

## 4. Discussion

This final chapter presents an interpretation and discussion of the results described in the previous chapter in reference to the hypotheses made at the onset of this study. The discussion proceeds by examining the three main aspects of this study, historical lexical typology (E-typ), the lexical typology found within the learners' repertoires (I-typ), and the learners' beliefs regarding proximity of the three languages (P-typ). The implications of the findings are then presented in a section that synthesizes the three aspects above. Finally, some methodological concerns and suggestions as to how these can be treated in future research are also presented.

### 4.1 *Lexical Typology*

The first phase of this study was to determine the E-typ profiles of the three languages involved. Data collected for this study did not support the initial hypothesis regarding the assumed language source profiles of German. That is, it was hypothesized that German comprises primarily Germanic words with fewer Latinate words and some Other words (see figure 1.2, repeated below in figure 4.1 for convenience). Rather, analysis of a random sample of vocabulary from a German dictionary revealed that the vast majority of German words (51%) are Latinate in origin, while 21.4% derive from Germanic sources, and 28% from Other sources. Based on these data, the hypothesized E-typ profile for German, shown in figure 1.2 of section 1.4, was revised to reflect the proportions outlined above. Additionally, figures for the proportions of source languages for Spanish and English vocabulary were adjusted for greater accuracy. Figure 4.1 presents the hypothesized E-typ profiles. Figure 4.2 presents the amended E-typ profiles for the three languages with adjustments to the German E-typ, Spanish, and English E-typ profiles based on the findings of this study.

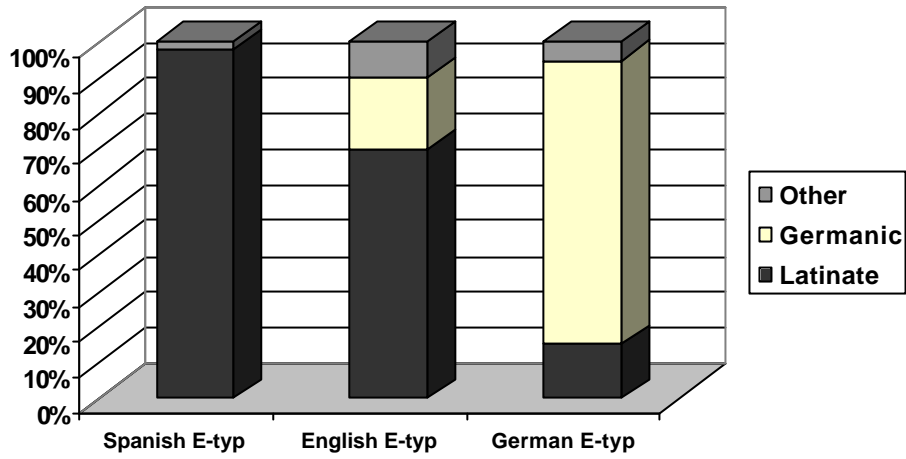


Figure 4.1: Hypothesized E-typ vocabulary profiles for Spanish, English, and German.

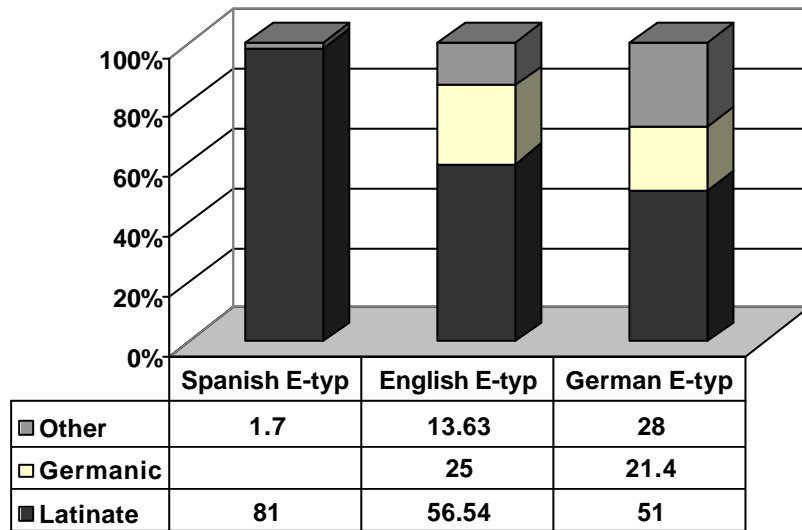


Figure 4.2: Revised E-typ profiles of Spanish, English, and German. Spanish and English word source proportions are adjusted based on the findings of this study. German profile is revised based on random sampling of a German dictionary.

Moreover, the data collected also demonstrate that the profiles of English and German, in respect to Latin- and German-based vocabulary, are the same. The E-typ profile for English reveals English comprises 56.54% Latinate vocabulary, 25% Germanic vocabulary, and 13.63% Other words profiles (see figure 2.1 in section 2.1.1). This is similar to the data presented above from the dictionary survey of German. Hence, the data presented above demonstrate that at the lexical level, English and German are typologically closer to each other than are Spanish and German.

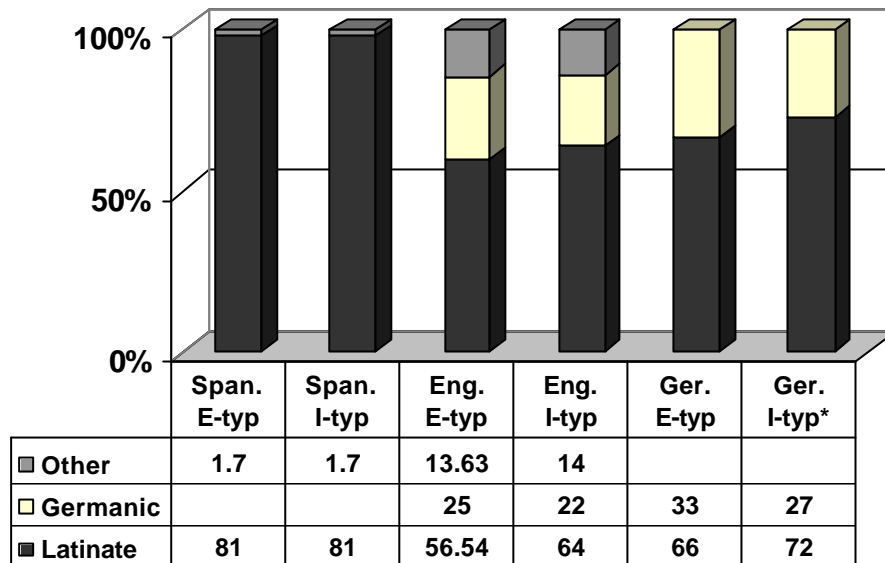
This finding does not support the assumption set forth in section 1.4 that English and French (and therefore Spanish) are closer at the lexical level than English and German. Rather, the conclusion drawn from these data is that of the three languages, English and German are typologically closest at the lexical level. Nonetheless, to a great degree all three language lexicons are typologically similar since there is such a large presence of Latinate vocabulary in all three (see section 4.4 for further discussion on the implications of this finding). This is further supported by the large presence of cognates across the three language that were of primarily (96%) Latinate origin.

#### 4.2 *Subject I-typ Profiles*

The second aspect we were concerned with in this study was to determine the language source distribution of word knowledge of third language learners. Although these data do give us some idea of the word source distribution within the mental lexicons of the subjects, they of course cannot determine the size of the mental lexicon. With this consideration, correct response rates for the English vocabulary test averaged 64.03% while correct response rates for the German vocabulary test averaged 73%. These figures should be considered in respect to the

instrument design when analyzing the data in that the German vocabulary instrument was designed using vocabulary from student textbooks, whereas the words for the English instrument were chosen randomly from frequency corpora. Consequently, the nature of the German instrument design results in slightly higher values for the proportions of words known in German as compared to those known in English since vocabulary was chosen from list of words already presented to the subjects during their course of study given their general level of proficiency in the two languages. We can therefore continue to assume that the subject's English mental lexicon is larger than the German mental lexicon.

Additionally, the data collected for this study demonstrate that when one considers the total words known by subjects, the subject I-typ profiles correspond with the E-typ profiles presented in chapter 2. The mean proportions for subject responses show little variation from the proportions found in the E-typ profiles. For English, there is a 6% difference between the proportion of Latinate words known by the subjects (64%) and the proportion of Latinate words found in the English vocabulary E-typ (56.54%). The proportion of Germanic words known by the subjects (27%) differs from the E-typ by 3%, while no difference can be found between the number of Other words subjects know (14%) and the number of Other words within the E-typ profile. Similarly, subject responses for the German vocabulary test show a difference of 6% from the E-typ profile in Latinate words (72%) and Germanic words (27%). Figure 4.3 reflects the revised I-typ profile and shows a comparison of revised E-typ and I-typ profiles.



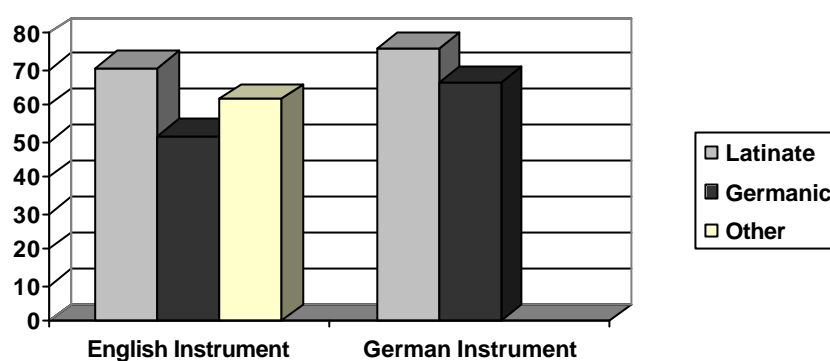
**Figure 4. 3: Revised I-typ vocabulary profiles compared to E-typ profiles. Figures for I-typ present only known vocabulary and do not account for the vocabulary present in the E-typ profiles that are unknown by the learner. Spanish E-typ and I-typ are assumed to be the same for native speakers of Spanish.**

\*Note: German E-typ omits 'Other' category and reflects adjusted profile used in instrument design (see section 2.3.2).

Another consideration here is the proportion of words known by subjects across the language source categories in each of the vocabulary instruments. This additional consideration is important because the design of the vocabulary instruments reflected the E-typ proportions of the English and German languages. Consequently, since a greater number of Latinate words were offered in the instruments, subjects had a greater chance to report Latinate vocabulary knowledge over Germanic vocabulary knowledge. Calculating the proportions of words known within each source language group corrects for this design feature.

As noted in section 3.2, out of the total number of Latinate words in the English vocabulary instrument, the subjects on average knew 70.6%; of the Germanic words, subjects correctly identified 51.7%; and of the Other category, subjects knew 61.8% of the words presented. In the German instrument, the proportion of Latinate words subjects identified

correctly out of a total of 42 averaged 75.7%; of the Germanic words presented subjects knew 66.5%. Figure 4.4 below summarizes these findings.



**Figure 4.4: Proportion of subject responses across language source categories in the two vocabulary instruments.**

Thus, our data have revealed two different measures of I-typ. The first measure shows a strong correlation between E-typ and I-typ. The second measure shows that the majority of subjects' vocabulary knowledge is of Latin origin. Based on the fact that both measurements indicate that Latinate words comprise the majority of vocabulary known by the subjects, the basis for subjects' beliefs that German and English are typologically closer is weak at best. This idea is discussed further in section 4.3 below.

#### 4.3 *Psychotypological Beliefs*

The final aspect of the study concerns itself with learners' beliefs (P-typ) regarding proximity of the languages involved. As previously mentioned, an overwhelming majority of subjects (95.4%) expressed the belief that English was more similar to German than Spanish and 93.2% believed that of the three languages English and German were more similar than Spanish and English or Spanish and German. These answers correlate with the E-typ data presented

above, albeit weakly since those data suggest that English and German are only slightly more typologically proximal at the lexical level than Spanish and English or Spanish and German.

Interestingly, when the subjects were surveyed as to their historical knowledge of the three languages involved, only 61.3% of subjects stated that English and German were historically related. This figure is significantly smaller than the figures outlined above for psychotypical beliefs. The significance here is that on the basis of this figure it would appear that learners are not basing their beliefs regarding typological proximity or distance of Spanish, English, and German on the facts of historical linguistics. If learners are not basing their psychotypical beliefs on language facts, then one would conclude that they are basing their ideas on the experience that they have had with the three languages. In this case, this belief is unsupported by the I-typ data summarized above.

Further, although subjects expressed the belief that English and German are typologically closer, the I-typ data show that the majority of words subjects knew were of Latinate origin. Accordingly, the correlations shown in this study are not absolute correlations since the three languages have lexicons that are more similar than different and since learners' beliefs do not fully correspond with the facts of the languages and with the data regarding I-typ profiles. Thus, from the findings of this study, subjects appear to have only a weak basis for their beliefs regarding the proximity of English and German. This finding that subjects' beliefs regarding language proximity do not fully coincide with the facts of the languages involved is corroborated in parallel studies on the acquisition of second- and third- language vocabulary and is discussed in greater detail in section 4.4 below.

Notwithstanding the belief expressed by 84.1% of subjects that English and German were more similar than Spanish and English or Spanish and German, the majority of subjects believed

that English would be easier to learn than German for a native Spanish speaker. As Hall, et al. (2004) note, the perception that English is easier to learn than German for a native Spanish speaker may result from the high number of cognates shared by the two languages as a result of the influence of French on English vocabulary. Although a native Spanish-speaking learner of German may believe that German and English are more similar than English and Spanish, (s)he may subconsciously or consciously perceive that the incidence of Spanish/English cognates in the English language is higher than the incidence of strictly Spanish/German cognates (i.e. cognates that are not cognates across the three languages) in the German language

If in fact learners are basing their belief that English would be easier to learn than German for a native Spanish speaker on the numbers of cognates present between Spanish and English and Spanish and German, then this belief is unsupported when one considers the high number of cognates found across Spanish, English, and German. The data indicate that the number of Spanish/ English cognates (39%) present in the English vocabulary instrument is equivalent to the number of cognates across the three languages (40%) in the German instrument. Of the cognates across the three languages in the German instrument, 96% were of Latin origin. Consequently, the data here contradict claims by subjects that English and German are typologically closer. It is therefore important that future studies ascertain the source of learners' beliefs regarding the proximity of English and German. A summary of the numbers of cognates within the two vocabulary instruments is presented below in figure 4.5.



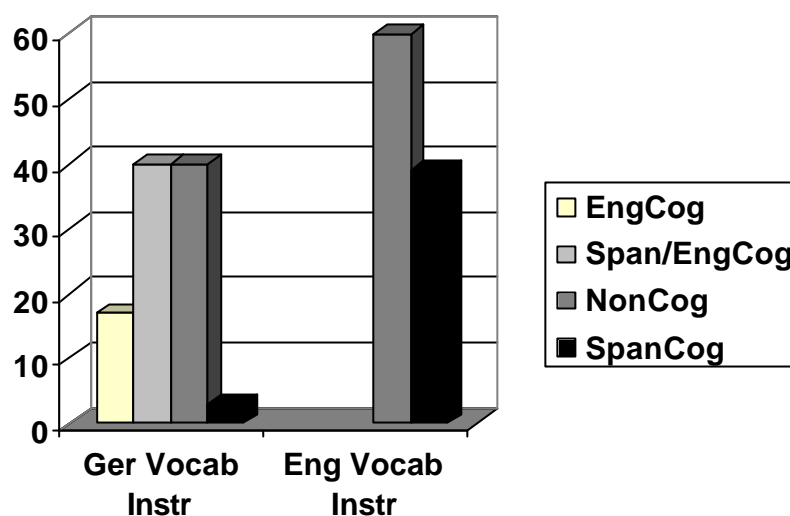


Figure 4. 5: Incidences of cognates in the German and English vocabulary instruments.

#### 4.4 Conclusions

We have thus far considered each aspect of this study separately. In this section we return to the main purpose of this study, which is to explore the correlations between E-typ, I-typ, and P-typ. Accordingly, the data presented above show a strong correlation between E-typ, I-typ, and P-typ. Nonetheless, these correlations are not absolute since the three languages are more similar at the lexical level than they are different. The proportions of Latinate and Germanic (and in the case of English, Other words) in the three E-typ profiles are quite similar to each other and to the I-typ profiles. Still, the marked similarities between lexical items in Spanish, English, and German are not reflected in the typological beliefs expressed by the subjects regarding the proximity of the three languages. This lack of congruency between what learners' believe regarding language proximity and the facts of the languages involved has been demonstrated in

previous studies. Two such studies, based on the Parasitic Model of Vocabulary Development are discussed below.

The Parasitic Model (Hall, 2002; Hall & Ecke 2003) indicates that when learners encounter a new word in the target language, they will automatically and subconsciously identify the form of the novel word and attach it to the form and frame of the closest translation equivalent in the L1. The conceptual structure is then accessed for the target item via the L1 form and frame. In the case of cognates this happens much more quickly since the form is already represented in the L1 and this results in a direct connection of the target language word to the conceptual level. Support for this claim stems from subjects' tendency to attach false cognates onto the similar form in the L1 thereby accessing the wrong frame and concept.

Two related studies that explore the Parasitic Model of Vocabulary Learning in L3 acquisition support the findings above. In the first study (Hall, et al., 2004) native speakers of Spanish, with English as an L2, who were learning German as an L3 were presented with L3 verbs and asked to select the correct frame for the L3 words. For cognates between Spanish and German, the subjects selected the Spanish frame with more than chance frequency. For cognates between English and German, the subjects selected the English frame with more than chance frequency. For noncognate target items, subjects selected the English frame. When surveyed, subjects indicated that they believed that English and German were the typologically closest of the three languages. This belief corresponded to the fact that the English frame was chosen for noncognate status verbs.

The second study (Newbrand, 2005) replicated the first except that rather than using German as an L3, French was the L3 under study. The rationale behind this was to determine if the above findings with the noncognate verbs resulted from the typological proximity of English

and German. It was assumed that if the results of this second study showed that subjects selected the Spanish frame for noncognates in the French language, then the selection correlated with the typological facts of the language.

The results, though, revealed that when presented with the noncognate forms, subjects preferably chose the English frame just as they did in the first study. Again, for this study subjects were surveyed and indicated that they believed that Spanish and French were typologically closer than English and French. The relevance for selection of the English frame for noncognate verbs indicates that there is no correlation between the psychotypological beliefs of the subjects involved and the selection of the appropriate verb frame for the L3 vocabulary item. Rather, it may be that in the two cases discussed above subjects' selection of the English frame for noncognate forms in German and French is attributable to second or foreign language recency effects. That is, there is a greater tendency to transfer from the L2 than the L1 since it is the most recently activated language (cf. Hammarberg, 2001).

The present study is part of the same project as the two studies mentioned above and is motivated by the lack of differentiation between psychotypology and typology in studies of cross-linguistic influence. As discussed in section 1.4, the term *psychotypology* has been used frequently in the literature (cf. Kellerman, 1983; Cenoz, 2001; Ringbom, 2001) to account for transfer occurring from previous languages in the acquisition of an additional language. These claims do not consider that learners may not be fully aware of the linguistic facts of the languages involved and may therefore have beliefs that do not correspond with these facts.

The choice to use Spanish as an L1, English as an L2, and German as an L3 was based on several factors. First, by using languages present in the original Hall, et al. (2004) study, this study would offer more support or would refute the findings in that study. Second, there is a

widely held consensus that German and English are typologically closer to each other than to Spanish. This is supported in the literature from historical linguistics that shows that the two languages are historically related. Still, this belief does not consider the large number of French words adopted by English during the Norman Conquest or the great influence of Latin on German vocabulary (as found in this study) and the possibility that at the lexical level English and German may be more closely aligned with Latin based languages such as Spanish. Consequently, it was interesting to verify that learners assume that English and German are typologically proximal and to determine if this assumption was correct at the lexical level corresponded to the particulars of the languages involved.

At the inception of this study, it was assumed that the English E-typ would prove to be more closely aligned with Spanish E-typ than with German E-typ at the lexical level and that the German E-typ would be distinct from Spanish and English E-typs. This distinction would offer a basis for comparison between the responses given in the vocabulary tests and the facts of the languages. Also, because English and German would be second and third languages for the subjects involved, it was assumed that they would be more familiar with the more frequent words of the languages, i.e. the Germanic vocabulary items. In this case the I-typ profiles would probably not correspond with the E-typ profiles that show an alignment with Spanish and English at the lexical level.

Unexpectedly, the data collected for this study demonstrated that at the lexical level Spanish, English and German are extremely alike. Additionally, the E-typ profiles corresponded with the I-typ profiles. To reiterate, the conclusion we can draw from this is that a correlation does exist between E-typ, I-typ, and P-typ for the three languages involved in this study, but this

correlation is not absolute in view of the fact that subjects' P-typ does not correspond exactly with the E-typ and I-typ profiles.

The data discussed above accentuate the need for research that attempts to reveal the thinking processes involved in learners' development of psychotypological beliefs. At present, we still do not know on what information learners decide what languages are more similar than others. The E-typ facts illustrated above do not unequivocally provide a basis for subjects' beliefs that English and German are more proximal than Spanish and English or Spanish and German. Moreover, the low number of subjects who reported knowing that English and German are historically related indicates that learners are not necessarily basing their beliefs on language facts. At any rate, the data from the two related studies discussed above suggest psychotypological beliefs do not exert a strong influence in learners' acquisition of additional languages, at least in the case of Spanish, English, and German.

Nonetheless, when considering the findings presented here there are several problems that must be taken into account. The first difficulty lies in the assessment of vocabulary source languages for the German language. For this assessment the sample pool of vocabulary was quite small due to insufficient computational resources and time constraints of the study. Although great care was taken to ensure that the sample was random, and therefore more representative of the language as a whole, a sample of 500 items is insufficient to conclude with certainty that the results do in fact show an accurate profile of the language. In order to rectify this problem, further studies would need to be conducted to determine the language sources of a larger number of words.

A further difficulty is the fact that the majority of cognates in the German instrument were cognates across the three languages. Since this vocabulary was randomly chosen from the

word list in the students' textbook, and such a large number proved to be cognates, it appears that the majority of the words these learners are initially exposed to in the German language are cognates with English and Spanish. This is not surprising since textbook authors often seek ways in which to facilitate vocabulary learning and the inclusion of cognates may have been a conscious strategy. As such, future studies may find that the cognate status presented here is not representative of the language as a whole.

Moreover, because of the numbers of cognates present, it is uncertain to what degree the L1 or the L2 are involved in the subjects' guesses as to the meaning of L3 vocabulary. As discussed above with reference to studies on the Parasitic Model, it may be quite possible that both the L1 and the L2 are equally influential in these cases. This is particularly true when one considers the idea that word candidates from all known languages are activated during the selection process and multilinguals have no 'top-down control' over this activation process (Dijkstra, 2003). Consequently, because of this overlap with cognates we cannot generalize our findings and state that the psychotypical beliefs of learners will always correspond with the typological facts of the languages.

Finally, the tree graphs presented in the psychotypical instrument may have caused some confusion and added to the low correct response rate by the subjects. The graphs presented are simplistic in nature and do not reflect the complex relationships of the languages involved. It may be that this study underestimated the subjects' knowledge of these historical relationships and the low response rate was caused by unclear or unsatisfactory choices presented to the subjects. A revision of the presentation of these relationships would help to clarify if incorrect response rates were due to lack of knowledge or confusion.

To more clearly delineate the role of psychotypology in vocabulary acquisition, future studies would need to select languages that are not so similar at the lexical level so that there would be cognates between the L1 and L3 and the L2 and L3, but minimal or no overlap with cognates across the three languages. This would enable the researcher to determine more precisely what the correlation between the typology of the three languages is, and consequently to assess the psychotypology of the learners to determine if this corresponds with the facts of the languages involved.

An additional factor to consider is that this study only accounts for words subjects knew; it does not analyze the words subjects did not know. The primary reason for this was the lack of time needed to analyze the 210 individual target items present in the two vocabulary instruments. Future studies in this area would need to consider the unknown words and isolate typological patterns, such as if the unknown words were more of Latinate, Germanic, or Other origin. This would offer more support or refute the I-typ data and possibly determine more accurately the effects of typology on the development of additional language vocabulary.

Future studies would also need to account for the basis of learners' beliefs regarding languages. Although we surveyed psychotypological beliefs of the subjects' involved, we did not inquire as to the reasons learners had for these beliefs. Understanding of the source of learners' typological beliefs would provide support for findings in future studies. Thus for example, if it had been discovered in this study that learners' believed that German and English were typologically close simply on the basis of hearsay, this would have offered further support for the finding that the psychotypological beliefs did not correlate exactly with the E-typ and I-typ profiles.

With this study we have attempted to profile the lexical typologies of Spanish, English and German and determine if there is a correlation between these typologies and the typology of the lexical items present in the lexicons of the learners and to determine if these correlate with the psychotypological beliefs of the learners. We have shown through the data presented above that a correlation, though not absolute, does indeed exist between these three factors. While this study serves as a starting point for theory development, much more research is needed to differentiate the subconscious processes involved in word processing from the more conscious, strategy related processes involved in psychotypologically based lexical decision-making.