

Effect of Word Origin in Romance Bilinguals

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EFFECT OF WORD ORIGIN IN BILINGUALS AND MONOLINGUALS

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ABSTRACT

English is a Germanic language which has, over time, been influenced by Latin and Ancient Greek and borrowing from other European languages, including French, Dutch, and German. Words in the English language which originate from Latin are usually of technical or academic register and acquired at later ages in development. This type of vocabulary is usually used by scholars. The English language also contains a word from the Anglo-Saxon/Germanic background. This words usually are of lower academic register and are learned at an earlier age. The purpose of this study was to see if speaking a romance language could be advantageous for bilinguals, especially in continuing higher levels of education. We used a lexical decision task where participants were presented with Latin origin words and non-words and Anglo-Saxon/Germanic origin words and non-words. The task consisted of deciding if the stimuli presented was a word or non-word. The hypothesis for the current study was that non-romance language speakers would be more accurate at identifying Anglo-Saxon root words, and romance language speakers would be more accurate at identifying Latin root words. Also, romance language speakers should be better at recognizing that presented pseudowords are in fact non-words due to their background in romance languages influenced by Latin.

On the other hand, non-romance language speakers should have a harder time recognizing that presented Latin pseudowords are in fact nonwords. Results: overall romance language speaker participants scored higher on accuracy when presented with Latin origin stimuli but took longer at identifying the stimuli. Interesting enough romance language speakers also scored higher in accuracy when presented with Anglo-Saxon/Germanic origin stimuli. On the other hand, non-romance language speakers scored higher in accuracy at recognizing Latin origin non-words.

Introduction

The English language is a Germanic language that over time has descended from Spanish, French, Ancient Greek as well as many other languages. Words in the English language which originate from Latin are usually of technical or academic register and acquired at later ages in development. This type of vocabulary is usually used by scholars. We can say that Latin words have preserved and are relevant to this day, the way we see it now a day is in high complexity English words.

In greater depth, the relationship between English, Anglo-Saxon/Germanic, and Latin is unique. English, Latin, and French have been the languages of the dominant classes, usually is used by scholars. (Barber 200). To this day, English words of Latin background are considered to be from a higher academic register and are often to be seen as abstract concepts. The English vocabulary entails structural differences as well as different register levels. For example, English vocabulary with a Germanic background, are typically monosyllabic, of high frequency (are more commonly use) and phonologically undergo different phonological processes (they tend to change from when talking in the past, present and future e.g., sing, sang, sung) but do not stress any alterations.

Usually, words ending in –ing derived from the Germanic background, whereas in Latin derived from more nominal counterparts, e.g., going/departing. (Bar-ilan & Berman, 2007). Moreover, only Germanic verbs form "phrasal verbs." Latin words are usually of high complexity (used less in the English language) and are acquired later in life. In the present study, we will be able to explore deeper into the interaction of Latin origin English words and Anglo-Saxon/Germanic origin English words.

The ability to use two languages when ideas arise is likely to be useful in today's environment. Bilingualism is common in most countries. A question commonly asked when studying romance language speakers is whether the “advantage of everyday life” might be counterpoised by the possible costs of the cognitive system. The cognitive system is the mental system that consists of interrelated items of assumptions, beliefs, ideas, and knowledge that an individual hold. We can say that this compromises the individual's view of the world and can determine how the individual might filter structure information received from the world (Lintern, 2007).

If bilingualism influences bilinguals’ cognitive processes, it is possible that the cognitive impact gradually appears as romance language speakers gain higher degrees of bilingualism, this meaning having higher proficiency in both languages. However, there has been no clear evidence of the relationship between bilinguals’ cognitive advantage and language proficiency. Therefore, it is important to examine bilinguals’ working memory concerning the degree of bilingualism. Studies show that bilinguals’ use of two languages is mental training and enhances their cognitive ability (Bialystok, Craik, Klein & Viswanathan, 2004). A recent study by Diamond, suggest that bilinguals’ cognitive advantages are not affected by knowing two languages but also by how well their experience with the languages is in their lives.

Knowing two languages could be reflected in studies reporting response times or brain activities during a language task. Previous studies have argued that the differences at both cognitive and neural levels between non-romance language speakers and romance language speakers in one language could be due to different levels of proficiency and age of acquisition (Johnson & Newport, 1989; Perani & Abutalebi, 2005)

In more depth, our brain has different regions that contribute to our memory retrieval and language comprehension. The angular gyrus is a region of the brain located in the parietal lobe. This region is involved with processes related to language, number processing, and spatial cognition, as well as memory retrieval, attention and theory of mind (Seghier, 2013).

In addition, we know that monolingual's and bilingual's way of thinking and analyzing is different, but how different are they and in what way? Cognitive models of visual word recognition describe our ability to read both words and non-words. We can conclude this is why non-words look like actual words, and it can be confusing to identify the differences. Metalinguistic awareness is defined as the ability to talk about, analyze, and think about language independent of the concrete meaning of each word. Numerous studies have proven this is one the strongest predictors of language and literacy development for either first as well as second language learners (Kuo, Ramirez, de Marin, Kim, & Gezer, 2015). This is important in the current study because we want to see the differences when identifying words and non-words between romance language speakers and non-romance language speakers.

The learning of two languages can be simultaneously or sequential and can be learned either early or late (Harley 2014). By convention, the language learned first is known as L1 and the language learned second is known as L2. Studies observing the effects of interferences of other language have shown that L1 interference becomes progressively stronger when developing (Sebastian-Gallés, Echeverría, & Bosch 2004). This is significant for the current study because some of the participants that participated in the study had Spanish as L1.

Recent work by Hartshorne, Tenenbaum, and Pinker has found different windows during which L2 acquisition results in a more optimal outcome. For Chinese, the optimal window is 6-10 years of age whereas for bilinguals it was at 0. For west Germanic languages, the optimal age

was between 1-5 years. English has a considerable influence in both its lexical and syntactic structure due to the influx of Latin-based words. For example, Ambridge and colleagues (2007) found that monolingual English-speaking adults, but not children, had an awareness of verbs that came from Latin. These singular verbs will use the "to..." construction to indicate a dative which is borrowed directly from the syntax used in romance languages. In a similar vein, morphological awareness is enhanced when monolingual English-speaking children are placed into dual-language immersion programs relative to those in single language classrooms. This shows that in English may be influenced by romance language knowledge than other languages. Prospective studies are needed to flesh this out more thoroughly.

Literature has shown that bilingual individuals have cognitive and linguistic advantages to monolingual individuals. This is most likely because bilinguals have more capacity to store information, separate linguistic symbols from referents, and show better skills to target a word and identify its phoneme (Harley, 2014; Lambert 1981). This is why for this study words will come from different levels of proficiency, frequency, and age of acquisition.

According to the study by McLaughlin (year), at the beginning of language development children seemed to work with a single set of rules as well as through a period of time when they are learning both languages. Later, they have two sets of rules where they can distinguish languages, allowing for interferences on the structure of each language (McLaughlin, 1981). Could this be an advantage for romance language speakers?

Another study performed by Kaushaskaya and Marian (year) that was performed with adults showed that the earlier the acquisition of L2 the stronger the ability to learn new words in adulthood was (Kaushaskaya, Marian 2009). Additional studies with different approaches and which also have tried to characterize language and metalinguistic skills of adults and children

that have been exposed to two languages have not shown differences between bilingual and monolingual individuals at these tasks (Lesaux, Lipka, & Siegel 2006).

On the other hand, recent findings suggest bilinguals are sensitive to the orthographic structure of their languages. Several studies have shown that if bilinguals are presented with language-specific sub-lexical information, bilingual individuals use this information to speed up word recognition, which provides evidence for language-selective lexical access (Schroter, Schoeder 2018).

For the purpose of the study, high complexity refers to words that are of an academic or technical register and low complexity words were those that are used on a day to day life.

Hypothesis

Many words used in the English language come from a Latin background, these are commonly acquired later in life and are lower frequency. H1: We hypothesized that non-romance language speakers would be more accurate at identifying Anglo-Saxon root words, and H2: romance language speakers (Spanish/English speakers) would be more accurate at identifying Latin root words. H3: Romance language speakers should be better at recognizing that presented pseudowords are in fact non-words due to the influence of Latin in their languages. On the other hand, H4: non-romance language speakers should have a harder time recognizing that presented Latin pseudowords are in fact nonwords.

Recent findings suggest that romance language speakers are sensitive to the orthographic structure of their languages. Several studies have shown that if romance language speakers are presented with language-specific sub-lexical information, romance bilingual individuals use this information to speed up word recognition, which provides evidence for language-selective lexical access (Schroter & Schoeder 2018).

Method

Participants

Recruitment. Undergraduate students were recruited through the University of Houston SONA System, which provided a direct link to the study. The principal investigator also recruited in classrooms after the approval of the professors. Through the University of Houston SONA System, emails were sent to participants that could potentially qualify for the study. After a participant had signed up for a timeslot through SONA, they were emailed a pre-screening form to assure qualification for the study. After qualification was confirmed participant went to the laboratory to complete the consent form and the lexical task.

Demographics. We ran 20 non-romance language speakers and 11 romance language speakers, but we had to exclude three monolingual that participated in the study because e-prime presented them with a different number of stimuli, making it a total of 17 non-romance language speakers. We included nine males and 19 females between the ages of 18 and 45 years old. Our participants included different race/ethnicity that as shown in table 3. We also included three left-handed participants and 25 right-handed participants. Not all our participants were born in the United States, nor English was spoken at their homes, but they demonstrated enough knowledge and proficiency in English that we were able to include them as romance language speakers.

We also looked into socioeconomic status between non-romance language speakers and romance language speakers, for both participants mother and father. We used self-reported questions regarding parents' education as well as profession and income as a proxy for socioeconomic status. Not all participants reported their socioeconomic status, non-romance language speakers reported the following: Six participants reported "major Professional:

Actuary, architect, engineer, lawyer, scientist, financial manager, chemist, bank officer, physician, psychologist, sociologist, teacher (college/university), veterinarians”, one participant reported: “Proprietor of business(es) valued at \$250,000 or more”, and ten participants decided not to answer the questions when asked about mother’s income. In addition, four participants reported: “Administrative officer in large concerns: District manager, executive assistant, personnel manager, production manager”, four other participants reported “Major Professional: Actuary, architect, engineer, lawyer, scientist, financial manager, chemist, bank officer, physician, psychologist, sociologist, teacher (college/university), veterinarians”, three participants reported: “Proprietor of business(es) valued between \$100,000-\$250,000” and six participants decided not to answer.

On the other hand, romance language speakers reported the following: one participants reported “Major Professional: Actuary, architect, engineer, lawyer, scientist, financial manager, chemist, bank officer, physician, psychologist, sociologist, teacher (college/university), veterinarians”, another participant reported “Proprietor of business(es) valued at \$250,000 or more” and nine decided to not report when asked about mother’s income. In addition, when they were asked about their father’s income they reported the following: one participant reported “Proprietor of business(es) valued between \$100,000-\$250,000” and ten participants decided not to report.

More information regarding socioeconomics/professions can be found in table 8 and table 9. More information about participants can be found in table 5, table 6, table 7 and figure 1.

Eligibility criteria. For both groups romance language speakers and non-romance language speakers, self-rated English proficiency was obtained. All romance language speakers demonstrated ‘adequate’ (4 or above on the scale out of 7) proficiency or better. When

participants filled out the pre-screening form, we were looking at some specific questions to assure eligibility.

1. Demographics:
 - a. Gender
 - b. Age
 - c. Handedness (originally, we wanted to exclude left handed participants but for the purpose of the study we analyze them all in one group)
2. Race and Ethnicity: with this we wanted to see if it had an effect on when language was use.
 - a. Participants
 - b. Mother
 - c. Father
3. Health (this including)
 - a. Hearing
 - b. Eyesight 9 participants responded that they wore glasses or used contacts
 - c. Attention
 - d. Psychological problems
 - e. Language problems.
 - i. three potential participants were excluded for psychological problems and attention problems e.g. anxiety, depression and ADHD or ADD.
4. Education:
 - a. Year in school (If you are on summer vacation, what year in school did you complete?)

5. Residency: these questions refer to,
 - a. Were you born in the United States?
 - b. If not, where were you born
 - c. If applicable, how many years have you lived in the US
 - d. If applicable, how old were you when you moved to the United States?
6. Language History:
 - a. What was the first language you learned as a child?
 - b. Were there any other languages, besides the L1 spoken in your home before age 12?
 - c. Which languages?
 - d. Please list all of the language you know, from the most proficient to the least proficient.
 - e. Please list the age at which you were first exposed to each of your languages. This includes any systematic contact with the target language inside or outside the United States. (This question was specifically target for bilingual participants, to obtain information of when they were exposed to Spanish. French and/or Italian.
 - f. How proficient are you in English?
 - i. Participants had a self-report scale from 1 to 7 (1 being “almost no proficiency” to 7 being “like a native speaker”)
 - ii. The scale measured for proficiency in speech, listening, reading, and writing.
 - g. How proficient are you currently in Spanish?

- i. Participants had a self-report scale from 1 to 7 (1 being “almost no proficiency” to 7 being “like a native speaker”)
- ii. If participants self-reported a 4 or above on either speech, listening, reading and/or writing, they were considered romance language speakers)
- h. How proficient are you currently in any other languages?
 - i. We asked this question to specifically look for any other languages that might interfere with the participants eligibility (e.g. German).
 - i. For what language(s) have you indicated proficiency above?
 - i. To indicate what other languages were being reported

For this study five potential participants were excluded because of psychological problems (e.g. depression and anxiety), and attention problems (e.g. ADHD, ADD).

Measures

Word selection. The words selected for this study were obtained from a word bank from Washington University called "The Lexicon Project" that consisted of 21,160 words with various origins. The initial filtering process included filtering each word for suffix, prefix, and root by grade level from first grade to eighth grade, to narrow the search for words that were only influenced by words that were influenced by Latin and/or Anglo-Saxon languages. The list was obtained by a school district and was used for the year of 2012-2013 (this list is still relevant at this point).

The second round of filtering consisted of only finding the words whose origins were from Latin and/or Anglo-Saxon. Using the Online Etymology Dictionary, we were able to classify a total of 525 words, choosing 201 English words with Latin origin and 201 English words with an Anglo-Saxon origin. In addition, we also selected a total of 202 pseudowords. We

classified them as Latin (101) and Anglo-Saxon (101) origin. Complete results are shown in table 10, table 11, table 12, table 13, table 14, and table 15.

Task development. After selecting the words, the lexical task was designed on E-Prime software. The stimuli were categorized by word, number of syllables, age of acquisition, etymology and word/non-word. The experiment was designed for the stimuli to be presented for "infinite" time and have an interval time call "fixation" of two hundred and fifty milliseconds between the first and second stimuli. All the words and non-words were used to design the study. We randomized the words presented by groups, having forty-five stimuli presented randomly accordingly the number of syllables starting with monosyllabic words and non-words.

The lexical task consisted of four different tasks. The tasks were not divided by the age of acquisition, frequency, nor etymology. These tasks included: "list1", "list2", "list3", and "list4". "List1" contained forty-five monosyllabic words and non-words. "List2" contained two hundred and eighty-one disyllabic words. "List3" contained one hundred and sixty trisyllabic words. "List4" contained seventy-six polysyllabic words (four syllables). From each word list, forty-five words were selected at random. Every list ended after presenting forty-five samples.

The experiment tested college students who were non-romance language speakers or romance language speakers (based on Language Questionnaire) and their ability to identify words and pseudoword (non-words) based on Latin or Anglo-Saxon roots as well as competition interference and lexical retrieval. For the purpose of this study, non-romance language speakers were those who spoke English and/or any other language that did not have a Latin background (e.g., Vietnamese, Chinese, Korean); romance language speakers were those who spoke English and any other Latin background language (e.g., Spanish, French, Italian). Participants filled out

an online screening form prior to coming into the laboratory to determine eligibility for the study. The pre-screening form consisted of questions regarding personal information, health, education, residency and language history.

The questions we focused on asking about gender, age, race, ethnicity, health (hearing, eyesight, psychological problems, attention problems, language problems.

201 of Latin English words, 201 of Anglo-Saxon English words, 100 of Latin pseudo-words, and 101 of Anglo-Saxon pseudo-words were randomly selected and presented to each participant for vocabulary testing and to match for complexity and usage of each and were presented as a computer task using E-Prime software.

The behavioral measure was a lexical decision task, in which each word/pseudo-word was presented for "infinite" time, participants were asked to identify if the sample presented was a word or a pseudo-word (non-word). This behavioral task was conducted using E-Prime program to measure task accuracy and reaction time when exposed to Latin and Anglo-Saxon root words as well as Latin non-words and Anglo-Saxon non-words. During the study, the participants were asked to press, on a keyboard, letters "Z" if they knew the stimuli (word) presented was a word, or "M" if they knew the stimuli presented was a non-word. Participants had "infinite" time to answer if the stimuli (sample) presented was a word or a non-word. Because of this, participants were asked to answer as "fast as possible," once they see the string of letters they had to make a decision.

Data Analysis

For the current study, each participant was given a study code. In order to differentiate non-romance language speakers and romance language speakers the code started with "M" if the participant was monolingual and "B" if the participant was bilingual (e.g., M001XX, B001XX).

We started the process by looking at specifically at the stimulus presented (string), number of syllables, the correct response, participants response, and response time. We did this for every "list" (4 total). Following this process, we took the accuracy, total response time and correct response time of each stimulus.

To analyze the data, we used JASP and SPSS. We looked at overall accuracy, overall response time as well as for each syllable (one, two, three, four). Within each category, we also ran results to look specifically at etymology (Latin or Anglo-Saxon (word and non-word)) between non-romance language speakers and romance language speakers, overall etymology, overall word or non-word. We looked at the overall means, standard deviations and p-values to assure if the interactions were significant or not we did that process for each results category as well as within each syllables.

Results

Before exploring the findings, it is essential to note that the task was designed to present the stimuli of each syllable at random. Unfortunately, E-prime did not give any Latin origin words with one syllable as well as Anglo-Saxon/Germanic no-words with two syllables. Due to this, data for these categories was not available for analysis.

ANOVA

The ANOVA showed the main effects and the interactions that we added on the model and which were significant. Four ANOVAs were run; two for results for accuracy and two for response time. This was necessary due to the missing data for some of the categories. The following cases were involved in the ANOVA for both average in accuracy and average in response time: (Non-Romance Language Speaker or Romance Language Speakers, Latin origin stimuli versus Anglo-Saxon/Germanic origin stimuli), (number of syllables), interaction between

(Non-Romance Language Speakers or Romance Language Speakers and Latin origin stimuli or Anglo-Saxon/Germanic stimuli), another interaction we observed was (Non-Romance Language Speakers or Romance Language Speakers and number of syllables), (Latin origin stimuli versus Anglo-Saxon origin stimuli and number of syllables), another interaction was (Non-Romance Language Speaker or Romance Language Speakers, Latin origin stimuli versus Anglo-Saxon/Germanic origin stimuli and number of syllables), some other interactions were (word/non-word) , (Non-Romance Language Speakers or Romance Language Speakers and Word/Non-word), (Word/Non-word and Latin origin stimuli versus Anglo-Saxon/Germanic origin stimuli) and the last one was (Non-Romance Language Speakers or Romance Language Speakers, Word/Non-word and Latin origin stimuli versus Anglo-Saxon/Germanic origin stimuli).

For accuracy, Latin origin words and Anglo-Saxon/Germanic origin words were significant with $F(1)=14.13, p=<.001$. In addition, syllables were also significant with $F(3)=53.94, p=<.001$. The relation between word/non-word was also significant with $F(1)=59.163, p=<.001$. The relation between Latin origin and the Anglo-Saxon/Germanic origin and the number of syllables was significant with $F(3)=18.596, p=<.001$. For response time, only the number of syllables was significant with $F(3)=18.232, p=<.001$.

The rest was not significant; the complete results can be found in table 16, table 17, table 18, and table 19.

Overall Statistics Between Accuracy, Response Time, and Syllables:

After running an ANOVA, we did a post-hoc analysis using independent sample t-tests was done. . The results showed that non-romance language speakers ($M = 64\%$ accurate; $SD = 0.48$) and romance language speakers are ($M = 67\%$ accurate; $SD = 0.47$) at identifying if the string of

letters presented was a word or a non-word. This interaction was significant with $t(-2.006)=5035, p=0.45$. For response time, non-romance language speakers took ($M = 920.0$ milliseconds; $SD = 673.591$) while romance language speakers took ($M = 999.9$ milliseconds; $SD = 713.047$). This interaction was significant with $t(-4.016)=5035, p=0.00$ for RT.

Going more in-depth within the number of syllables, when monolingual participants were asked to select if the monosyllabic stimulus presented were a word or a non-word ($M = 75\%$ accurate; $SD = 0.44$), while romance language speakers ($M = 77\%$ accurate; $SD = 0.42$). Interesting enough, romance language speakers had a longer response time ($M = 1.24$ seconds; $SD = 546.499$) compared to non-romance language speakers ($M = 928.63$ milliseconds; $SD = 594.234$). In greater depth, only response time was significant with $t(-2.876)=1258, p=0.04$, but accuracy was not significant with $t(-1.022)=1258, p=0.307$.

We also looked into stimulus with four syllables; romance language speakers were more accurate at identifying words and non-words with ($M = 67\%$ accurate; $SD = 0.472$).

On the other hand, non-romance language speakers had a ($M = 64\%$ accurate; $SD = 0.480$) when doing the same task. Moreover, romance language speakers took ($M = 1.23$ seconds; $SD = 875.439$), and non-romance language speakers took ($M = 1.09$ seconds; $SD = 809.594$) to respond if the stimuli presented was a word or a non-word. When looking deeper into independent t-test, we only noticed that response time was significant with $t(-2.975)=1255, p=0.003$, and accuracy was not significant with $t(-.896)=1255, p=0.370$.

The rest was not significant; the complete results can be found in table 20 and table 21.

Overall Etymology (Latin and Anglo-Saxon/Germanic):

Latin:

Overall between Latin origin words and non-words, non-romance language speakers were ($M = 62\%$ accurate; $SD = 0.486$) and a response time of 931.80 milliseconds with a standard deviation of 712.065. On the other hand, romance language speakers were ($M = 64\%$ accurate; $SD = 0.480$) and a response time of 1.00 second with a standard deviation of 754.242. More in-depth, response time was significant with $t(-2.506)=2486, p=0.012$, but accuracy was not significant with $t(-1.149)=2486, p=0.250$.

When examining words/non-words with four syllables with a Latin background, non-romance language speakers had an average of ($M = 52\%$ accurate; $SD = .500$) together with a response time of ($M = 1.11$ seconds; $SD = 0.500$) while romance language speakers had an average of ($M = 61\%$ accuracy; $SD = .490$) along with a response time of ($M = 1.23$ seconds; $SD = 0.490$). For this task, the only accuracy was significant with $t(-2.364)=760, p=0.018$ but the response time was not significant with $t(-1.926)=760, p=0.054$.

The rest was not significant; the complete results can be found in table 22 and table 23.

Anglo-Saxon/Germanic:

During this task, the average accuracy was ($M = 66\%$ accurate; $SD = 0.474$) for non-romance language speakers with a response time of ($M = 908.69$ milliseconds; $SD = 634.45$) while accuracy was ($M = 69\%$ accurate; $SD = 0.462$) for romance language speakers with a response time of ($M = 993.17$ milliseconds; $SD = 669.82$). In addition, accuracy was not significant with $t(-1.733)=2547, p=0.083$ but the response time was significant with $t(-3.207)=2547, p=0.001$.

Going more in-depth with number of syllables, monosyllabic words/non-words had an accuracy of ($M = 77\%$ accurate; $SD = 0.419$) and a response time of ($M = 897.30$ milliseconds; $SD = 559.94$); while romance language speakers had an accuracy of ($M = 83\%$ accurate; $SD = 0.375$) with a response time of ($M = 986.03$; $SD = 516.73$). Both accuracy and response time were

significant with a monosyllabic stimulus with $t(-1.972)=782, p=0.049$ for accuracy and $t(-2.233)=782, p=0.026$ for response time.

Lastly, when participants were presented word/non-words with four syllables, non-romance language speakers scored an average of ($M = 83\%$ accurate; $SD = 0.381$) and a response time of ($M = 1.07$ seconds; $SD = 810.97$). Additionally, romance language speakers scored an average of ($M = 76\%$ accurate; $SD = 0.373$) and a response time of ($M = 1.24$ seconds; $SD = 809.77$). When looking at an independent t-test only response time was significant with $t(-2.375)=493, p=0.018$, but accuracy was not significant with ($p=0.058$).

The rest was not significant; the complete results can be found in table 24 and table 25.

Etymology and Word or Non-word

Anglo-Saxon/Germanic (Word):

When running the results between etymology and (word), non-romance language speaker's overall accuracy was a ($M = 73\%$ accurate; $SD = 0.445$) and response time of ($M = 8633.04$ milliseconds; $SD = 571.314$). On the other hand, romance language speakers were an average of ($M = 79\%$ accurate; $SD = 571.31$) and a response time of ($M = 914.61$ milliseconds; $SD = 653.61$). Only accuracy was significant with $t(-2.757)=1572, p=0.006$ but the response time was not significant with $t(-1.651)=1572, p=0.099$.

When participants were presented with monosyllabic words or non-words, non-romance language speakers scored an average ($M = 97\%$ accurate; $SD = 571.31$) and a response time of ($M = 753.45$ milliseconds; $SD = 390.44$).

On the other hand, romance language speakers presented with the same task scored an average of ($M = 100\%$ accurate; $SD = 0.000$) and a response time ($M = 784.28$ milliseconds; $SD = 366.23$).

Moreover, the only accuracy was significant with $t(-2.159)=334, p=0.032$ while response time was not significant with $t(-.724)=334, p=0.469$.

The rest was not significant; the complete results can be found in table 26 and table 27.

Anglo-Saxon/Germanic (Non-word):

The overall accuracy when participants were asked to decide if the stimuli presented was a non-word or word; non-romance language speakers scored an average of ($M = 55\%$ accurate; $SD = 0.498$) and a response time of ($M = 981.56$ milliseconds; $SD = 718.21$). Romance language speakers scored an average of ($M = 53\%$ accurate; $SD = 0.500$) and a response time of ($M = 1.22$ seconds; $SD = 679.95$). Only response time was significant with $t(-3.041)=973, p=0.002$; on the other hand, accuracy was not substantial $t(.508)=973, p=0.612$.

Non-romance language speakers presented with the stimuli of one syllable, scored an average of ($M = 63\%$ accurate; $SD = 0.484$) and a response time of ($M = 1.01$ seconds; $SD = 638.824$). On the other hand, romance language speakers scored an average of ($M = 70\%$ accurate; $SD = 0.58$) and a response time of ($M = 1.14$ seconds; $SD = 560.61$). Only response time was significant with $t(-2.242)=446, p=0.025$, but accuracy was not significant $t(-1.655)=446, p=0.099$.

As said before e-prime did not present stimuli that were non-words with two syllables so that data will not be express.

With stimuli of four syllables, non-romance language speakers scored an average of ($M = 90\%$ accurate; $SD = 0.306$) and a response time of ($M = 1.16$ seconds; $SD = 950.56$). When presented with the same task, romance language speakers scored an average of ($M = 71\%$ accurate; $SD = 0.456$) and a response time of ($M = 1.37$ seconds; $SD = 827.64$). In-depth, the only accuracy was significant with $t(4.076)=278, p=0.00$, response time was not significant with $t(-1.883)=278, p=0.061$.

The rest was not significant; the complete results can be found in table 28 and table 29.

Latin (word):

The overall average for non-romance language speakers regarding accuracy was ($M = 64\%$ accurate; $SD = 0.479$) and a response time of ($M = 916.44$ milliseconds; $SD = 714.41$). Romance language speakers scored an average of ($M = 70\%$ accurate; $SD = 0.460$) and response time of ($M = 1.00$ second; $SD = 811.91$). Interesting enough, both accuracy and response time were significant with $t(-2.278)=1706, p=0.023$ for accuracy and $t(-2.329)=1706, p=0.020$ for response time.

Like said above, e-prime did not present any monosyllabic Latin words, due to this data will not be displayed.

Finally, with stimuli that had four syllables, non-romance language speakers scored an average of ($M = 46\%$ accurate; $SD = 0.499$) and a response time of ($M = 1.07$ seconds; $SD = 749.548$).

Romance language speakers scored an average of ($M = 58\%$ accurate; $SD = 0.495$) and an average response time of ($M = 1.21$ seconds; $SD = 937.259$). Furthermore, both accuracy and response time were significant with $t(-2.911)=634, p=.004$ for accuracy and $t(-2.123)=634, p=.034$ for response time.

The rest was not significant; the complete results can be found in table 30 and table 31.

Latin (non-word):

Nothing was significant when talking about non-words Latin origin stimuli; the complete results can be found in table 32 and table 33.

Overall Word/Non-Word:

Word

The overall average of accuracy for non-romance language speakers was ($M = 68\%$ accurate; $SD = 0.465$) and a response time of ($M = 890.68$ milliseconds; $SD = 649.717$). Romance language speakers scored higher with an average of ($M = 74\%$ accurate; $SD = 0.438$) and a response time of ($M = 961.16$ milliseconds; $SD = 741.942$). As we can expect, both accuracy and response time were significant with $t(-3.477)=3280, p=.001$ for accuracy and $t(9-2.873)=3280, p=.004$ for response time.

When participants were presented with words that contained one syllable, non-romance language speakers scored lower with an average of ($M = 97\%$ accurate; $SD = 0.182$) and a response time of ($M = 753.45$ milliseconds; $SD = 390.442$).

On the other hand, romance language speakers scored higher with an average of ($M = 100\%$ accurate; $SD = 0.000$) and a response time of ($M = 784.28$ milliseconds; $SD = 366.252$). Only accuracy was significant with $t(-2.159)=334, p=.03$ but the response time was not significant with $t(-.724)=334, p=.469$.

Next, non-romance language speakers scored an average of ($M = 53\%$ accurate; $SD = 0.499$) and an average response time of ($M = 977.91$ milliseconds; $SD = 778.199$) when presented with stimuli of three syllables. Romance language speakers scored higher with a ($M = 61\%$ accurate; $SD = 0.489$) and an average response time of ($M = 1.028$ seconds; $SD = 735.758$). Interesting enough, the only accuracy was significant with $t(-2.322)=986, p=.020$, response time was not significant with $t(-1.019)=986, p=.308$.

Lastly, when participants were presented with stimuli of four syllables, non-romance language speakers scored an average of ($M = 53\%$ accurate; $SD = 0.499$) and an average response time of ($M = 1.03$ seconds; $SD = 705.906$). In contrast, romance language speakers scored an average of ($M = 64\%$ accurate; $SD = 0.481$) and a response time of ($M = 1.18$ seconds; $SD = 896.434$).

Moreover, both accuracy and response time were significant with $t(-3.138)=849, p=.002$ for accuracy and $t(-2.611)=849, p=.009$ for response time.

The rest was not significant; the complete results can be found in table 34 and table 35.

Non-word

The overall average for non-words was ($M = 56\%$ accurate; $SD = 0.497$) and an average response time of ($M = 974.35$ milliseconds; $SD = 712.811$). Romance language speakers scored lower with an average score of ($M = 53\%$ accurate; $SD = 0.500$) ($M = 1.07$ seconds; $SD = 648.804$).

Only response time was significant with $t(-2.941)=1753, p=.003$, but accuracy was not significant with $t(1.209)=1753, p=.227$.

Next, when participants were presented with two syllables stimuli, non-romance language speakers scored lower with an average of ($M = 67\%$ accurate; $SD = 0.472$) and a response time of ($M = 992.33$ milliseconds; $SD = 641.282$). On the other hand, romance language speakers scored higher with an average score of ($M = 69\%$ accurate; $SD = 0.464$). However, they obtain an average response time of ($M = 1.11$ seconds; $SD = 574.807$). Only response time was significant with $t(-2.870)=922, p=.004$, but accuracy was not significant with $t(-.698)=922, p=.485$.

Non-romance language speakers scored an average of ($M = 86\%$ accurate; $SD = 0.345$) and a response time of ($M = 1.21$ seconds; $SD = 975.859$) when presented with stimuli of four syllables. On the contrary, romance language speakers scored an average of ($M = 73\%$ accuracy; $SD = .446$) and an average response time of ($M = 1.36$ seconds; $SD = 813.810$). Moreover, only accuracy was significant with $t(9.391)=404, p=.001$ but the response time was not significant with $t(-1.683)=404, p=.093$.

The rest was not significant; the complete results can be found in table 36 and table 37.

Discussion

To our knowledge, there has been no research to date to identify the relation between being bilingual or monolingual word recognition within Latin and Anglo-Saxon/Germanic origin. It was challenging to find other research to relate back onto the current study, but the findings will help develop other studies.

We looked for specific things to see if being a romance-language bilingual could provide academic advantages. We looked at response time to see how long participants took at identifying and recognizing words from non-words as well as, accuracy to see how well participants would identify correctly. We predicted that romance language speakers should be able to be more accurate at identifying words and non-words. We hypothesized that non-romance language speakers would be more accurate at identifying Anglo-Saxon root words, and romance language speakers would be more accurate at identifying Latin root words. Also, romance language speakers should be better at recognizing that presented pseudowords are in fact non-words due to their background in Latin. On the other hand, non-romance language speakers should have a harder time recognizing that presented Latin pseudowords are in fact nonwords. When looking at an overall, romance language speakers scored higher at accuracy, this meaning that they were correct at a higher percentage. On the other hand, romance language speakers took a longer time at defining if the stimuli presented was a word or a non-word. We think this is because romance language speakers have a higher cognitive process. Because romance language speakers have more exposure to both languages, it can influence their cognitive system, this meaning that their knowledge can influence in their daily life especially if using both English and Spanish or any other romance language and how the individual might filter structure information received from the world. (Lintern, Gavan, 2007). When looking at the overall results

for the stimuli (word), romance language speakers scored higher in accuracy meaning they were correct a higher percent of the time.

On the other hand, the more complex the stimuli got, the more time romance bilingual participants took to make a decision. When it came to stimuli (non-word), overall, non-romance language speakers were more accurate in the exception of monosyllabic stimulus when romance language speakers scored higher at 69% and non-romance language speakers lower at 67%.

Another impressive result was with duo-syllabic stimuli, where both non-romance language speakers and romance language speakers scored an average of 0%.

When looking at the results for Latin origin stimuli, as expected, romance language speakers scored a higher average for correct responses. On the other hand, as we have seen on previous results, romance language speakers took longer at making the decision if the stimuli presented was a word or a non-word. Also, low complexity stimuli (monosyllabic and duo-syllabic) were easier to be recognized by non-romance language speakers than romance language speakers.

When the stimuli presented got more complex (higher syllables), romance language speakers scored higher in accuracy. It will be interesting to look more in-depth on why non-romance language speakers scored higher on low complexity stimuli.

Similarly, when looking at a specific etymology like Latin and the stimuli being a word, romance language speakers scored higher at accuracy, like before we did not expect was for romance language speakers to take longer at answering as they should have the background in Latin since they are romance language speakers. We think this could be because they take longer to search for the words in their mental dictionary since they have two languages. This could not be a problem; it is not necessary for them to do a time task. On the other hand, on the same task non-romance language speakers scored higher on duo-syllabic Latin words with an average score of

89% correct which was not too low compared to romance language speakers score of 87%. We want to expand this study and look at why this occurred. Like discussed before, non-romance language speakers scored higher at identifying Latin non-words, could romance language speakers have scored lower because they got confused between their languages.

This study will help see that being bilingual is important. This research has shown that romance language speakers are better at recognizing words from Latin origin as well as Anglo-Saxon due to speed accuracy trade-off and that bilinguals look at words differently than monolinguals do.

This could mean that romance language speakers could have a more sophisticated vocabulary.

Although non-romance language speakers were better at recognizing at non-word stimuli for both Latin origin and Anglo-Saxon/Germanic, they scored lower at recognizing words for both etymologies.

As we know from previous research, romance language speakers are sensitive to the orthographic structure of their languages. We can say that this is why they take more time identifying. Several studies have shown that if bilinguals are presented with language-specific sub-lexical information, bilingual individuals use this information to speed up word recognition, which provides evidence for language-selective lexical access (Schroter, Schoeder 2018). This proves why romance language speakers were more accurate at identifying Latin origin words as well as Anglo-Saxon words.

H1: We hypothesized that monolinguals would be more accurate at identifying Anglo-Saxon root words. This hypothesis was not supported as romance language speakers scored higher in accuracy with 79%. H2: Romance language speakers would be more accurate at identifying Latin root words. This hypothesis was supported with bilinguals scoring a 70% accurate. H3: In addition, romance language speakers should be better at recognizing that presented pseudowords

are in fact non-words due to their background in Latin. This hypothesis was not supported with non-romance language speakers scoring higher at a 57% accuracy. H4: On the other hand, non-romance language speakers should have a harder time recognizing that presented Latin pseudowords are in fact nonwords. This hypothesis was not supported with non-romance language speakers scored higher at identifying Latin non-words at a 57% accurate.

Limitations and Future Studies

The primary limitation for this study was time; having more time to run the study would have helped to get a bigger sample of participants. Future studies can expand this lexical task to a wider sample of participants. Furthermore, expanding this research to use neuroimaging, such as fNIRS, would allow to detect the neural mechanisms behind the accuracy-response time trade off we detected in romance language speakers for this lexical decision task.

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The following are the words and non-words used in the study. In addition, the age of acquisition for all words were also included.

Table1

Monosyllabic Stimuli

Monosyllabic words	Age of acquisition	Monosyllabic non-words
cry	2.78	vit
stop	2.89	al
sock	2.94	le
couch	3.74	la
pear	4	lle
juice	4.4	nar
cone	4.67	dep
giant	4.72	te
voice	4.83	de
dish	4.89	di
real	4.95	dom
inch	5.11	en
ink	5.16	ti
seal	5.42	lod
proud	5.44	min
desk	5.56	pars
grade	5.72	du
fly	5.79	aug
screen	5.84	rad
badge	6.11	ab
vowel	6.53	bon
vine	6.95	aft
ark	7.17	est
chute	7.68	re
brace	7.89	pau
wet	2.47	rot
spoon	2.5	scha
shoe	2.6	es
hand	2.74	fi
sleep	2.79	frag
jump	2.84	ken
bed	2.89	bau
fly	3.05	un

see	3.06
bath	3.23
arm	3.26
clap	3.4
bean	3.42
bite	3.58
key	3.58
cloud	3.63
red	3.68
twirl	3.72
green	3.79
spill	3.84
stair	3.84
ice	3.86
pea	3.95
shorts	3.95
smoke	4
chalk	4.47
chirp	4.63

Table 2
Two Syllable Stimuli

Two syllable words	Age of acquisition	Two syllable non-words
carrot	2.74	alfans
crayon	3.2	annis
diaper	3.4	rium
music	3.81	buca
story	3.89	bulur
color	4	catum
parent	4.22	ceplus
silent	4.42	cobor
cereal	4.44	siste
scissors	4.5	dica
pretend	4.56	pames
party	4.58	parpus
doctor	4.6	peplex
silence	4.6	pespet
biscuit	4.63	popi
adult	4.68	pornax
second	4.68	harkate
ocean	4.74	vater
ceiling	4.75	essen
insect	4.75	durst
human	4.83	lampe
present	4.83	milch
devil	5	sagen
special	5	triken
beauty	5.05	mutter
police	5.05	regen
plastic	5.11	gehen
address	5.15	bruder
fairy	5.17	machen
sandal	5.21	abend
dentist	5.22	kissen
postman	5.22	danken
radish	5.25	messer
repeat	5.28	setzen
nosebleed	5.32	legen
super	5.32	antwort
secret	5.39	suchen
honest	5.46	regnen

Two syllable words	Age of acquisition	Two syllable non-words
different	5.5	wenig
tractor	5.5	geben
magic	5.52	holen
cushion	5.53	flashe
normal	5.53	nicken
tricky	5.53	treten
painter	5.6	abends
metal	5.61	backen
return	5.61	lenken
salad	5.61	mittags
lampshade	5.63	platzen
enter	5.67	
promise	5.67	
remove	5.67	
scribble	5.67	
vomit	5.68	
enjoy	5.75	
plenty	5.76	
visit	5.79	
lotion	5.83	
safety	5.84	
sentence	5.84	
comics	5.89	
student	5.94	
oval	5.95	
actress	6.17	
applause	6.2	
caution	6.22	
arrive	6.26	
confuse	6.33	
violence	6.39	
absent	6.5	
active	6.53	
often	6.53	
subtract	6.53	
city	6.56	
complete	6.58	
study	6.58	
vision	6.58	
amount	6.63	

Two syllable words	Age of acquisition	Two syllable non-words
curious	6.64	
action	6.67	
baptize	6.67	
sudden	6.67	
olive	6.68	
destroy	6.67	
vacuum	6.74	
section	6.78	
triple	6.78	
odor	6.81	
total	6.83	
airport	6.84	
cement	6.89	
actual	6.94	
common	6.94	
complete	6.94	
audience	7	
comic	7	
entry	7	
talent	7	
tuba	7	
altar	7.16	
admire	7.42	
admit	7.56	
almond	7.67	
absence	7.7	
adopt	7.83	
adore	7.95	
water	2.37	
bathroom	3	
pinkie	3.21	
bathtub	3.22	
chicken	3.26	
backyard	3.38	
noodle	3.44	
sorry	3.44	
breakfast	3.47	
hungry	3.63	
kitchen	3.68	
nighttime	3.72	

Two syllable words	Age of acquisition	Two syllable non-words
eyeball	3.83	
bathing	3.84	
upstairs	3.86	
thirsty	3.89	
downstairs	3.91	
airplane	3.94	
candy	4	
morning	4	
rainy	4	
heavy	4.05	
children	4.1	
stariway	4.15	
every	4.2	
clothing	4.22	
heaven	4.22	
dresser	4.28	
winter	4.38	
ladder	4.4	
friendly	4.5	
bouncy	4.61	
dusty	4.74	
coming	4.77	
today	4.77	
elbow	4.78	
sixteen	4.8	
darkness	4.83	
softness	4.83	
cracker	4.9	
daylight	4.94	
duckling	4.95	
frosting	4.95	
closet	5	
pretzel	5	
sadness	5	
shadow	5	
bumpy	5.11	
nothing	5.21	
salty	5.33	
seven	5.36	
tasty	5.4	

Two syllable words	Age of acquisition	Two syllable non-words
between	5.47	
dizzy	5.5	
daisy	5.55	
scrambled	5.61	
schooldays	5.84	
shaded	5.89	
really	5.94	
sweaty	5.94	
ashtray	5.95	
biter	6	
donkey	6	
hearing	6.05	
onion	6.05	
workman	6.06	
zigzag	6.06	
heater	6.1	
sundown	6.11	
youngster	6.11	
tugboat	6.17	
trusty	6.24	
bury	6.28	
washer	6.32	
headband	6.33	
hateful	6.42	
thickness	6.42	
trading	6.42	
sunbeam	6.43	
wriggle	6.47	
highway	6.5	
twisty	6.53	
badly	6.58	
workbook	6.65	
weeping	6.68	
headache	6.71	
seaweed	6.74	
weekday	6.78	
headlight	6.79	
yardstick	6.8	
unclean	6.83	
sweetness	6.89	

Two syllable words	Age of acquisition	Two syllable non-words
wafer	6.89	
turnip	7	
bobcat	7.06	
brighten	7.06	
blowup	7.11	
awhile	7.12	
cheddar	7.14	
cheakbone	7.17	
blinding	7.21	
blindness	7.21	
bumble	7.27	
blurry	7.28	
bushy	7.33	
ballplayer	7.42	
amaze	7.5	
cinder	7.57	
bookshelf	7.68	
boredom	7.68	
bedside	7.71	
brownish	7.71	
bedspread	7.72	
creaking	7.74	
among	7.75	
blubber	7.84	
brainy	7.86	
boneless	7.89	
bathrobe	7.9	
coolness	7.9	
dandy	7.94	
beater	7.95	
crippled	7.95	
beardless	8	
charcoal	8	
sweetheart	6.26	

Table 3
Three Syllable Stimuli

Three syllable words	Age of acquisition	Three syllable non-words
animal	2.89	alandis
family	3.38	alausus
coloring	3.5	aldicare
vegetable	4.17	aldomen
policeman	4.44	almata
elephant	4.8	alportans
unicorn	4.83	altraneus
poisonous	4.89	anicus
triangle	4.9	avenis
eraser	4.95	bullire
honesty	5	calina
rectangle	5	canductus
opposite	5.06	defacere
vacation	5.22	dorosus
accident	5.3	elserere
magician	5.37	esternus
reflection	5.5	insequi
hospital	5.55	lormire
terrible	5.56	mumilis
principal	5.58	cutare
uniform	5.6	ongestus
remember	5.63	onsectum
adventure	5.67	onsula
dishonest	5.68	onteger
cucumber	5.72	padaver
addition	5.76	patials
important	5.79	pavare
horrible	5.81	peltiplus
innocent	5.95	pigidus
magical	5.95	planaris
gingerbread	6	praternus
ambulance	6.16	prognosce
commercial	6.67	pudium
tornado	6.21	pundatem
subtraction	6.28	sanalis
emotion	6.37	astampel
deputy	6.45	bagabel
delicious	6.5	bettafel

Three syllable words	Age of acquisition	Three syllable non-words
energy	6.52	blatnilperd
beverage	6.63	brettspiegel
deliver	6.63	brotbiber
direction	6.68	bubischof
consequence	6.72	burvogel
volcano	6.74	fahnepil
attention	6.78	fasrauch
criminal	6.78	frischritter
aquarium	6.84	glaskasten
biblical	6.9	hackerobbe
expression	6.94	hernadel
carnival	6.95	hexecu
nursery	6.95	hufonkel
assignment	7	jungesprite
decorate	7	korspuele
argument	7.55	krakenstern
adoption	7.79	mauertisch
approval	7.95	milchschatten
underpants	3.35	mondschaufel
butterfly	3.67	stehen
lollipop	3.89	freuen
finger nail	4	zeigen
bumblebee	4.11	schere
strawberry	4.21	sauer
bicycle	4.26	stellen
everything	4.44	kriegen
afternoon	4.65	mauer
unhappy	4.89	vorsicht
holiday	5.19	gemein
nobody	5.25	bleiben
raspberry	5.33	besuchen
cinnamon	5.37	
eleven	5.78	
heaviness	6.11	
heavenly	6.22	
tablecloth	6.26	
whistling	6.32	
ugliness	6.33	
cranberry	6.45	
woodpecker	6.5	

Three syllable words	Age of acquisition	Three syllable non-words
carelessness	6.61	
tablespoon	6.63	
watery	6.65	
untruthful	6.74	
unhealthy	6.78	
windbreaker	6.79	
untangle	6.84	
awaken	7.17	
blabbermouth	7.5	
battleship	7.58	
buttermilk	7.6	
crumbly	7.61	
allergic	7.72	

Table 4

Four Syllable Stimuli

Four syllable words	Age of acquisition	Four syllable non-words
alligator	4.78	algradare
rectangular	5.43	alprehender
refrigerate	5.72	apiditas
decorated	5.91	asiderare
decoration	5.94	atitudo
emergency	5.94	calumbula
activity	6.47	canstruere
education	6.7	cemininus
monopoly	6.74	conefactum
accidental	6.75	demonitio
salamander	6.89	desterare
adorable	6.94	destitudo
auditorium	6.94	detervallum
ridiculous	7	diperator
television	4.11	dispechier
kindergarten	4.38	dournails
anybody	5.11	dournata
apologize	5.67	enimatus
unhappiness	6.84	esqualis
awakening	10.89	estestari
unwarranted	12.8	ilplorare
debarkation	14.36	imparere
riboflavin	14.37	imvertere
misanthropy	15.29	ondenticus
nonpartisan	15.35	parcosium
progesterone	16.67	patreprendre
technocracy	17.44	perraria
		priniversa
		safficultas
		santeanus
		tamaturus
		tidelitas
		affeanker
		benehocker
		blumespargel
		freundeder
		kupriester
		lewestras

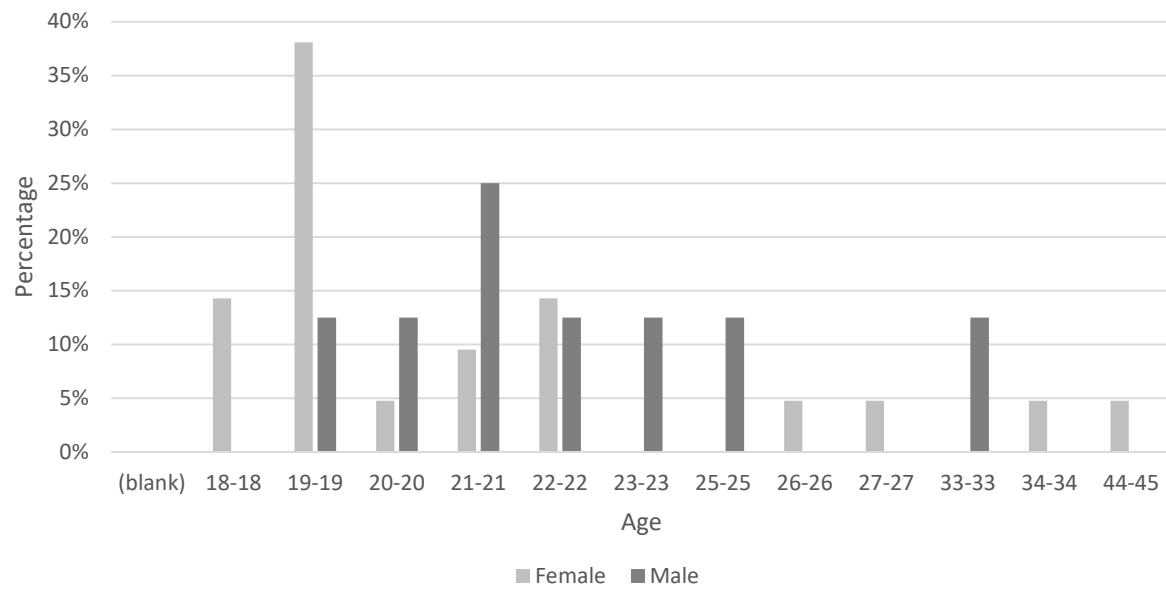
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	schiffwalros
	sonnerhaba
	spinneselll
	spielen
	gemeinsam
	stiefel

Table 5
Participants Demographics

		Number		Percentage	
		Male	Female	Male	Female
Gender		9	19	26.67%	67.86%
Classification	Freshman	1	5	3.57%	17.86%
	Sophomore	2	4	7.14%	14.29%
	Junior	3	7	10.71%	25.00%
	Senior	3	3	10.71%	10.71%

This table shows the gender and classification of participants included in this study.

Figure 1



This graph shows the age group of the participants that were included in the study.

Table 6
Participants Demographics

	Number	Percentage
Left	3	10.71%
Right	25	89.29%

This table represents handedness; 89.29% of our participants were right handed and 10.71% were left handed.

Table 7

	Number	Percentage
African-American, Black	2	7.14%
American	1	3.57%
Asian-American	1	3.57%
Asian-American, Asian, or Pacific Islander	8	28.57%
Caucasian, White	6	21.43%
Latino or Hispanic	9	32.14%
Other or Unknown	1	3.57%

This table shows the race/ethnicity of participant included in the present study.

Table 8

Socioeconomic statuses (mother's income)

Non-Romance Language Speakers	Profession/Income	Number of Participants	Percentage of Participants
	Major Professional: Actuary, architect, engineer, lawyer, scientist, financial manager, chemist, bank officer, physician, psychologist, sociologist, teacher (college/university), veterinarians	6	35.29%
	Proprietor of business(es) valued at \$250,000 or more	1	5.88%
	Did not report	10	58.82%
Total		17	60.71%
Romance Language Speakers			
	Major Professional: Actuary, architect, engineer, lawyer, scientist, financial manager, chemist, bank officer, physician, psychologist, sociologist, teacher (college/university), veterinarians	1	9.09%
	Proprietor of business(es) valued at \$250,000 or more	1	9.09%
	Did not report	9	81.82%
Total		11	39.29%

This table shows the socioeconomics (mother's) description between non-romance language speakers and romance language speakers. The table does not show every participant, so it was difficult to make a conclusion if socioeconomics played a difference. But what we can see (from mother's income) is that in fact non-romance language speakers come from a higher socioeconomic status.

Table 9

Socioeconomic statues (father's income)

Non-Romance Language Speakers	Profession/Income	Number of Participants	Percentage of Participants
	Administrative officer in large concerns: District manager, executive assistant, personnel manager, production manager	4	23.53%
	Major Professional: Actuary, architect, engineer, lawyer, scientist, financial manager, chemist, bank officer, physician, psychologist, sociologist, teacher (college/university), veterinarians	4	23.53%
	Proprietor of business(es) valued between \$100,000-\$250,000	3	17.65%
	Did not Report	6	35.29%
Total		17	60.71%
Romance Language Speakers			
	Proprietor of business(es) valued between \$100,000-\$250,000	1	9.09%
	Did not Report	10	90.91%
Total		11	39.29%

This table shows the socioeconomics (father's) description between non-romance language speakers and romance language speakers. The table does not show every participant, so it was difficult to make a conclusion if socioeconomics played a difference. But what we can see (from father's income) is that in fact non-romance language speakers come from a higher socioeconomic status.

Table 10
Descriptive Statistics

	AoA		Frequency		# of syllables	
	0	1	0	1	0	1
Valid	201	201	201	201	201	201
Missing	0	0	0	0	0	0
Mean	5.780	5.810	41.67	64.19	2.294	2.169
Std. Deviation	1.091	2.391	85.77	244.7	0.7736	0.7357
Minimum	2.740	2.370	0.1600	0.02000	1.000	1.000
Maximum	7.950	17.44	707.3	2557	4.000	4.000

This table illustrates the means for age of acquisition, frequency (times used in the English language) and number of syllables. 0=Latin origin words, 1=Anglo-Saxon origin words.

Table 11
Independent Samples T-Test

	t	df	p
# of syllables	1.652	400.0	0.099 ^a
AoA	-0.159	400.0	0.874 ^a

Note. Student's t-test.

^a Levene's test is significant ($p < .05$), suggesting a violation of the equal variance assumption

Note that the p values were not significant for both Anglo-Saxon and Latin origin words Therefore, there is not a significant difference between number of syllabus and age of acquisition between Anglo-Saxon and Latin origin words.

Table 12

Latin

# of syllabus	Total # of AoA and the number of syllabus	Age of Acquisition	
		Between*	Total
1	25	<= 3	3
		<=5	8
		<=10	14
		<=20	0
2	106	<= 3	1
		<=5	23
		<=10	82
		<=20	0
3	56	<= 3	1
		<=5	11
		<=10	44
		<=20	0
4	14	<= 3	0
		<=5	1
		<=10	13
		<=20	0

*Less than or equal to the ages of word acquisition

Table 13
Anglo-Saxon

# of syllabus	Total # of AoA and the number of syllabus	Age of Acquisition	
		Between*	Total
1	27	<= 3	7
		<=5	20
		<=10	0
		<=20	0
2	126	<= 3	2
		<=5	45
		<=10	79
		<=20	0
3	35	<= 3	0
		<=5	10
		<=10	25
		<=20	0
4	13	<= 3	0
		<=5	2
		<=10	3
		<=20	8

*Less than or equal to the ages of word acquisition

Table 14
Latin Non-Words

# of syllabus	Total
1	16
2	16
3	36
4	31

Table 15

Anglo-Saxon Non-Words

# of syllabus	Total
1	16
2	33
3	35
4	16

Table 16

ANOVA - Average of ACC

Cases	Sum of Squares	df	Mean Square	F	p
NONoRomance	0.004	1	0.004	0.053	0.818
LAvAS	1.139	1	1.139	14.134	< .001
Syllables	13.040	3	4.347	53.944	< .001
NONoRomance * LAvAS	0.041	1	0.041	0.512	0.475
NONoRomance * Syllables	0.033	3	0.011	0.137	0.938
LAvAS * Syllables	4.495	3	1.498	18.596	< .001
NONoRomance * LAvAS * Syllables	0.120	3	0.040	0.496	0.685
Residual	29.573	367	0.081		

Note. Type III Sum of Squares

Table17

ANOVA-Average of ACC

Cases	Sum of Squares	df	Mean Square	F	p
Word/Non	6.676	1	6.676	59.163	<.001
NONoRomance * Word/Non	0.305	1	0.305	2.700	0.101
Word/Non * LAvAS	0.113	1	0.113	1.000	0.318
NONoRomance * Word/Non * LAvAS	0.017	1	0.017	0.148	0.700

This table shows that only the interaction between word and non-word was significant.

Table 18

ANOVA - Average of RT

Cases	Sum of Squares	df	Mean Square	F	p
MoB	480943	1	480943	2.938	0.087
LAvAS	3482	1	3482	0.021	0.884
Syllables	8.955e +6	3	2.985e +6	18.232	< .001
NONoRomance * LAvAS	8558	1	8558	0.052	0.819
NONoRomance * Syllables	219550	3	73183	0.447	0.720
LAvAS * Syllables	1.200e +6	3	399851	2.442	0.064
NONoRomance * LAvAS * Syllables	15421	3	5140	0.031	0.993
Residual	6.009e +7	367	163723		

Note. Type III Sum of Squares

Table19

ANOVA – Average of RT

Cases	Sum of Squares	df	Mean Square	F	p
Word/Non	182578	1	182578	0.968	0.326
NONoRomance * Word/Non	4946	1	4946	0.026	0.871
Word/Non * LAvAS	208766	1	208766	1.107	0.293

This table shows that there was no significance between the cases when talking about response time.

Table 20
Group Statistics

	Language Status	N	Mean	Std. Deviation	Std. Error Mean
ACC	Non-romance language speakers	3059	.64	.480	.009
	Romance language speakers	1978	.67	.471	.011
RT	Non-romance language speakers	3059	920.03	673.591	12.179
	Romance language speakers	1978	999.91	719.047	16.033
Stimulus1.ACC	Non-romance language speakers	765	.75	.435	.016
	Romance language speakers	495	.77	.420	.019
Stimulus1.RT	Non-romance language speakers	765	928.63	594.234	21.485
	Romance language speakers	495	1024.19	546.499	24.563
Stimulus2.ACC	Non-romance language speakers	765	.75	.435	.016
	Romance language speakers	495	.75	.431	.019
Stimulus2.RT	Non-romance language speakers	765	738.16	472.652	17.089
	Romance language speakers	495	766.98	608.599	27.355
Stimulus3.ACC	Non-romance language speakers	765	.45	.494	.018
	Romance language speakers	495	.48	.500	.022
Stimulus3.RT	Non-romance language speakers	765	923.65	723.136	26.145
	Romance language speakers	495	975.81	701.706	31.539
Stimulus4.ACC	Non-romance language speakers	765	.64	.480	.017
	Romance language speakers	495	.67	.472	.021
Stimulus4.RT	Non-romance language speakers	765	1089.90	809.594	29.290
	Romance language speakers	495	1233.59	875.439	39.428

Table 21

Group statistics T-Test

		t	df	p
ACC	Equal variances assumed	-2.006	5035	.045
	Equal variances assumed	-2.014	4276.079	.044
RT	Equal variances assumed	-4.016	5035	.000
	Equal variances assumed	-3.967	4045.936	.000
Stimulus1.ACC	Equal variances assumed	-1.022	1258	.307
	Equal variances assumed	-1.030	1081.355	.303
Stimulus1.RT	Equal variances assumed	-2.876	1258	.004
	Equal variances assumed	-2.928	1116.466	.003
Stimulus2.ACC	Equal variances assumed	-.285	1258	.776
	Equal variances assumed	-.286	1061.545	.775
Stimulus2.RT	Equal variances assumed	-.942	1258	.346
	Equal variances assumed	-.894	869.223	.372
Stimulus3.ACC	Equal variances assumed	-1.858	1258	.063
	Equal variances assumed	-1.854	1046.175	.064
Stimulus3.RT	Equal variances assumed	-1.265	1258	.206
	Equal variances assumed	-1.273	1077.282	.203
Stimulus4.ACC	Equal variances assumed	-.896	1255	.370
	Equal variances assumed	-.900	1062.452	.369
Stimulus4.RT	Equal variances assumed	-2.975	1255	.003
	Equal variances assumed	-2.925	990.384	.004

This table shows what was significant and what was not significant between the different group statistics.

Table 22

Latin and Non-Romance Language Speakers/Romance Language Speakers

	Language Status	N	Mean	Std. Deviation	Std. Error Mean
ACC	Non-romance language speakers	1501	.62	.486	.013
	Romance language speakers	987	.64	.480	.015
RT	Non-romance language speakers	1501	931.80	712.065	18.379
	Romance language speakers	987	1006.67	154.242	24.008
Stimulus1.ACC	Non-romance language speakers	289	.70	.458	.027
	Romance language speakers	187	.67	.470	.034
Stimulus1.RT	Non-romance language speakers	289	980.24	644.460	37.909
	Romance language speakers	187	1087.05	588.318	43.022
Stimulus2.ACC	Non-romance language speakers	348	.65	.477	.026
	Romance language speakers	214	.62	.486	.033
Stimulus2.RT	Non-romance language speakers	348	692.70	418.279	22.422
	Romance language speakers	214	704.34	624.668	42.701
Stimulus3.ACC	Non-romance language speakers	401	.65	.478	.024
	Romance language speakers	287	.68	.469	.028
Stimulus3.RT	Non-romance language speakers	401	903.76	779.179	38.910
	Romance language speakers	287	949.71	665.507	39.284
Stimulus4.ACC	Non-romance language speakers	463	.52	.500	.023
	Romance language speakers	299	.61	.490	.028
Stimulus4.RT	Non-romance language speakers	463	1105.57	809.190	37.606
	Romance language speakers	299	1227.45	916.809	53.020

This table shows the different means for each stimulus. We see that overall romance language speakers scored higher in accuracy.

Table 23

Latin and Non-Romance Language Speakers/Romance Language Speakers T-Test

		t	df	p
ACC	Equal variances assumed	-1.149	2486	.250
	Equal variances assumed	-1.152	2128.122	.249
RT	Equal variances assumed	-2.506	1486	.012
	Equal variances assumed	-2.476	2023.535	.013
Stimulus1.ACC	Equal variances assumed	.659	474	.510
	Equal variances assumed	.655	389.701	.513
Stimulus1.RT	Equal variances assumed	-1.827	474	.068
	Equal variances assumed	-1.863	422.479	.063
Stimulus2.ACC	Equal variances assumed	.738	560	.461
	Equal variances assumed	.735	444.216	.463
Stimulus2.RT	Equal variances assumed	-.264	560	.792
	Equal variances assumed	-.241	331.194	.809
Stimulus3.ACC	Equal variances assumed	-.752	686	.452
	Equal variances assumed	-.755	623.269	.451
Stimulus3.RT	Equal variances assumed	-.810	686	.418
	Equal variances assumed	-.831	664.885	.406
Stimulus4.ACC	Equal variances assumed	-2.364	760	.018
	Equal variances assumed	-2.375	645.863	.018
Stimulus4.RT	Equal variances assumed	-1.926	760	.054
	Equal variances assumed	-1.875	578.771	.061

This table shows the significance of some variables between Latin and Non-Romance Language Speakers/Romance Language Speakers.

Table 24

Anglo-Saxon/Germanic and Non-Romance Language Speakers/Romance Language Speakers

	Language Status	N	Mean	Std. Deviation	Std. Error Mean
ACC	Non-romance language speakers	1558	.66	.474	.012
	Romance language speakers	991	.69	.462	.015
RT	Non-romance language speakers	1558	908.69	634.346	16.071
	Romance language speakers	991	993.17	669.818	21.277
Stimulus1.ACC	Non-romance language speakers	476	.77	.419	.019
	Romance language speakers	308	.83	.375	.021
Stimulus1.RT	Non-romance language speakers	476	897.30	559.938	25.665
	Romance language speakers	308	986.03	516.733	29.444
Stimulus2.ACC	Non-romance language speakers	417	.82	.380	.019
	Romance language speakers	281	.85	.354	.021
Stimulus2.RT	Non-romance language speakers	417	776.09	511.052	25.026
	Romance language speakers	281	814.68	592.763	35.361
Stimulus3.ACC	Non-romance language speakers	364	.18	.381	.020
	Romance language speakers	208	.20	.402	.028
Stimulus3.RT	Non-romance language speakers	364	945.55	656.256	34.397
	Romance language speakers	208	1011.83	748.933	51.929
Stimulus4.ACC	Non-romance language speakers	301	.83	.373	.021
	Romance language speakers	194	.76	.426	.031
Stimulus4.RT	Non-romance language speakers	301	1065.80	810.969	46.743
	Romance language speakers	194	1243.05	809.772	58.138

This table shows the different means for each stimulus. We see that overall romance language speakers scored higher in accuracy.

Table 25

Anglo-Saxon/Germanic and Non-Romance Language Speakers/Romance Language Speakers T-Test

		t	df	p
ACC	Equal variances assumed	-1.733	2547	.083
	Equal variances assumed	-1.743	2148.508	.081
RT	Equal variances assumed	-3.207	2547	.001
	Equal variances assumed	-3.168	2023.108	.002
Stimulus1.ACC	Equal variances assumed	-1.972	782	.049
	Equal variances assumed	-2.020	705.722	.044
Stimulus1.RT	Equal variances assumed	-2.233	782	.026
	Equal variances assumed	-2.272	692.397	.023
Stimulus2.ACC	Equal variances assumed	-1.021	696	.308
	Equal variances assumed	-1.036	629.408	.301
Stimulus2.RT	Equal variances assumed	-.917	696	.360
	Equal variances assumed	-.891	539.626	.373
Stimulus3.ACC	Equal variances assumed	-.772	570	.441
	Equal variances assumed	-.761	411.951	.447
Stimulus3.RT	Equal variances assumed	-1.103	570	.271
	Equal variances assumed	-1.064	386.108	.288
Stimulus4.ACC	Equal variances assumed	1.954	493	.051
	Equal variances assumed	1.898	371.929	.058
Stimulus4.RT	Equal variances assumed	-2.375	493	.018
	Equal variances assumed	-2.376	412.324	.018

This table shows the significance of some variables within Anglo-Saxon/Germanic and Non-Romance and Romance language speakers.

Table 26
Anglo-Saxon/Germanic (Word)

	Language Status	N	Mean	Std. Deviation	Std. Error Mean
ACC	Non-romance language speakers	958	.73	.445	.014
	Romance language speakers	616	.79	.408	.016
RT	Non-romance language speakers	958	863.04	571.314	18.458
	Romance language speakers	616	914.61	653.610	26.335
Stimulus1.ACC	Non-romance language speakers	204	.97	.182	.013
	Romance language speakers	132	1.00	.000	.000
Stimulus1.RT	Non-romance language speakers	204	753.45	390.442	27.336
	Romance language speakers	132	784.28	366.252	31.878
Stimulus2.ACC	Non-romance language speakers	417	.82	.380	.019
	Romance language speakers	281	.85	.354	.021
Stimulus2.RT	Non-romance language speakers	417	776.09	511.052	25.026
	Romance language speakers	281	814.68	592.756	35.361
Stimulus3.ACC	Non-romance language speakers	209	.29	.453	.031
	Romance language speakers	116	.36	.483	.045
Stimulus3.RT	Non-romance language speakers	209	1100.58	749.291	51.830
	Romance language speakers	116	1179.20	840.753	78.062
Stimulus4.ACC	Non-romance language speakers	128	.75	.435	.038
	Romance language speakers	87	.83	.380	.041
Stimulus4.RT	Non-romance language speakers	128	933.12	546.764	48.328
	Romance language speakers	87	1082.32	761.524	81.644

Table 27

Anglo-Saxon/Germanic (Word) T-Test

		t	df	p
ACC	Equal variances assumed	-2.757	1572	.006
	Equal variances assumed	-2.809	1392.283	.005
RT	Equal variances assumed	-1.651	1572	.099
	Equal variances assumed	-1.603	1184.055	.109
Stimulus1.ACC	Equal variances assumed	-2.159	334	.032
	Equal variances assumed	-2.686	203.000	.008
Stimulus1.RT	Equal variances assumed	-.724	334	.469
	Equal variances assumed	-.734	292.449	.463
Stimulus2.ACC	Equal variances assumed	-1.021	696	.308
	Equal variances assumed	-1.036	629.408	.301
Stimulus2.RT	Equal variances assumed	-.917	696	.360
	Equal variances assumed	-.891	539.626	.373
Stimulus3.ACC	Equal variances assumed	-1.396	323	.164
	Equal variances assumed	-1.371	225.373	.172
Stimulus3.RT	Equal variances assumed	-.867	323	.387
	Equal variances assumed	-8.39	215.578	.402
Stimulus4.ACC	Equal variances assumed	-1.350	213	.178
	Equal variances assumed	-1.386	199.942	.167
Stimulus4.RT	Equal variances assumed	-1.672	213	.096
	Equal variances assumed	-1.573	144.787	.118

Table 28
Anglo-Saxon/Germanic (Non-Word)

	Language Status	N	Mean	Std. Deviation	Std. Error Mean
ACC	Non-romance language speakers	600	.55	.498	.020
	Romance language speakers	375	.53	.500	.026
RT	Non-romance language speakers	600	981.56	718.214	29.321
	Romance language speakers	375	1122.22	676.952	34.958
Stimulus1.ACC	Non-romance language speakers	272	.63	.484	.029
	Romance language speakers	176	.70	.458	.034
Stimulus1.RT	Non-romance language speakers	272	1005.18	638.824	38.734
	Romance language speakers	176	1137.34	560.605	42.257
Stimulus2.ACC	Non-romance language speakers	0 ^b	.	.	.
	Romance language speakers	0 ^b	.	.	.
Stimulus2.RT	Non-romance language speakers	0 ^b	.	.	.
	Romance language speakers	0 ^b	.	.	.
Stimulus3.ACC	Non-romance language speakers	155	.03	.159	.013
	Romance language speakers	92	.00	.00	.000
Stimulus3.RT	Non-romance language speakers	155	736.52	424.568	34.102
	Romance language speakers	92	800.79	549.427	57.282
Stimulus4.ACC	Non-romance language speakers	173	.90	.306	.023
	Romance language speakers	107	.71	.456	.044
Stimulus4.RT	Non-romance language speakers	173	1163.97	950.563	72.270
	Romance language speakers	107	1373.73	827.638	80.011

Table 29

Anglo-Saxon/Germanic (Non-Word) T-Test

		t	df	p
ACC	Equal variances assumed	.508	973	.612
	Equal variances assumed	.507	791.976	.612
RT	Equal variances assumed	-3.041	973	.002
	Equal variances assumed	-3.083	829.116	.002
Stimulus1.ACC	Equal variances assumed	-1.655	446	.099
	Equal variances assumed	-1.675	388.628	.095
Stimulus1.RT	Equal variances assumed	-2.242	446	.025
	Equal variances assumed	-2.305	407.053	.022
Stimulus3.ACC	Equal variances assumed	1.555	245	.121
	Equal variances assumed	2.020	154.000	.045
Stimulus3.RT	Equal variances assumed	-1.029	245	.305
	Equal variances assumed	-.964	155.402	.336
Stimulus4.ACC	Equal variances assumed	4.076	278	.000
	Equal variances assumed	3.726	165.498	.000
Stimulus4.RT	Equal variances assumed	-1.883	278	.061
	Equal variances assumed	-1.945	247.849	.053

Table 30
Latin (Word)

	Language Status	N	Mean	Std. Deviation	Std. Error Mean
ACC	Non-romance language speakers	1028	.64	.479	.015
	Romance language speakers	680	.70	.460	.018
RT	Non-romance language speakers	1028	917.44	714.405	22.282
	Romance language speakers	680	1003.33	811.908	31.135
Stimulus1.ACC	Non-romance language speakers	0 ^b	.	.	.
	Romance language speakers	0 ^b	.	.	.
Stimulus1.RT	Non-romance language speakers	0 ^b	.	.	.
	Romance language speakers	0 ^b	.	.	.
Stimulus2.ACC	Non-romance language speakers	256	.89	.318	.020
	Romance language speakers	153	.87	.338	.027
Stimulus2.RT	Non-romance language speakers	256	700.89	439.039	27.440
	Romance language speakers	153	731.68	714.621	57.774
Stimulus3.ACC	Non-romance language speakers	391	.66	.473	.024
	Romance language speakers	272	.71	.453	.027
Stimulus3.RT	Non-romance language speakers	391	912.34	786.335	39.767
	Romance language speakers	272	964.22	677.664	41.089
Stimulus4.ACC	Non-romance language speakers	381	.46	.499	.026
	Romance language speakers	255	.58	.495	.031
Stimulus4.RT	Non-romance language speakers	381	1065.47	749.548	38.401
	Romance language speakers	255	1208.03	937.259	58.693

Note: b= t cannot be computed because at least one group is empty

Table 31
Latin (Word) T-Test

		t	df	p
ACC	Equal variances assumed	-2.278	1706	.023
	Equal variances assumed	-2.297	1494.538	.022
RT	Equal variances assumed	-2.329	1706	.020
	Equal variances assumed	-2.269	1323.136	.023
Stimulus2.ACC	Equal variances assumed	.524	407	.600
	Equal variances assumed	.516	304.065	.606
Stimulus2.RT	Equal variances assumed	-.540	407	.590
	Equal variances assumed	-.481	221.591	.631
Stimulus3.ACC	Equal variances assumed	-1.316	661	.189
	Equal variances assumed	-1.326	598.312	.185
Stimulus3.RT	Equal variances assumed	-.884	661	.377
	Equal variances assumed	-.907	631.464	.365
Stimulus4.ACC	Equal variances assumed	-2.911	634	.004
	Equal variances assumed	-2.915	547.602	.004
Stimulus4.RT	Equal variances assumed	-2.123	634	.034
	Equal variances assumed	-2.032	461.472	.043

Table 32
Latin (Non-Word)

	Language Status	N	Mean	Std. Deviation	Std. Error Mean
ACC	Non-romance language speakers	473	.57	.496	.023
	Romance language speakers	307	.52	.500	.029
RT	Non-romance language speakers	473	965.20	706.552	32.487
	Romance language speakers	307	1014.08	608.490	34.728
Stimulus1.ACC	Non-romance language speakers	289	.70	.458	.027
	Romance language speakers	187	.67	.470	.034
Stimulus1.RT	Non-romance language speakers	289	980.24	644.460	37.909
	Romance language speakers	187	1087.05	588.318	43.022
Stimulus2.ACC	Non-romance language speakers	92	.00	.000 ^b	.00
	Romance language speakers	61	.00	.000 ^b	.00
Stimulus2.RT	Non-romance language speakers	92	669.92	355.377	37.051
	Romance language speakers	61	635.77	291.255	37.291
Stimulus3.ACC	Non-romance language speakers	10	.00	.000 ^b	.00
	Romance language speakers	15	.00	.000 ^b	.00
Stimulus3.RT	Non-romance language speakers	10	568.40	246.972	78.100
	Romance language speakers	15	686.67	283.285	73.144
Stimulus4.ACC	Non-romance language speakers	82	.79	.408	.045
	Romance language speakers	44	.77	.424	.064
Stimulus4.RT	Non-romance language speakers	82	1291.90	1027.762	113.497
	Romance language speakers	44	1340.05	787.980	118.792

Note: b= t cannot be computed because the standard deviation of both groups are 0

Table 33

Latin (Non-Word) T-Test

		t	df	p
ACC	Equal variances assumed	1.245	778	.213
	Equal variances assumed	1.243	649.572	.214
RT	Equal variances assumed	-.996	778	.320
	Equal variances assumed	-1.028	718.955	.301
Stimulus1.ACC	Equal variances assumed	.659	474	.510
	Equal variances assumed	.655	389.701	.513
Stimulus1.RT	Equal variances assumed	-1.827	474	.068
	Equal variances assumed	-1.863	422.479	.063
Stimulus2.RT	Equal variances assumed	.624	151	.533
	Equal variances assumed	.650	144.246	.517
Stimulus3.RT	Equal variances assumed	-1.074	23	.294
	Equal variances assumed	-1.105	21.218	.281
Stimulus4.ACC	Equal variances assumed	.258	124	.797
	Equal variances assumed	.255	85.174	.799
Stimulus4.RT	Equal variances assumed	-.271	124	.787
	Equal variances assumed	-.293	109.082	.770

Table 34
Overall Word

	Language Status	N	Mean	Std. Deviation	Std. Error Mean
ACC	Non-romance language speakers	1986	.68	.465	.010
	Romance language speakers	1296	.74	.438	.012
RT	Non-romance language speakers	1986	890.68	649.717	14.579
	Romance language speakers	1296	961.16	741.942	20.603
Stimulus1.ACC	Non-romance language speakers	204	.97	.182	.013
	Romance language speakers	132	1.00	.00	.000
Stimulus1.RT	Non-romance language speakers	204	753.45	390.442	27.336
	Romance language speakers	132	784.28	366.252	31.878
Stimulus2.ACC	Non-romance language speakers	673	.85	.359	.014
	Romance language speakers	434	.86	.348	.017
Stimulus2.RT	Non-romance language speakers	673	747.49	485.961	18.732
	Romance language speakers	434	785.42	638.790	30.663
Stimulus3.ACC	Non-romance language speakers	600	.53	.499	.020
	Romance language speakers	388	.61	.489	.025
Stimulus3.RT	Non-romance language speakers	600	977.91	778.199	31.770
	Romance language speakers	388	1028.49	735.758	37.352
Stimulus4.ACC	Non-romance language speakers	509	.53	.499	.022
	Romance language speakers	342	.64	.481	.026
Stimulus4.RT	Non-romance language speakers	509	1032.19	705.906	31.289
	Romance language speakers	342	1176.05	896.434	48.474

This table shows that overall romance language speakers scored higher in accuracy.

Table 35
Overall Word T-Test

		t	df	p
ACC	Equal variances assumed	-3.477	3280	.001
	Equal variances assumed	-3.520	2880.971	.000
RT	Equal variances assumed	-2.870	3280	.004
	Equal variances assumed	-2.792	2505.974	.005
Stimulus1.ACC	Equal variances assumed	-2.159	334	.032
	Equal variances assumed	-2.686	203.000	.008
Stimulus1.RT	Equal variances assumed	-.724	334	.469
	Equal variances assumed	-.734	292.449	.463
Stimulus2.ACC	Equal variances assumed	-.504	1105	.614
	Equal variances assumed	-.508	944.415	.612
Stimulus2.RT	Equal variances assumed	-1.118	1105	.264
	Equal variances assumed	-1.056	749.271	.291
Stimulus3.ACC	Equal variances assumed	-2.322	986	.020
	Equal variances assumed	-2.333	838.775	.020
Stimulus3.RT	Equal variances assumed	-1.019	986	.308
	Equal variances assumed	-1.032	859.014	.303
Stimulus4.ACC	Equal variances assumed	-3.138	849	.002
	Equal variances assumed	-3.162	750.250	.002
Stimulus4.RT	Equal variances assumed	-2.611	849	.009
	Equal variances assumed	-2.493	612.925	.013

This table illustrates some significant interactions.

Table 36
Overall Non-Word

	Language Status	N	Mean	Std. Deviation	Std. Error Mean
ACC	Non-romance language speakers	1073	.56	.497	.015
	Romance language speakers	682	.53	.500	.019
RT	Non-romance language speakers	1073	974.35	712.811	21.761
	Romance language speakers	682	1073.54	648.804	24.844
Stimulus1.ACC	Non-romance language speakers	561	.67	.472	.020
	Romance language speakers	363	.69	.464	.024
Stimulus1.RT	Non-romance language speakers	561	992.33	641.282	27.075
	Romance language speakers	363	1111.43	574.807	30.170
Stimulus2.ACC	Non-romance language speakers	92	.00	.000 ^a	.000
	Romance language speakers	61	.00	.000 ^a	.000
Stimulus2.RT	Non-romance language speakers	92	669.92	355.377	37.051
	Romance language speakers	61	635.77	291.255	37.291
Stimulus3.ACC	Non-romance language speakers	165	.02	.154	.012
	Romance language speakers	107	.00	.000	.000
Stimulus3.RT	Non-romance language speakers	165	726.33	417.413	32.496
	Romance language speakers	107	784.79	520.900	50.357
Stimulus4.ACC	Non-romance language speakers	255	.86	.345	.022
	Romance language speakers	151	.73	.446	.036
Stimulus4.RT	Non-romance language speakers	255	1205.11	975.859	61.111
	Romance language speakers	151	1363.91	813.810	66.227

This table shows that non-romance language speakers scored higher in accuracy when presented with non-words stimuli.

Table 37

Overall Non-Word T-Test

		t	df	p
ACC	Equal variances assumed	1.208	1753	.227
	Equal variances assumed	1.206	1444.047	.228
RT	Equal variances assumed	-2.941	1753	.003
	Equal variances assumed	-3.003	1547.958	.003
Stimulus1.ACC	Equal variances assumed	-.698	922	.485
	Equal variances assumed	-.701	782.529	.484
Stimulus1.RT	Equal variances assumed	-2.870	922	.004
	Equal variances assumed	-2.938	831.327	.003
Stimulus2.RT	Equal variances assumed	.624	151	.533
	Equal variances assumed	.650	144.246	.517
Stimulus3.ACC	Equal variances assumed	1.624	270	.105
	Equal variances assumed	2.019	164.000	.045
Stimulus3.RT	Equal variances assumed	-1.022	270	.308
	Equal variances assumed	-.975	191.228	.331
Stimulus4.ACC	Equal variances assumed	3.391	404	.001
	Equal variances assumed	3.178	255.922	.002
Stimulus4.RT	Equal variances assumed	-1.683	404	.093
	Equal variances assumed	-1.762	360.039	.079

This table shows us some significant interactions.

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