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Comprehension of Idiomatic Expressions by Bilinguals

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As a way to introduce the present study, consider the sentence, *Bob kicked the bucket*. The idiom or the idiomatic expression, *kicked the bucket*, in the above sentence could be understood in terms of a figurative or nonliteral interpretation implying that *Bob died*. Alternatively, this phrase could also be interpreted in relation to its literal meaning suggesting that *Bob physically kicked a bucket or a pail of water*. However, as it has been traditionally defined, it would be quite difficult to derive the intended interpretation of the idiom (i.e., *death*), based on the composition of the individual words of the phrase (Swinney & Cutler, 1979). How are idiomatic expressions comprehended? Although a large number of studies have examined this issue with monolingual speakers, few studies have examined bilingual idiom comprehension. As a consequence, little is known about how might bilinguals represent idioms in their mental lexicon, and how they comprehend idiomatic expressions (e.g., Cieřlicka, 2006; see also Abel, 2003). One purpose of the present study is to examine the influence of idiomatic similarity between Spanish and English in bilingual idiom processing (Irujo, 1986, 1993), and to see how these findings might contribute to, or support existing psycholinguistic language models of idiom processing. However, before reviewing findings from the bilingual figurative language processing literature, I first describe some of the most significant models of idiom processing and what these models pose about idiom representation and comprehension.

Models of Idiom Processing

One of the first general language processing models to describe the mental representation and interpretation of idiomatic expression is the *Idiom List Hypothesis*. This model holds that idiomatic expressions are represented and accessed from a “special idiom list that is not part of the normal mental lexicon (Swinney & Cutler, 1979, p. 524; see also Bobrow & Bell, 1973). This hypothesized idiom list can only be accessed via a special *idiom mode*. However, access to this special list is only possible if a literal analysis is first attempted (Swinney & Cutler, 1979). Thus, according to this model, the comprehension of idiomatic expressions take place in a serial processing manner. That is, encounter of an idiomatic expression: (1) triggers the literal interpretation of the expression, (2) checks the literal interpretation against the contextual information provided and determines its plausibility and appropriateness. At this stage, the literal interpretation may be accepted or rejected; if accepted the idiom is interpreted literally. However, if the literal interpretation is rejected, (3) the idiom list is accessed and a figurative or nonliteral interpretation is triggered (e.g., Janus & Bever, 1985; Searle, 1979). Despite its intuitive appeal and its clear predictions, studies supporting this model (e.g., Bobrow & Bell, 1973) have been criticized based on methodological issues related to whether the task used was sensitive enough to measure what is referred to as on-line or “real-time” language processing (Swinney, 1982; Swinney & Cutler, 1979).

A second hypothesis that is somewhat related to the above hypothesis is the *Direct Access Model* (Gibbs 1980, 1986; for a review see Gibbs, 2002). Although this view poses a literal and nonliteral meaning, because of the strong convention for figurative language, the computation of the nonliteral meaning precedes the literal meaning. That is, the nonliteral sense is accessed directly. In general, findings showing faster reading times for the comprehension of idiomatic over literal phrases are taken to support the direct access model (see also Gibbs & Gonzalez, 1985; but see Cacciari & Tabossi, 1988; Peterson & Burgess, 1993; Peterson, Burges, Dell, & Eberhard, 2001).

A third and perhaps one of the most influential models is the *Lexical Representation Hypothesis*. The main premise of this model is that idioms are simply morphological complex words that are stored and retrieved in the same manner as (ambiguous) words. In this view, idioms are simply long words that are processed in the same way that ambiguous words (e.g., *bug*) with multiple meanings (e.g., *insect*, and *spy device*) are processed (e.g., Swinney, 1979; Swinney & Osterhout, 1990). Thus, during idiom comprehension, both idiomatic and literal interpretations are retrieved in parallel. This simultaneous activation is initiated as early as encountering the first word of the idiom (but see Swinney, 1982). Moreover, as the nonliteral interpretation of the idiom (or the long string of words) is being accessed, simultaneously, individual words making up the phrase undergo a structural analysis as well. Whether this structural analysis occurs at the semantic or syntactic level, is not clear because the theory is underspecified (see for example, Peterson & Burgess (1993). How is this ambiguity resolved? According to Swinney and Cutler (1979), the figurative interpretation usually concludes faster (or “wins” the competition”) because it benefits from the activation of both the literal and nonliteral interpretations. The literal interpretation, on the other hand, takes longer because it requires the computation of the relationship between the words in the phrase to derive its literal interpretation.

Support for this model comes from Swinney & Cutler's (1979) original study employing a phrase classification task. This task required participants to analyze idiomatic phrases such as *out of sight* and literal phrases such as *out of shape* in terms of “natural” English phrases, as opposed to ungrammatical or “non natural” English phrases (e.g., *out shape of*). As predicted by the lexical representation hypothesis, results revealed that participants were faster in their responses to the idiom phrases than to the literal phrases. Although both meanings were simultaneously activated, the nonliteral interpretation “won the race” due to its multiple sources (i.e., activation of both the literal and nonliteral interpretations) facilitating its retrieval (but see see Gibbs, 1980, 1986). Additional support for this view comes from Swinney (1982). Swinney reports findings from an experiment involving the presentation of sentences such as *It was hoped that the young man would see₁ the light₂ and come home safely*, where *see the light* is the idiomatic phrase. Testing for both literal and nonliteral activation at the beginning of the idiom (subscript 1) showed activation, but only for the literal interpretation of the idiom (e.g., *eye*). More important, activation for both literal

and nonliteral meanings was observed if measured immediately after the last word of the idiom (subscript 2), regardless of whether or not the idiom phrase was preceded by biasing context towards the literal or the nonliteral meaning (see also Estill & Kemper, 1982; Ortony, Shallert, Reynolds, & Antos, 1978). Although these results may not support a strong version of the lexical idiom hypothesis, these results are at least suggestive that idiom processing involves the simultaneous activation of both interpretations when measured at idiom offset or after the last word of the idiom (see also McParland-Fairman, 1989; but see below), and that activation of the literal interpretation during idiom processing must be obligatory (Peterson & Burgess, 1993). Further support for the assumption that idioms behave like words comes from studies showing that idioms, like words are more readily accessible depending on the degree of experience, (i.e., familiarity) speakers have with a particular phrase (Titone & Connine, 1999, p. 1658).

More recently, however, the characterization of an idiom as merely a long (ambiguous) word—a critical assumption of the *lexical representation model*—is being questioned. While the lexical representation hypothesis may provide a reasonable explanation for idioms that are syntactically and semantically fixed (see for example, Tabossi, Fanari, & Wolf, 2005), other idioms exhibit lexical characteristics that are semantically and syntactically flexible. For instance, idioms such as *kick the bucket* are typically classified as “frozen” because any grammatical alteration (e.g., *the bucket was kicked*) would void the phrase from its nonliteral meaning, and “noncompositional” because the individual words do not contribute to the overall figurative interpretations of the idiom (e.g., Gibbs, Nayak, Bolton, & Keppel, 1989; Tabossi, Fanari, & Wolf, 2005; Titone & Connine, 1999; see also Nunberg, Sag, & Wasow, 1994). That is, individually, the words “bucket” and “kick” do not say anything about the idiom's nonliteral sense “dying.” Other idioms, such as *spill the beans*, on the other hand, are syntactically flexible in that they can tolerate passivization (e.g., *beans were spilled*), and are compositional because the individual lexical components contribute to the overall figurative meaning, where “*beans = secret*” and “*spill = divulge*.” Moreover, other idioms such as *put one's cards on the table* can tolerate interchangeable synonyms such as “lay,” “throw,” or “place” for “put” (e.g., Gazdar, Klein, Pullum, & Sag, 1985). So, “throw” in the phrase *to throw one's cards on the table* does not disrupt the intended nonliteral meaning of the idiom (see Titone & Connine, 1999 for other issues related to the internal semantic structure of compositional idioms). However, it should be noted that although the distinction between compositional and noncompositional idioms are supported by linguistic descriptive analysis and psycholinguistic experiments that involve speakers' intuitions and subjective ratings (e.g., Gibbs et al., 1989), other studies (e.g., Cutting & Bock, 1997; Peterson et al., 2001) have failed to find this distinction (cf. Swinney & Cutler, 1979, experiment 2; but see Gibbs & Gonzalez, 1985).

More detrimental to the lexical representation hypothesis are the findings that idiom processing is sensitive to syntactic or grammatical analysis—a possibility not posed by the lexical

representation model. Peterson and Burgess (1993), and Peterson et al., (2001) used a sentence-priming task in which auditorily presented sentences ended with incomplete sentences (e.g., *The man was old and feeble and it was believed that he would soon kick the...* Sentences were either biased for either the literal (e.g., *ball*) or idiomatic (e.g., *bucket*) interpretations. The participants' task was to name a visual word which was syntactically appropriate (i.e., using a noun to complete the sentence) or inappropriate (i.e., using a verb to complete the sentence) following the final word of the sentence fragment. The visual targets were always semantically unrelated (e.g., noun = *town*; verb = *grow*) to the context of the sentence. To summarize, the results showed that noun completions were faster than verbs for both contextual conditions. More important, the magnitude of the priming effect was similar for both contextual conditions. These findings were interpreted as suggesting that idiom processing was indeed sensitive to syntactic analysis (See also Cutting & Bock, 1997). Further, these results lead Peterson and Burgess (1993) and Peterson et al., (2001) to conclude that even though syntactic analysis of the literal meaning was obligatory, once the figurative meaning has been retrieved, literal analysis is terminated, but syntactic analysis continues until the end of the idiom.

Findings by Peterson and Burgess (1993), Peterson et al. (2001) in conjunction with those of Cacciari and Tabossi (1988), Tabossi et al., 2005; Titone and Connine (1999), and Titone and Connine (1994) have been taken to support the *Configuration Model* (Cacciari & Glucksberg, 1991; Cacciari & Tabossi, 1988; cf. Cutting & Bock, 1997; Sprenger, Levelt, & Kempen, 2006). This model, unlike the *Lexical Representation Model* hypothesizing the representation of idioms as lexical entries, holds that idioms are organized in the lexicon as a configuration of words that become accessible only after enough information is available to trigger the recognition of the figurative interpretation of the idiomatic phrase (Cacciari & Tabossi, 1988). Thus, during the on-line comprehension of an idiom such as *kick the bucket*, the phrase is initially processed literally until a "recognition point" termed the "key" is reached. At this point, the nonliteral interpretation or configuration of the idiom begins to emerge (Titone & Connine, 1999). Where and how this "configuration key" is triggered, would depend on the predictability or how predictable (i.e., the extent to which an idiom can be correctly completed) the idiom is (Tabossi et al., 2005). For example, Tabossi et al. found that for predictable idioms, the nonliteral configuration appeared as early as the first content word following the idiom verb. However, for non-predictable idioms, idiom configuration appeared at the end of the idiom (See also Titone & Connine, 1994 for similar results; but see Cacciari and Tabossi, 1988). This finding, is in agreement with Peterson et al.'s (2001) results showing that upon retrieval of the nonliteral interpretation (i.e., the configuration key), literal processing is terminated even if syntactic analysis continues in a normal manner until the end of the idiomatic phrase (but see Titone & Connine, 1994, 1999, for the view that literal processing does not terminate upon retrieval of the nonliteral meaning).

The final model described is Giora's *Graded Salience Hypothesis* (1997; 2002). Briefly, this

model posits that coded salient meanings (e.g., frequency, familiarity, conventionality, and prototypicality) in the mental lexicon are processed initially, regardless of their literality (i.e., whether idiom has a stronger literal or nonliteral interpretation) or contextual fit (Giora, 1997, 2002, p, 490). “Nonsalient” meanings are those that are not coded and are those *ad hoc* inferences or bridging inferences. Moreover, nonsalient meanings are less familiar, less frequent, and less-salient. In other words, “salience” could be portrayed as a matter of degree or a continuum influenced by such factors as frequency of exposure to a particular idiom. Thus, during idiom comprehension, the salient meaning will be accessed immediately. Less-salient meanings, on the other hand, will take longer to be triggered, and may require extra-inferential or post-perceptual processes (p. 491).

In regards to context, this model poses that lexical salience has priority and context is ineffective in blocking highly salient meanings (p. 491). Thus, regardless of contextual information, or literality, during the initial phase of lexical access, processing of the literal and nonliteral interpretations are fundamentally the same, as long as both interpretations are equally salient. So, for an idiomatic expression whose figurative meaning is highly salient, a highly constrained biasing context towards the figurative meaning would exclusively trigger its nonliteral interpretation (see for example, Giora & Fein, 1999). Likewise, this view predicts activation of the nonliteral interpretation under a highly constrained biasing context towards the literal interpretation, but only momentarily. Consequently, the contextual information contained in the sentence facilitates the activation of the literal interpretation which is less-salient. From a strict semantic spreading activation perspective, a significant decrease of the nonliteral interpretation should be observed from initial idiom onset (i.e., beginning of the idiom) to idiom offset (i.e., last word of the idiom) or thereafter (e.g., 300 ms after idiom offset). Although this model appears to explain a large number of findings in the idiom literature (see Giora, 1997, 2002), it has difficulties explaining research findings as the ones suggested by Swinney (1982) in which regardless of the bias of the preceding contextual information, activation of the literal meaning is computed, and by the end of the idiom, both interpretations are readily active. Overall, according to this model, what predicts idiom language processing differences is not the literal or figurative dimension, but the salient-nonsalient continuum (Giora, 2002).

Bilingual Idiom Processing

How do bilinguals comprehend idioms in the second language (L2)? Are bilinguals more likely to comprehend idiomatic expressions in such a way that only the intended or conventional idiomatic meaning is computed, as predicted by the *direct access model*? Alternatively, is bilingual idiom comprehension reflective of a serial processing configuration in which the literal interpretation must be computed before an idiomatic expression is understood nonliterally? Although answers to these questions are highly constrained by the limited empirical studies on bilingual idiom processing, however limited they may be, these studies are beginning to provide

some insights into how bilinguals might process idiomatic expressions.

Schraw, Trathen, Reynolds, and Lapan (1988) had proficient bilinguals and English monolinguals paraphrase idioms classified as highly familiar and of average familiarity. Idioms were presented under contextual biasing conditions (e.g., *The politician believed in his views. The man took a stand*), or in isolation (e.g., *The man took a stand*). A control condition was also included that involved literal statements (e.g., *The pilot was prepared. The man flew the jet*). In general, English monolinguals provided considerably more idiomatic paraphrases than bilinguals for both high and average familiarity conditions and under both contextual conditions. Specifically, monolinguals were much better paraphrasing highly familiar idioms than average familiarity idioms. In the literal control condition, both groups performed similarly. More important to the present discussion is the finding that the biasing-contextual information improved idiomatic paraphrasing for bilinguals—more so with highly familiar idioms—compared to the idiom isolated condition. Although highly familiar idioms slightly improved bilinguals' idiomatic paraphrasing, their overall performance was much lower than monolinguals. Schraw et al. concluded that whereas English monolinguals processed idiomatic phrases as lexical chunks, as posed by the *lexical representation hypothesis* (Swinney & Cutler, 1979) permitting rapid understanding of the idiom, bilinguals, adopted a word-by-word semantic analysis of the idiom. This strategy adopted by bilinguals reflected their lack of familiarity and access to the lexicalized information of idioms in memory (see also Vanlancker-Sidtis, 2003 for similar results). To summarize, Schraw et al.'s results support a bilingual processing system in which an idiomatic expression must be analyzed literally before its conventional figurative meaning is perceived. Moreover, these results underscore the role of familiarity or frequency of exposure, how well-known or easily understood the idiom is (e.g. Titone & Connine, 1994), and L2 proficiency. Inspection of Schraw et al.'s bilinguals suggests that even though they were considered proficient in English, their experience to the English language and as a consequence to idioms was limited. Thus, the serial idiom processing configuration strategy adopted by bilinguals in this experiment might be reflective of beginning bilinguals or inexperienced L2 users, but not necessarily for advanced and highly experienced bilinguals (e.g., Johnson, 1989; Johnson & Rosano, 1993; Nelson, 1992).

In a somewhat related study, Matlock and Heredia (2002) investigated the comprehension of phrasal verbs between monolingual English speakers and bilinguals classified as beginning or late bilinguals. Beginning bilinguals were defined as learning the L2 before the age of 12 years, and late bilingualism were those that learned the L2 after 12 years of age. Briefly, phrasal verbs are conventionalized lexical units that convey a single, or multiple thoughts and function as a grammatical unit (Hill & Bradford, 2000). Phrasal verbs are similar to idioms in the sense that they have two possible interpretations. Thus, the phrasal verb, *go over*, in the sentence *Paul went over the exam* denotes the act of “reviewing.” However, in the sentence *Paul went over the bridge*, “go

over” is no longer a phrasal verb, but a verb+preposition combination (*go + over*) as in “*going above or on top*.” Henceforth, the interpretation of the phrasal verb as “a lexicalized unit” is referred to as “nonliteral,” and “literal” when used as a verb+preposition combination. Participants in the Matlock and Heredia's study were presented with sentences containing phrasal verbs, followed by a sentence paraphrased according to the literal (e.g., *going above or on top*) or nonliteral (e.g., *reviewing*) interpretation. The participants' objective was to read each sentence, and decide if the second sentence was an appropriate paraphrase (yes or no) of the first one. In sum, monolinguals and early bilinguals were quicker in responding to the nonliteral than the literal interpretation of the phrasal verb. In contrast, late bilinguals were slower and revealed no differences between the literal and nonliteral readings of the phrasal verb. A further comparison showed no reading differences between monolinguals and early bilinguals.

Although the Matlock and Heredia's (2002) findings, in conjunction with Schraw et al.'s (1988) might suggest the possibility of two different processing configurations for bilinguals depending on such factors as exposure and familiarity to English idioms, and L2 experience, two other studies using more sensitive measures of language processing suggest a bilingual processing structure more in line with the predictions of the *lexical representation hypothesis* and the *configuration model*.

In one of the first studies to look at the on-line processing of bilingual idiom comprehension, McPartland-Fairman (1989) found that highly proficient bilinguals in their L2 followed similar processing patterns as English native speakers. Specifically, McPartland-Fairman used a cross-modal lexical priming task (Swinney, 1979; Swinney & Osterhout, 1990) in which bilinguals and English monolinguals listened to phrasal verbs such as *to break in* preceded by contextual information that was biased towards the literal interpretation (as in destroying) of the phrasal verb (e.g., *Peter shocked everyone at the party. It was an expensive antique lamp that he broke in*1* a million pieces) or biased towards the nonliteral (as in robbery) interpretation (e.g., *The criminal trained a monkey to enter and steal money. It was during his vacation that he broke in*1*, a policeman said. One important aspect of the task used in this experiment, is that unlike the technique used by Matlock and Heredia (2002), the cross-modal lexical priming task measures the extent to which the literal or the nonliteral meanings of the phrasal verb are being activated or retrieved. Immediately after listening to the last word of the phrasal verb (subscript *1*) in the sentence above, participants responded to visually presented target words that were related to the literal (e.g., *crack*), nonliteral (e.g., *robbery*) or unrelated controls (e.g., *smart* and *marital*). Results revealed that regardless of the preceding contextually biasing information both the literal and nonliteral meaning of the phrasal verb were activated. That is, both meanings were accessed by the nonnative English speakers, regardless of whether the phrasal verb was followed by context biased towards the literal or nonliteral interpretations. More impressive, however, was the finding**

that this same pattern held for phrasal verbs identified as semantically transparent (i.e., the literal meaning is readily available) and opaque (i.e., the literal meaning is no longer available). Although monolingual native speakers of English were in general faster in their responses to the visually presented targets than bilinguals, nonetheless, they exhibited the same idiom processing patterns as the bilinguals. These results were originally described as supporting the *lexical representation hypothesis* that predicts simultaneous activation of both the literal and nonliteral interpretation of the phrasal verb. However, the *configuration hypothesis cannot be rejected* because activation was only measured at the end of the phrasal verb (i.e., phrasal verb offset), and it may very well be the case that as predicted by the *configuration hypothesis* activation of both the literal and nonliteral interpretations of the phrasal verb could have occurred much earlier before the phrasal verb was fully processing.

In a more recent study, Cieslika's (2006) measured activation of literal and nonliteral meanings in a neutral sentence in which the preceding context did not bias the meaning of the upcoming idiom. Bilinguals were presented with sentences such as *Peter was planning to tie the the_{*1*} knot_{*2*} later that month*. As participants listened to the sentences, they responded to visually presented words related to the literal (e.g., *rope*), the nonliteral interpretation (e.g., *marry*) and unrelated control words to the idiom *to tie the knot*. Visual words were presented immediately after the penultimate word of the idiom (depicted by subscript *1*) and at the end of the idiom (subscript *2*). Idiomatic expressions vary in regards to literality (i.e., the extent to which the phrase can be interpreted literally) and nonliterality (i.e., the extent to which the phrase can be interpreted nonliterally or figuratively). Overall, the results replicated McPartland-Fairman (1989) findings showing activation of both the literal and nonliteral at idiom offset (subscript *2*). Moreover, although no activation for the literal and nonliteral meanings of the idiom were found at position 1 (subscript *1*), inspection of the response times (i.e. time taking to respond to the visually presented item), shows longer processing times for both literal and idiomatic interpretations at this position than at idiom offset. This increase in processing time may be indicative that at this position, the two meanings of the idiom were being considered. However, the most important findings was that regardless of idiom type (i.e., literality vs. nonliterality), the literal interpretation appeared to be more active or more salient than the nonliteral interpretation of the idiom. Indeed, this finding was interpreted as supporting the *Graded Salience Hypothesis* suggesting that for bilinguals, activation or the computation of the literal interpretation of the idiom must be obligatory and automatic. However, it may very well be the case that this reliance on the literal interpretation by bilinguals is a function of language exposure (English in this case), and that the bilinguals in this experiment, although described as fluent speakers of English, were more likely equivalent to the late bilinguals described in the Matlock and Heredia (2002) study. Overall, the general finding that the idiom's both meanings remained active at idiom offset are consistent with the predictions of the *configuration hypothesis* suggesting that for bilinguals, the

“recognition point” or the “configuration key” is at idiom offset. However, given the finding that meaning activation was not a function of idiom literality (i.e., whether the idiom has a stronger literal or nonliteral interpretation), the *lexical representation hypothesis* cannot be rejected.

The purpose of the present study is to further investigate bilingual idiom processing. This study differs from the ones described here in two important ways. First, Spanish-English bilinguals participating in the experiment are highly dominant in their L2, and living in a highly active bilingual community in which the Spanish and English languages are used quite frequently. Second, the idioms used in the present study vary in terms of similarity across English and Spanish. Idioms were classified as “identical” if their Spanish translation was a direct translation of its English equivalent (e.g., *Point of view* vs. *punto de vista*). Idioms with close translations between the two languages were classified as “similar” (eg., *two kill two birds with one stone* vs. *matar dos pájaros de un tiro* “to kill two birds from one shot”); and idioms that had different translations, but similar meanings were classified as “different” (e.g., *to pull his leg* vs. *tomarle el pelo*). Bilingual studies varying idiom similarity across Spanish and English have found that bilinguals are better at comprehending, and translating identical than similar or different idiomatic expressions (e.g., Irujo, 1986; 1993). This ease of comprehension for identical and similar idioms is presumably due to cross language transfer. Accordingly, during the comprehension of idiomatic expressions that are identical and similar across languages, bilinguals use the information from their L1 to help them produce the interpretation of the idiomatic expression in their L2 (Irujo, 1986). As a consequence, the intended meanings of the identical and similar idioms will be retrieved more readily. Different idioms, on the other hand, are unable to take advantage of this one-to-one mapping between the two languages, and any attempts to use the first language to make sense of the idiomatic expression causes interference errors and slows down the comprehension process. Therefore, results of the present studies are expected to exhibit positive transfer patterns for identical and similar idioms, and less so for different idiomatic expressions.

Bilinguals in this experiment participate in a self-paced reading task. Bilinguals are presented with a series of English idiomatic expressions (e.g. *Kick the bucket*), and their task is simply to read each phrase and press a designated computer key after reading each idiomatic expression. The purpose of this experiment is to investigate possible comprehension difference, as measured by reading times, on idiom similarity across Spanish and English.

Method

Participants

Thirty-five Texas A&M International University Spanish-English bilinguals participated in the Experiment. These bilinguals reported Spanish as their L1, and English as their L2.

Materials

Stimuli consisted of 66 idiomatic expressions and 34 short English regular phrases (e.g., *the car is green*) that served as fillers or distractors. These fillers were included in order to prevent

participants from guessing the purpose of the experiment. Thus, each list contained 22 sentences for each idiom type condition (identical, similar, different) for a total of 66 idioms. Stimuli presentation were in English. Idiomatic expressions were chosen from (Irujo, 1986, 1993) and other published norms. Idiom similarity was established using the following criteria: English idioms (e.g., *point of view*) that were direct translations of Spanish idioms (e.g., *punto de vista*) were classified as “identical.” To qualify as “similar,” an English idiom (eg., *two kill two birds with one stone*) was required to have a close Spanish translation in which at least one key word was not a direct translation (eg., *matar dos pájaros de un TIRO* “to kill two birds from one SHOT”), with the constraint that both idioms had similar meaning. Idioms classified as “different” were those that had different translations, and no key words in common, but similar overall meaning (e.g., *to pull his leg vs. tomarle el pelo*).

Only idioms that were rated as highly familiar (on a 1-7 rating scale, where 1 = not familiar and 7 = very familiar) were used in the experiment. Familiarity average ratings for the idiomatic expressions used were 5.4 ($SD = 1.0$) for the different, 5.6 ($SD = .74$) for the identical, and 5.2 ($SD = .90$) for the similar condition. Familiarity ratings came from Spanish-English bilinguals from the same population as the participants.

The designed conformed to a multi-level experiment with idiom similarity as the only independent variable with the three levels (identical, similar, and different) conforming to a within-subjects design. The 100 idiomatic expressions were combined in a pseudo-random order, which imposed the constraint that no more than three idiomatic expressions occurred consecutively. Sixteen additional passages served as practice trials. The practice trials followed the same format as the critical stimuli in the experimental list. To ensure that participant were listening and understanding the idiomatic expressions, eight comprehension questions were placed throughout the list. Comprehension questions only followed filler stimuli and were always followed by a filler item.

Procedure

Participants were tested individually. Upon arrival, informed consent was obtained. Subsequently, participants read instructions on a computer screen. Participants were told to read each phrase carefully, and as quickly as possible. The task was essentially a self-paced reading task. Participants were then given ten practice trials to become familiar with the task.

Stimuli were presented in the middle of a computer screen. For each each trial, a fixation point (XXX) appeared on the middle screen for 250 ms, followed by a blank screen that remained on the screen for 200 ms. Immediately after, the idiomatic phrase appeared on the middle of the computer screen and remained on the screen until participants responded. Reading times were measured from the onset of the idiomatic expression until participants responded or after a response window of 5000 ms. There was an inter-trial interval of 1500 ms. The experiment was controlled by PsyScope (Cohen, MacWhinney, Flatt, & Provost, 1993), and the participant’s reading times were

recorded using the Carnegie Mellon University Button Box.

Results and Discussion

Reading times 3.0 standard deviations above or below the mean were excluded from the subsequent analyses. This criterion represented less than .5% of the overall data. Reading times were entered into a one-way within-subjects Analysis of Variance (ANOVA) with subjects and items as random factors. The ANOVA for items did not reach significance ($F < 1$). However, the ANOVA by subjects reached statistical significance, $F(2, 68) = 12.22, p < .01$. The results are summarized in Figure 1. As can be seen from Figure 1, bilinguals took, on average, about 1,251 ($SD = 392$) milliseconds (ms) to comprehend an idiomatic expression that was similar across English and Spanish. Identical idiomatic expressions ($M = 1,277, SD = 397$ ms) were actually about 26 ms slower than similar idioms. However, the unexpected finding shows that different idioms ($M = 1,166, SD = 385$ ms) were actually faster to comprehend than similar and identical idioms.

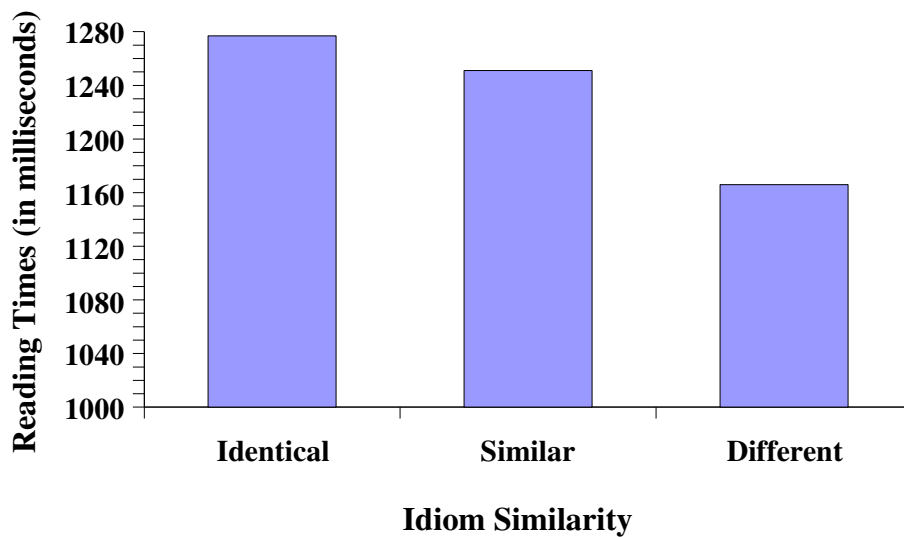


Figure 1. Reading times (in milliseconds) as a function of idiom similarity (Levels: Identical, similar, and different) for Spanish-English bilinguals.

Following statistical convention (Cohen & Cohen, 1983; Bruning & Kirtz, 1987) the Least Significant Difference (LSD) multiple comparison was used to determine possible differences between the idiom similarity means. Multiple comparisons between the three means (LSD = 47 ms), shows that the 26 ms difference between similar and identical idioms was not statistically reliable, thus suggesting that both idiom conditions were equally fast. However, the 85 ms difference between different and similar idioms, and the 111 ms difference between different and identical idioms was statistically reliable. In short, unexpectedly, English idioms classified as

different across languages were faster to comprehend than idioms that shared similar or identical translations between English and Spanish.

General Discussion

The purpose of the present study was to investigate bilingual idiom processing. Unlike previous bilingual experiments, this experiment looked at English idiomatic expressions with identical equivalents, similar, and different idiomatic expressions in Spanish. Using a similar methodology, Irujo (1986) found that bilinguals were much better in comprehending identical and similar than different idioms. Irujo's results were explained in terms of transfer theory. Briefly, transfer theory states that during the comprehension of identical idioms, language users or bilinguals use the information from their L1 to help them produce the interpretation of the idiomatic expression in their L2. In contrast, different idioms are unable to take advantage of this one-to-one language mapping between the two languages. However, the results reported here suggest that in language processing, as measured by reading times, this possible reliance on the first language to produce the meaning of the idiomatic expression in the L2 may actually slow down bilingual idiom processing. On the contrary, processing or comprehension of the English different idiom is faster because it can be retrieved directly from the English mental lexicon without having to invoke the Spanish mental dictionary. At the present time, the explanation offered is speculative at best. Clearly, a replication of the present results is in order to determine the strength and reliability of these findings and whether or not the results reported here apply only to early bilinguals or those bilinguals that are highly experienced in the L2. It may very well be the case that late bilinguals, or less experienced L2 users might be able to take advantage of language transfer and show positive processing facilitation effects for identical and similar idioms.

Finally, as a pedagogical note, Cornell (1985) argues that even though the implementation and exposure to phrasal verbs (e.g., *go over*) and idiomatic expressions have increased in second language teaching, still it is not enough. Second language teachers ought to consider using more figurative language to make the learning process fun and informative. Thus, instead of having L2 students memorizing isolated words devoid of any contextual information, idiomatic expressions might prove fruitful, since idioms not only provide vocabulary but also culture-specific information. For some cultures, how much an individual knows about that culture is determined or measured by his or her knowledge of idioms, metaphors, and proverbs of that culture.

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