process is supported by electroencephalography (EEG) brain scan findings in pragmatic metaphor studies (Bambini & Resta 2012). Liontas also argues that 'syntactic, semantic, and pragmatic analyses are obligatory' in idiomatic comprehension (2002: 159). Therefore, in ID as well, idiomatic meanings are computed separately, though decomposable idioms stay in the first step as their idiomatic meaning can be drawn from the literal one. Non-decomposable idioms require a second step for context, reflecting the Standard Pragmatic View (Pritchett, Vaid & Tosun 2016). Cieślicka renders context obsolete and decomposability irrelevant as the literal meaning is the only one that initially matters. This obligatory literal step is also supported by different EEG studies in the study of metaphor pragmatics, highlighting difficulties in ambiguity resolution (Bambini & Resta 2012). With the subtle differences between models (dependent on decomposability and context), studies can support multiple models depending on the focus of their research questions. However, the following section examines their differences to determine which one is most supported by current research.

## 3 Systematic Review

This section examines recent studies in L2 idiom acquisition and processing. These studies focus on a few areas: online or offline idiom processing, cross-linguistic comparisons, L1 and L2 differences, and contextual influences. Utilizing different methodologies, languages, and participant groups, they offer different perspectives on existing L2 theories, evidencing some and highlighting places for improvement in others.

To look at online processing of L2 idioms, researchers tend to use think aloud processing (TAP) or lexical decision tasks. In TAP, participants voice their process of figuring out the meaning of an idiom. Lexical decision tasks require participants to decide if a word is a word or not in the target language. For SLIP, the stimulus is an idiom. The following word relates to the idiom's figurative meaning, literal meaning, neither, nor is a non-word. When participants decide that word's lexicality, their reaction time and accuracy indicate how the stimulus is being processed. Offline techniques for researching L2 idiom acquisition and processing investigate the outcome of reader decisions, either through Likert scale ratings, or written tests. Likert scales allow participants to rate how they feel about certain idiomatic features such as imageability, familiarity, or decomposability. When compared with L1 judgements, they highlight possible differences in native and non-native idiom processing. Written tests instead assess learner progress in acquisition through recognition, comprehension, and production/active recall tasks. For recognition, learners answer multiple choice questions to determine the idiomatic meaning of a phrase from set options while comprehension questions ask learners to define idioms in their own words. Active recall tasks are often fill-in-the-blanks, requiring learners to produce an idiom. These tasks effectively assess participant knowledge of L2 idioms but offer a less comprehensive view into psycholinguistic processes.

[1] Decomposable idioms require two steps.

Learner knowledge still gives insight into how processing changes according to different knowledge levels; however, it does not expose the actual pathways. Therefore, offline studies are weighted less in their direct support for each model.

The three SLIP models used different methods to investigate how L2 learners understand and process idioms. Abel (2003) compared German native speakers' judgments on English idioms with English L1 speakers', comparing L1 and L2 idiom decomposability judgements (yes/no questions), idiom sorting by decomposability, and familiarity ratings with idioms. Abel (2003) also asked participants to give definitions for the three idioms they rated most familiar. Assessing conscious differences between L1 and L2 idiom processing, Abel found L2 speakers' familiarity with idioms varied more than L1 speakers. L2 speakers also judged more idioms as decomposable overall, except for those who read L2 texts daily. Therefore, her results suggest that as the frequency of an idiomatic entry increases with increased exposure, the idiomatic entry becomes more salient and is accessed conceptually rather than literally.

Controlling for cross-linguistic differences and different contextual levels, Liontas (2002) combined online and offline processes, asking participants (L1 English, L2 Spanish, French, or German) to give idiomatic meanings through TAP before scoring them for accuracy, ultimately illustrating that for idioms sharing structure but not meaning, L2 learners overextend L1 idioms (i.e. interpreting the Spanish idiom 'to pull chestnuts out of the fire' as 'taking flames from the fires of hell' rather than 'to save someone's neck') (Liontas 2002: 177). Consequently, this supports the idea that learners try bottom-up processing first, taking cues from previous lexical knowledge, before moving to top-down processing, focusing on overall idiomatic knowledge application. Cieślicka (2006) also employed online methodology, using cross-modal lexical priming after controlling for literality, decomposability, and familiarity between L1 and L2 English speakers (L1 Polish for L2 English) through Likert scales. She found L1 and L2 control ratings corresponded, allowing for L2 representation of L2 judgments. Her results indicate priming effects for literal sentences exceeded priming effects for idiomatic phrases, concluding that, overall, the literal meaning of an idiom is always the most salient in SLIP.

Beyond the model SLIP studies, the seventeen studies used in this systematic review focused mostly on offline comprehension, with eight studies solely using written tests and two studies combining written tests and Likert scales. Of the remaining seven studies that used online methodology, two used TAP and the remaining five used lexical decision tasks. Studies evaluating SLIP through lexical decisions tend to support LS as reaction times (RTs) for literal meanings were often the fastest and the most accurate. However, with TAP, learners relied heavily on context to unpack idiomatic meanings. The contextual environment in which the idiom is presented is also important in SLIP, though only included in four of the additional studies. Context is almost always necessary for figurative parsing, as even non-decomposable idioms like 'kick the bucket' are highly plausible. The pragmatics of the surrounding phrases disambiguate these phrases for processing. While most studies avoid this issue by providing multiple lexical decision trials where both figurative and literal words are targets for RT comparison, this neglects

global discourse environments and that, without context, processing may be biased toward literal meaning (López, Vaid, Tosun & Rao 2017, Türker 2016a). Zyzik (2011) found that there was a significant prior knowledge effect on SLIP, suggesting that learners edit their idiomatic entries from literal to figurative over time. This suggests that studies must find a way to integrate context into their methodology, either through providing the presence and absence of context (Suñer 2018), high and low context conditions (Beck & Weber 2016b), or by other means to ensure that the experimental environment accurately represents the natural pragmatic context in which idioms appear. The details of these studies and which models they support is outlined in Table 2. Asterisks denote alternative explanations for data patterns from the authors that do not support the hypothesis. Numbers indicate the factors listed in section 2:

1. Decomposability
2. Imageability
3. Plausibility
4. Frequency
5. Familiarity
6. cross-linguistic Differences (form/meaning)

While the base findings offer insight into different models, each original and subsequent study controls for different idiomatic features. Idiomatic features such as frequency, familiarity, decomposability, and cross-linguistic overlap were controlled during target idiom selection across different languages and different studies. However, the studies also found varying results for such features. Some studies found that decomposability matters in the speed of acquiring, reading, and processing idioms (Cooper 1999, Fleisig 2020, Irujo 1986). Other studies found that decomposability inhibits advanced learner processing, creating greater opportunity for cross-linguistic interference (López & Vaid 2018). In fact, most advanced learners abandon translation strategies once they can access conceptual meaning (Taki & Soghady 2013, Zyzik 2011). Other studies found imageability, rather than decomposability to be more helpful for SLIP overall (Hubers et al. 2020, Pritchett et al. 2016, Steinel et al. 2007). Either way, these results tend to support Cieślicka and Abel as these effects are irrelevant in LS and can be explained by fewer overall L2 idiomatic entries in DIR (e.g. non-decomposable have fewer L2 entries and decomposable already rely on constituent meaning).

Each study involves decomposability differently, especially when examining cross-linguistic differences. Some studies avoid this by using entirely non-decomposable idioms (Beck & Weber 2016b). Other studies distinguish conceptual and formal (structural) distinctions to account for differences in literal and figurative processing in L2 (Beck & Weber 2016a, Liontas 2002, Suñer 2018, Taki & Soghady 2013, Van Ginkel & Dijkstra 2020). In these studies, idioms are typically divided into

| Study | Method | Languages | Included Factors | DR | ID | LS |
|---|---|---|---|---|---|---|
| Beck & Weber (2016a) | Lexical Decision | L1 German L2 English | 1, 3, 4, 5, 6 (form + meaning) | ✓ | ✗ | ✓* |
| Beck & Weber (2016b) | Lexical Decision | L1 German L2 English | 1, 3, 5, 6 (form + meaning), context | ✗ | ✗ | ✓* |
| Cooper (1999) | TAP | L1 Various L2 English | 4, context, English varieties (slang, formal, etc.) | ✓ | ✓ | ✗ |
| Fleisig (2020) | Lexical Decision | Spanish/English Bilinguals | 6 (form) | ✓ | – | ✗ |
| Fusté-Herrmann (2008) | Written Test | L1 Spanish L2 English | 1, 4, context | ✓ | ✓ | ✓ |
| Hubers et al. (2020) | Likert + Written | L1 German L2 Dutch | 1, 2, 3, 4, 5, 6 (form + meaning) | ✓ | – | ✓ |
| Irujo (1986) | Written Test | L1 Spanish L2 English | 4, 5, 6 (form + meaning) | ✓ | – | ✓ |
| López & Vaid (2018) | Lexical Decision | Spanish/English Bilinguals | 1, 4, 6 (form + meaning) | ✓ | – | ✗ |
| López et al. (2017) | Written Test | Spanish/English Bilinguals | 3, 6 (meaning) | ✗ | – | ✓ |
| Pritchett et al. (2016) | Written Test | Russian/English Bilinguals | 2, 4, 6 (meaning) | ✓ | – | ✓ |
| Steinel, Hulstijn & Steinel (2007) | Likert + Written | L1 Dutch L2 English | 2, 3, 4, 6 (meaning) | ✗ | – | ✓ |
| Suñer (2018) | Written Test | L1 French L2 German | 6 (form + meaning), context | ✓ | – | ✓ |
| Taki & Soghady (2013) | TAP | L1 Persian L2 English | 6 (meaning), learner proficiency | ✓ | ✓ | ✓ |
| Türker (2016a) | Written Test | L1 English L2 Korean | 4, 6 (form + meaning), context | ✗ | ✓ | ✓ |
| Türker (2016b) | Written Test | L1 English L2 Korean | 6 (meaning), context | ✓ | ✓ | ✗ |
| Van Ginkel & Dijkstra (2020) | Lexical Decision | L1 Dutch L2 German | 1, 2, 3, 4, 5, 6 (form + meaning) | ✓ | ✓ | ✗ |
| Zyzik (2011) | Written Test | L1 English L2 Spanish | 4, 5 | ✓ | ✓ | – |

**Table 2** Studies on Idiom Processing.

three groups: literal and figurative matches (English and Spanish 'throw in the towel'), figurative match with literal incongruence (English 'to put all one's eggs in one basket' and Spanish 'to put all the meat on the spit'), and literal match and figurative incongruence (Korean and English 'to have heart'). Examples are further illustrated in Table 3. With greater conceptual distance between L1 and L2 idioms, learners rely on literal cues unless idioms are supported by context during instruction (Beck & Weber 2016a, Türker 2016a,b). This supports DIR as learners would likely have preexisting L1 idiomatic entries into their mental lexicon for conceptually similar idioms and would need to rely on constituents for idioms differing conceptually from their L1. ID and LS have mixed support. ID falters with lack of expected translatability effects and LS struggles with a lack of L1 comparison data that would confirm L2 learners are not subject to figurative salience over time (Beck & Weber 2016a, Türker 2016b).

| Match Type | | |
|---|---|---|
| Literal/ Figurative Match | Spanish: *tirar la toalla*<br>• Lit. 'to throw the towel'<br>• Fig. 'to give up' | English: 'to throw in the towel'<br>• Lit. 'to throw in the towel'<br>• Fig. 'to give up' |
| Figurative Match Only | Spanish: *toda la carne en el asador*<br>• Lit. 'to put all the meat on the spit'<br>• Fig. 'put all effort into one thing with no resources left to do anything else' | English: 'to put all one's eggs in a basket'<br>• Lit. 'to put all of one's eggs in a basket'<br>• Fig. 'put all effort into one thing with no resources left to do anything else' |
| Literal Match Only | Korean: 마음이 있다 'maumi issta'<br>• Lit. 'to have a heart'<br>• Fig. 'to be willing to do something' | English: 'to have heart'<br>• Lit. 'to have a heart'<br>• Fig. 'to be compassionate; to have courage' |

**Table 3** Literal and Figurative Idiom Matches.

Outside of contextual applications, most studies favor the LS Model, finding Cieślicka's model most comprehensive. Data from López et al. (2017) and Beck & Weber (2016a,b) align closely with expected LS effects; even so, their analyses are critical of the model, offering alternative explanations for the literal processing speed. They suggest that literal meaning only appears dominant without context and if the idiom is stored as one unit, it is a larger unit than its constituents and takes longer to parse accordingly. Nevertheless, context cannot be disregarded for idioms due to issues of idiomatic plausibility. When context is included, or when online processing is tested with TAP, DIR provides a more comprehensive explanation: L2 learners overall have fewer idiomatic entries. They lean into literal constituents to parse lesser-known idioms, producing the same effects as LS would predict. However, they also lean into context clues and idiomatic knowledge, suggesting a shift to conceptual representations with increased proficiency. Thus, less

decomposable idioms may benefit more from increased proficiency in the long run according when idioms are viewed as multi-word units, as greater proficiency often comes with greater exposure to such phrases and therefore greater lexical access overall. Decomposable idioms may also improve over time as even results arguing against Abel (2003), with literal activation remaining in a figurative environment,[2] highlight faster figurative attunement and processing with increased proficiency (Beck & Weber 2016b). This highlights the difficulty of finding a theory that explains everything. However, continuing to research SLIP with respect to offline and online considerations as well as contextual issues offers pathways to improve existing theories based on issues raised by existing research.

## 4 Further Considerations

While the studies in this paper cast a wide net for research questions in relation to SLIP, this section examines issues that should be included in a complete model of L2 idiomatic processing. There is still more work to be done regarding universal applications, pedagogical methodology, and structural considerations of L2 idiomatic expressions. Pedagogically, there is little known about how SLIP is impacted by learning idioms within context rather than memorizing them as multi-word expressions. Kim & Nam (2017) and Zyzik (2011) illustrate that learners can acquire idioms conceptually without breaking them down into constituents. This may prevent direct language comparison, mitigating cross-linguistic interference. Furthermore, brokering and translation experiences provide deeper idiomatic learning (López et al. 2017, López & Vaid 2018). Extensions of this area of study could provide insight into whether literal meaning is truly salient or if it has only been found to be salient when idioms are taught through their constituents. This lends itself to examining SLIP within the context of L2 acquisition models, particularly Kroll & Stewart's Revised Hierarchical Model which suggests that, with proficiency, L2 conceptual links can be formed directly with the mental lexicon rather than detouring through L1. Furthermore, issues considered in SLIP also extend to L2 metaphors, other multi-word-phrases, and L2 lexical processing. Continuing to explore these topics with regard to more advanced online methodologies, such as EEGs could lead to further insight into SLIP and broader issues such as ambiguity resolution in L2 pragmatics.

Beyond extension of content and method, the populations and languages of the present studies could also be enhanced. The populations that these studies examine are relatively monolithic in terms of participant age and learning method (classroom-based, formal lessons), though they do vary slightly in the languages used. For example, all present studies except for Fusté-Herrmann (2008) used intermediate to advanced L2 learners or bilingual adults. To research the full extent of SLIP, future studies could explore different types of L2 language learners with respect to simultaneous, early, and late bilinguals, bilinguals immersed in their L2 language and culture, and how long they have been immersed in that culture. Id-

[2] Van Ginkel & Dijkstra (2020) did not replicate these results, attributing the activation to cognates in the 2016 study.

ioms have cultural implications. Their meaning varies between languages and even between regional dialects (Callies 2017, Liu 2012). Therefore, the cultural context and learner experience matter in SLIP.

Beyond cross-linguistic interference from literal and figurative idiomatic (in)congruence, further studies should also consider non-Indo-European languages. Out of the studies in this theoretical review, only Türker focused on non-Indo-European languages. Cieślicka (2006) found that word order in idioms and idiomatic keyword location mattered in SLIP. Consequently, the present studies should also be extended to include languages with structural differences rather than linguistic or topical ones (Karlsson 2019). Another area that has not yet been studied within this realm is the effect of orthographic differences in SLIP. Though Korean uses Hangul instead of a Latin script, Türker did not elaborate on possible effects caused by this difference which could have impacted reaction times in his online studies. Future research in SLIP could investigate effects of linguistic distance, culturally, syntactically, orthographically, and lexically.

## 5 Conclusion

Overall, this paper has outlined theoretical considerations of current SLIP models and evaluated them against current research in the field. While all three theories provide a strong base for current research, they each have areas of improvement, to take into consideration different controls, concerns, and contexts. However, the present study is limited as there are a few different areas of focus and it is difficult to account for them all in a single theory as they contain different insights into how idioms are acquired in L2 learners. Though current research outwardly favors the Literal Salience Model, it often reigns in areas of contextual absence and its effects are subject to external explanation. This does not mean it is wrong; it simply means that future studies should further focus on how literal reaction times are impacted by contextual primes. Taking context into account also allows for better evaluation of the Idiom Diffusion Model and this paper's lean toward the Model of Dual Idiom Representation. Furthermore, different teaching styles (i.e. teaching idioms by constituent, by context, or by chunking them into multi-word expressions) and integrating context into learning create possibilities of different lexical or conceptual, or literal and figurative entries into an L2 learner's mind and should be investigated further. Therefore, continued investigation of SLIP and SLIP models is important because it may improve second language education and provide insight into wider areas of L2 pragmatic discourse.

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