3. **Analysis and Results**

We conducted this study with the premise that there is a need to differentiate between psychotypology and typology in studies of cross-linguistic influence. Consequently, for this study three forms of typology were differentiated: E-typ, which represents the historical typological facts of a language; I-typ, which represents the typological facts of the individual's mental lexicon; and P-typ, which is the learner's perception regarding typological proximity or distance of languages (Hall, 2004). Using the assumption that these three types are important in research that studies CLI, the purpose of this study has been to ascertain if a correlation exists between typology, psychotypology and L3 vocabulary acquisition. In this chapter, we look at each component and present the results and analyses of the study's findings in reference to the three forms of typology outlined in chapter one.

3.1 *Language Profiles*

As mentioned in section 2.1 above, previous research (Patterson, 1986) demonstrates that 81% of Spanish vocabulary derives from Latin sources while other language sources account for 1.7% of the vocabulary surveyed. For English, previous research (Finkenstaedt & Wolff, 1973) shows that the lexicon is composed of 56.54% Latinate vocabulary, 25% Germanic vocabulary, and 13.63% Other vocabulary. Our survey of the German lexicon indicates that out of a 500-word sample, Latinate sources account for 255 words (51%), Germanic sources contribute 107 words (21.4%), and Other languages, including Greek, supply the remaining 138 words (28%). However, note that in section 2.3.2, these proportions were adjusted during the instrument design phase of the study. Figure 3.1 shows the German vocabulary profile as compared to Spanish and English before these adjustments were made.
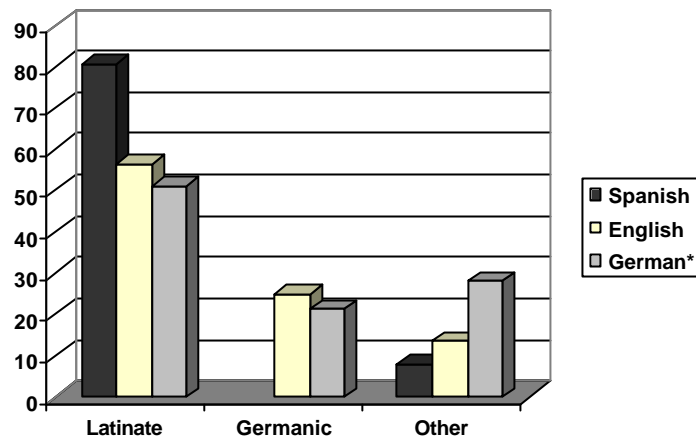
Figure 3.1: Unadjusted vocabulary source distributions

Note: But see section 2.3.2 for revised German vocabulary source proportions

3.2   Psychotypological Survey Results

Responses to the psychotypological survey were assessed to determine the subjects'

beliefs regarding the three languages involved. The mean number of each type of response was

calculated for each question presented. These results were then converted into mean proportions

of responses to each question. Results obtained from this survey are similar to those found in

Hall, et al. (2004) who used the same survey with first semester German students as opposed to

second semester students.

An overwhelming percentage of subjects (95.4%) expressed the belief that English was

most similar to German rather than Spanish, and 93.2% proposed that German and English were

more similar to each other than German and Spanish and Spanish and English respectively. Most

subjects (86%) also indicated that they believed that German would be easier for a native English

speaker to learn than Spanish and 84.1% of the subjects surveyed believed that English would be

easier for a native Spanish speaker to learn. Additionally, 61.3% of subjects stipulated that German and English were more closely related historically (the correct answer). Table 3.1 summarizes these results.

Table 3. 1: Responses to psychotypological survey

Question	Options	% Response
Which language is more similar to German?	English	95.4
	Spanish	5
Which languages are more similar to each other?	German & English	93.2
	German & Spanish	6.8
	Spanish & English	0
Which language is easier to learn for a native Spanish speaker?	English	84.1
	German	15.9
Which language is easier to learn for a native English speaker?	Spanish	13.6
	German	86.4
Historically, in the language family tree, which is the correct relationship between the three languages?	[(Eng, Span) Ger]*	0.23
	[Ger, Eng, Span]*	34
	[(Ger, Span) Eng]*	0.23
	[(Ger, Eng.) Span]*	61.3

Note the relationships of these language were presented in the form of a language tree in the original instrument.

In the original English instrument design of Schmitt, Schmitt and Clapham (2001), the presence of cognates was not accounted for. There are at least two reasons for this. First, the test was designed to use with a variety of learners with different language and cultural backgrounds. This feature makes it impossible to factor in cognates since there is no standard L1 to use as a reference point. Additionally, the original purpose of this test was evaluative; it was meant to be used by teachers, administrators, or researchers to determine the vocabulary size of learners.

However, since the study presented here deals with lexical typology one must also account for the incidence of cognates between languages and across the three languages in order to fully analyze the data presented by the survey. A higher incidence of cognates between

languages indicates a higher level of proximity. For the purpose of this study, a cognate is defined as words with "at least 50% shared phonemes or regular variants (not counting inflections) in the same linear order" (Hall, et al., p. 23, 2004). Thus, the English vocabulary instrument was analyzed to assess the number of Spanish/English cognates present. Because this study focuses primarily on typology effects in L3 vocabulary acquisition, three types of cognates were identified in the German vocabulary instrument: English/German, Spanish/German, and English/Spanish/German. Since cognates across the three languages in the German instrument were found to be principally of Latinate origin (see below), it was deemed unnecessary to find cognates across the three languages in the English instrument since they would most probably be a subclass of the Spanish/English cognates and would offer no additional information for the study. Examples of each type of cognate identified in the German vocabulary instrument are given in table 3.2.

Table 3. 2: Cognate types- German vocabulary instrument

Cognate Type	Spanish	English	German
English/German		arm	Arm
Spanish/ German	taza		Tasse
English/Spanish/German	alcohol	alcohol	Alcohol

As such, the English instrument comprised 58 Spanish/English cognates and 92 noncognates out of 150 target items. Cognates account for 39% of all target words in the instrument. In the German vocabulary instrument, ten target words (17%) were English/German cognates. Only 2 target words out of 60 total (3%) were strictly Spanish/German cognates.

However, the majority of cognates in the German vocabulary instrument, 24 target words (40%), were cognates across the three languages and, of these, 96% (23 out of 24 words) were primarily of Latinate origin (see figure 3.2). The remaining 36 target items were noncognates with Spanish or English.
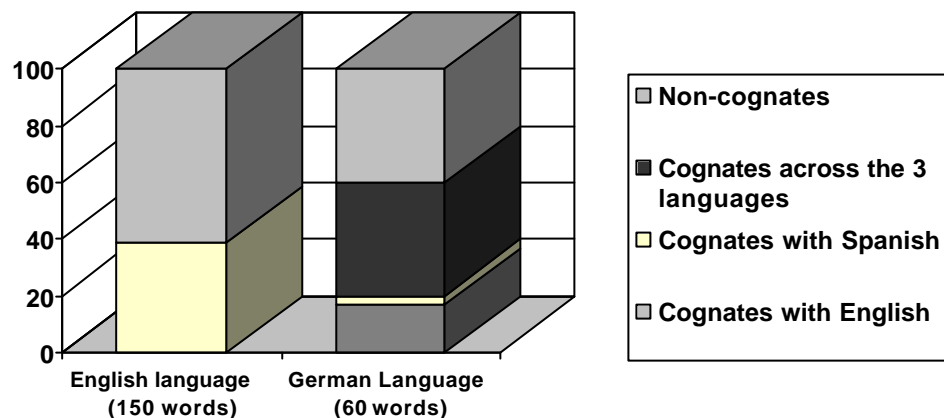

Figure 3.2: Cognate frequency in vocabulary instruments (in percentages)

3.3   *Vocabulary Instrument Results*

In order to determine the role typological and psychotypological effects have in learners' acquisition of languages, the data collected were analyzed to establish from what language sources the words subjects knew came from. First, means for the total number of correct responses for the English vocabulary test and the German vocabulary test were calculated. Next, to obtain an I-typ profile of the subjects, means for the numbers of Latin-based words, Germanic words, and Other words were calculated for the English vocabulary test.

There were a total of 150 possible correct responses for the English vocabulary test. The mean proportion of correct answers provided by all subjects for the English vocabulary test was 64.03%. For the German vocabulary test, means for the numbers of Latinate words and

Germanic words were calculated. The total number of possible correct responses for the German

vocabulary test was 60. The mean proportion of correct answers provided by all subjects for the

German vocabulary test was 73%. These results are summarized below in table 3.1.

Table 3. 3: Means for correct responses and word type

Means	English vocabulary test n=150	German vocabulary test n=60
Mean number of correct answers	96.0 (64.03%)	43.8 (73%)
Mean number of Latinate words known out of the mean number of correct answers	60.7 (63.3%)	31.8 (72.6%)
Mean number of Germanic words known out of the mean number of correct answers	21.7 (22.6%)	12.0 (27.3%)
Mean number of Other words known out of the mean number of correct answers	13.6 (14.2%)	____

Using the data acquired from the vocabulary tests, the mean proportions for the types of

words known were calculated in order to provide a comparison with the E-typ word profiles

presented in section 2.1. Calculations show that for the English instrument, the mean proportion

of Latinate words out of subjects' total number of correct responses was 63.3%. This was

compared to the E-typ profile, which showed that English comprises 57% Latinate vocabulary.

For Germanic words, the mean proportion of the subject correct responses in the English

instrument was 22.6%, while the E-typ profile comprises 25% Germanic words. The proportion

of Other words for both the subject responses to the English instrument and the E-typ profile

were equal (14%). Figure 3.3 presents a comparison of the mean proportions of word sources for

subject responses to the English vocabulary test and the E-type proportions of English word
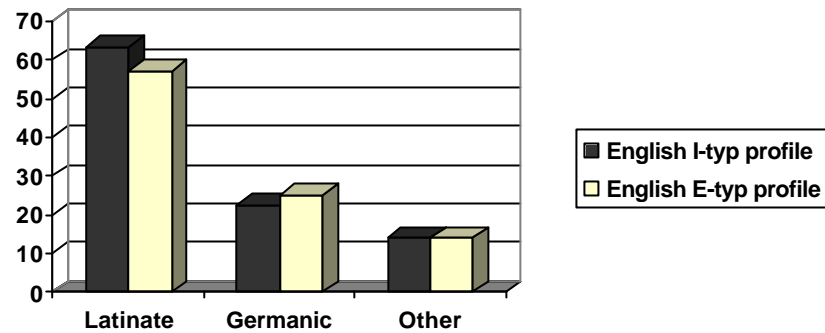
sources.

Figure 3.3: Comparison of distribution of language sources for vocabulary for subject responses to English vocabulary instrument to English E-typ vocabulary source profiles.

For German, the mean proportion of Latinate words from the total responses was 72.5% while the revised E-typ profile indicates that German comprises 66% Latinate words. The mean proportion of Germanic words in subject responses was 27% while the E-typ comprises 33% Germanic words. Figure 3.4 presents the mean proportions for subject responses to the German vocabulary test and the E-type proportions of German word sources.
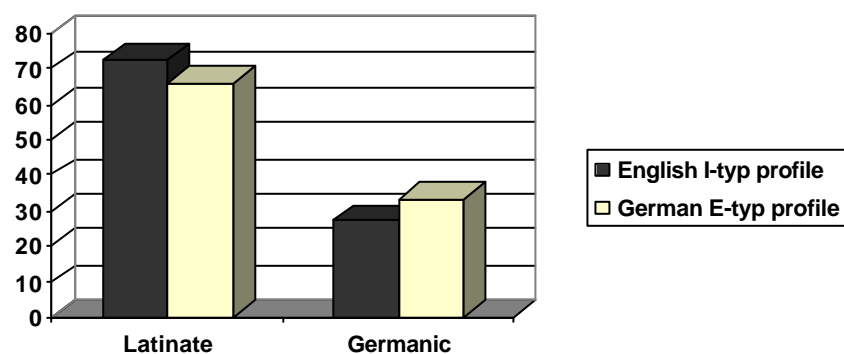

Figure 3.4: Comparison of distribution of language sources for vocabulary for subject responses to German vocabulary instrument to German E-typ vocabulary source profiles.

Finally, since the English and German vocabulary tests were designed to reflect the E-typ profiles, and therefore contained more Latinate words than Germanic or Other category words, an argument could be made that subjects in the study were 'directed' to respond in a certain manner. That is, that by offering more Latinate words, the test offered subjects more opportunities to answer these items correctly thereby producing results that match the E-typ profiles. To correct for this design feature, an additional calculation was made to determine the percentage of correct responses out of all Latinate words and out of all Germanic words in both the English and German instruments and the percentage of correct responses out of all Other words in the English instrument.

Results from this analysis show that out of a total of 86 Latinate words in the English vocabulary instrument, subjects knew on average 60.7 words (70.6%). Of the total number of Germanic vocabulary items (42) in the English instrument, subjects knew an average of 21.7 words (51.7%). For the Other category, subjects knew an average of 13.6 words out of 22 total words (61.8%) presented in the English instrument. For the German instrument, subjects knew an average 31.8 out of 42 Latinate words (75.7%) and 12 out of 18 Germanic words (66.5%) presented in the vocabulary instrument. These results are summarized below in table 3.4

Table 3. 4: Mean proportions of category words known.

Mean proportions of words in each category known by subjects	English Instrument	German Instrument
Mean proportion of Latinate words known	70.6% (n= 86)	75.7% (n= 42)
Mean proportion of Germanic words known	51.7% (n= 42)	66.5% (n= 18)
Mean proportion of Other words known	61.8% (n= 22)	____