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„Phonaesthetics & Familiarity: The Influence of L1 on Language Perception“

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To my grandparents, who are the light that surrounds me and resides within me.

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Abstract

It is usually assumed that some languages are aesthetically more appealing than others; for example, it is often claimed that Italian sounds much more beautiful than German (Giles et al., 1974). Phonaesthetics is the subfield of phonetics concerned with these aesthetic properties of speech sounds (Crystal, 2008). This thesis delves into language perception and its relationship with familiarity, aiming to replicate and expand prior studies in Phonaesthetics led by Susanne Reiterer and the Phonaesthetics Research group in Vienna. Specifically, the research investigates how participants with a first language (L1) typologically unrelated to Indo-European languages evaluate the aesthetic characteristics of certain Indo-European languages. To achieve this, two distinct speaker populations were compared: a speaker population of a European language and speaker population of a non-European language. The former comprised native German speakers, while the latter consisted of native Chinese speakers. This study conducted an online experiment, incorporating two sets of twenty-three voice recordings narrating the fable "The Northwind and the Sun" in various European languages. In the initial segment of the experiment, participants provided demographic information. Subsequently, they listened to one of the two sets of twenty-three diverse voice recordings in different European languages. Based on their impressions, participants rated four aesthetic categories for each language—Eros, Beauty, Status, and Order—using a scale ranging from 1 to 100. Participants also identified whether the language sounded familiar, rated the voice of the speaker on the same scale, and concluded by indicating the language or family language they believed they heard, along with speculating on the language(s) or family language of a close relative. The findings indicated that participants' first language did not notably impact language preferences. German speakers demonstrated greater familiarity with the languages used in the experiment, recognizing them in 20% of attempts, while Chinese speakers recognized them in only 3% of attempts. Despite this discrepancy in familiarity, familiarity did not exert a major influence on the evaluation of the languages. Notably, the languages' ratings given by both groups of speakers exhibited a positive correlation, suggesting some cross-cultural agreement in phonaesthetical evaluations, particularly in terms of Eros and Voice of the speaker. These results support an equalitarian perspective of languages and underscore the cross-cultural impact of voice on language preferences.

Kurze Zusammenfassung

Es wird in der Regel angenommen, dass einige Sprachen ästhetisch ansprechender sind als andere; beispielsweise wird oft behauptet, dass Italienisch viel schöner klingt als Deutsch (Giles et al., 1974). Die Phonaesthetik ist das Teilgebiet der Phonetik, das sich mit diesen ästhetischen Eigenschaften von Sprachlauten befasst (Crystal, 2008). Diese Arbeit untersucht die Sprachwahrnehmung und ihre Beziehung zur Vertrautheit mit dem Ziel, frühere Studien zur Phonaesthetik zu replizieren und zu erweitern, die von Susanne Reiterer und der *Phonaesthetics Research Group in* Vienna geleitet wurden. Konkret untersucht die Forschung, wie Teilnehmer mit einer Erstsprache (L1), die typologisch nicht mit indogermanischen Sprachen verwandt ist, die ästhetischen Eigenschaften bestimmter indogermanischer Sprachen bewerten. Um dies zu erreichen, wurden zwei verschiedene Sprechergruppen verglichen: eine Sprecherpopulation einer europäischen Sprache und eine Sprecherpopulation einer nichteuropäischen Sprache. Erstere bestand aus muttersprachlichen Deutschsprechern, während die letztere aus muttersprachlichen Chinesischsprechern bestand. Diese Studie führte ein Online-Experiment durch, bei dem zwei Sätze von dreiundzwanzig Sprachaufnahmen, die die Fabel "Der Nordwind und die Sonne" in verschiedenen europäischen Sprachen erzählten, integriert wurden. Im ersten Abschnitt des Experiments gaben die Teilnehmer demografische Informationen an. Anschließend hörten sie sich einen der beiden Sätze von dreiundzwanzig verschiedenen Sprachaufnahmen in verschiedenen europäischen Sprachen an. Basierend auf ihren Eindrücken bewerteten die Teilnehmer für jede Sprache vier ästhetische Kategorien - Eros, Schönheit, Status und Ordnung - auf einer Skala von 1 bis 100. Die Teilnehmer gaben auch an, ob die Sprache ihnen vertraut klang, bewerteten die Stimme des Sprechers auf derselben Skala und schlossen damit ab, indem sie angaben, welche Sprache oder Familiensprache sie glaubten, gehört zu haben, sowie Spekulationen über die Sprache(n) oder Familiensprache eines nahen Verwandten anstellten. Die Ergebnisse deuteten darauf hin, dass die Erstsprache der Teilnehmer die Sprachvorlieben nicht wesentlich beeinflusste. Deutschsprechende zeigten eine größere Vertrautheit mit den im Experiment verwendeten Sprachen und erkannten sie in 20% der Versuche, während Chinesischsprechende sie nur in 3% der Versuche erkannten. Trotz dieses Unterschieds in der Vertrautheit hatte die Vertrautheit keinen signifikanten Einfluss auf die Bewertung der Sprachen. Bemerkenswerterweise zeigten die Bewertungen der Sprachen beider Sprechergruppen eine positive Korrelation, was auf eine gewisse kulturübergreifende Übereinstimmung bei phonaesthetischen Bewertungen hinweist, insbesondere in Bezug auf Eros und die Stimme des Sprechers. Diese Ergebnisse unterstützen eine egalitäre Perspektive der Sprachen und unterstreichen den kulturübergreifenden Einfluss der Stimme auf Sprachvorlieben.

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1. Introduction

It is assumed that certain languages are aesthetically more appealing than others, for example, it is often claimed that Italian sounds much more beautiful than German (Giles et al., 1974), even Emperor Charles V once claimed: “I speak Spanish to God, Italian to women, French to men, and German to my horse” (Brunner, 2014).

Research in Cognitive Science has found that familiarity influences affective preference for a stimulus (Leder et al., 2014; Moreland & Topolinski, 2010; Reber et al., 2004, etc.,). This thesis seeks to delve into language perception and its connection to familiarity, specifically, exploring how first language (L1) influences phonaesthetical preferences.

Phonaesthetics is a subfield of phonetics intersecting with aesthetics that is interested in the aesthetic properties of speech sounds (Crystal, 2008). In previous phonaesthetical studies, participants with different L1 listened to various European languages and evaluated them from a phonaesthetical perspective. In these studies, it was found that aesthetical evaluations of a language are influenced by familiarity with the language. (Reiterer et al., 2020; Kogan & Reiterer, 2021). This thesis aims to replicate the previous studies conducted by the Phonaesthetics Research Group, about phonaesthetical perception of languages but with a particular interest in familiarity. The participants in the past studies consisted of listeners whose L1 was related to some of the languages used as stimuli in the experiment. This project seeks to diminish familiarity by selecting listeners whose L1 is not typologically related to any of the languages of the experiment. The results will then be compared with those of listeners whose L1 is typologically related to the stimuli. In this context, it is anticipated that aesthetic evaluations of languages will differ between the groups. These populations will consist of native Chinese speakers and native German speakers.

The first part of this master’s thesis delves into the domain of aesthetics and its study from a scientific lens. This is when the concept of Phonaesthetics is introduced. Subsequently, linguistic attitudes are addressed, topic that appertains to the field of Sociolinguistics. Here, the hypotheses explaining whether language preferences arise from inherent linguistic traits or from the social connotations associated with them are exposed. Then some studies attempting to validate these hypotheses are presented. After this, the topic of familiarity and its relationship with cognition comes into question, which is primarily addressed from the Psychology and Neuroscience fields. Various proposals trying to elucidate how familiarity influences the perception of a stimulus, particularly impacting our preferences, are explained. In the next section, a panorama unfolds presenting different studies on the influence of familiarity in different areas

such as art, music, food, etc. The last part of the theoretical section focuses on the Chinese language, given that the main population of this research comprises native Chinese speakers. This part concerns the field of Linguistics and Psycholinguistics, briefly describing the characteristics of the language. Additionally, it provides an overview of research about phonetic perception of a language in a Chinese population. After the theoretical part, the hypothesis of this thesis is empirically addressed. The thesis methodology, the participants, the stimuli, the experiment, etc. are described. Demographic data is then presented. The subsequent part shows the obtained results. Finally, the discussion and the conclusions are unfolded.

This thesis combines different disciplines such as Linguistics, Psycholinguistics, Sociolinguistics, Neuroscience, Psychology, Aesthetics, all disciplines that pertain to the Cognitive Sciences and that make this thesis of interdisciplinary nature.

2. Aesthetics

Aesthetics is commonly considered a branch of philosophy that comprises the nature of art and the appreciation of beauty (Leder et al., 2004). According to Reber (2004), beauty can be defined as a pleasurable subjective experience that is directed toward an object. Because of this, beauty has been considered a synonym of aesthetic pleasure. Beauty has acquired different perspectives since ancient times, for instance, the objectivist view and the subjectivist view. The first one conceives beauty as a property of an object that elicits a pleasurable experience in the perceiver (Tatarkiewicz, as cited in Reber, 2004); contrary to this, the subjectivist view conceives beauty as a function of idiosyncratic qualities of the perceiver. According to the latter perspective, beauty is relative since it depends on history and culture (Tatarkiewicz, 1970; Kubovy, 2000, as cited in Reber, 2004). Later, in addition to the objectivist and subjectivist perspectives, the interactionist view was introduced. It claims that the sense of beauty emerges from patterns in the way people and objects relate. This proposal suggests that aesthetic judgements are affected by these processing dynamics (Reber, 2004).

Aesthetic experiences have been associated with art throughout tradition, nonetheless, they not only concern art. In recent years, aesthetics has been a subject of matter for scientists, specifically, in the sciences of the mind (Leder et al., 2004; Leder & Nadal, 2014). With the objective of understanding the cognitive-processes stages involved in the aesthetic experience, an information-processing model of the aesthetic experience was developed by Leder et al., (2004). The model comprises five distinct stages that involve various cognitive analyses, i.e., perception, explicit classification, implicit classification, cognitive mastering, and evaluation.

According to the model, the affective state of the initial state of the perceiver has an important influence on the aesthetic experience, therefore, the context of the aesthetic experience is crucial for the process. The context influences the pre-classification of the perceived stimulus. After this pre-classification, the stages perception and explicit classification take place and simple judgements of aesthetic preference are active. In the third stage i.e., implicit memory integration, the aesthetic processing is affected by all the features that have not yet become conscious. One of the most studied features is familiarity. Research has found that familiarity influences affective preference for a stimulus (Leder et al., 2014). The fourth stage is explicit classification, which is related to the process being affected by the expertise and knowledge of the perceiver. Finally, the last stage is cognitive mastering and evaluation. This final stage relates to an achieved success due to self-rewarding cognitive experiences, such as satisfying understanding, successful cognitive mastering or expected changes in levels of ambiguity. Also, the understanding of the aesthetic phenomenon results in an activation of the rewarding centers in the brain and this activation prompts affective and emotional processing (Blood & Zatorre, 2001; Maffei & Fiorentini, 1995; Zeki, 1999, as cited in Leder et al., 2004).

The model by Leder et al., (2004) proposes that the result of every processing stage can increase or decrease the affective state. It depends on the success in cognitive mastering results. If this is successful, the changes in the affective state are positive and a state of pleasure and satisfaction is achieved. The affective state of a perceiver is evaluated and once a satisfactory state is fulfilled, the processing is stopped by the perceiver.

The model recognizes two outputs: aesthetic emotion and aesthetic judgments. The aesthetic judgments rely on success and evaluation in the cognitive mastering stage. Based on this model, Leder et al. (2004, p,493) define an aesthetic experience as a cognitive process that is accompanied by continuously upgrading affective states that vice versa are appraised, resulting in an (aesthetic) emotion.

In the end, research has revealed that an aesthetic experience is a matter of different dynamics. Leder & Nodal (2014) conclude that “the appreciation of art and aesthetics are the result of neural processes that also enable many other cognitive capacities and experiences” (p,457).

2.1 Phonaesthetics

Phonaesthetics is a subfield of phonetics that can be defined as the study of the expressive properties of sound (Crystal, 1995). The term was coined by the linguist and author J.R.R. Tolkien (Robbins, 2013). Even if research in aesthetics has commonly been associated with arts

(especially in the visual arts), an interest in the relationship between aesthetics and the sound of languages has been latent and has given rise to important research.

3. Language Attitudes

3.1 The Inherent-value Hypothesis & the Imposed-norm Hypothesis

It has been assumed that certain languages are aesthetically more appealing than others, for example, it is often claimed that Romance languages sound much more beautiful than Germanic languages; that Italian is beautiful, and that German is ugly (Giles et al., 1974). It is evident that some languages or varieties of languages i.e., dialects or accents, are perceived as more appealing than others. Two main theories attempt at explaining the reason behind these language preferences: the inherent-value hypothesis and the imposed-norm hypothesis.

The *inherent-value hypothesis* argues that the sound of the traits of languages makes them inherently aesthetically attractive. If this hypothesis is true, it means that, to the human ear, there are languages naturally pleasant and languages naturally unpleasant (Giles, 1974). This hypothesis also implies that certain linguistic characteristics, such as individual sounds or classes of sounds are shared cross-linguistically (Hilton et., 2021).

In contrast, the *imposed-norm hypothesis* claims that languages could be perceived as more aesthetically pleasant not because of their linguistic traits but because of their social traits (Giles, 1974). This hypothesis states that the aesthetical evaluations of a language are a result of cultural norms and social conventions. Later it was claimed that the aesthetical perception of languages is also dependent on the context in which these languages are embedded. This last argument led Giles (1978) to originate the *social connotation hypothesis*, an extension of the imposed-norm hypothesis. It states that assessments of a language can only be made if there is some recognition of the social connotations of the language (Halliday et al., 1964, as cited in Trudgill, 1976). This means that judgements about a language depend significatively on the social attributes that the listeners or speakers of a language attach to it. As Edwards (1999) points out, it is the characteristics that reflect perceptions of social belonging that determine the evaluations toward the speakers.

These evaluative reactions to language are called *language attitudes.* According to social psychology, *attitudes* can be conceptualized as a function of beliefs of people about an attitude object and their evaluations of those beliefs, e.g., Italian is beautiful and beautiful is good. Language attitudes entail the social meanings that people attribute to language and its speakers (Albarracin et al., 2018; Dragojevic, 2021).

Two sequential cognitive processes seem to be involved in language attitudes: social categorization and stereotyping (Dragojevic, 2021). The process of social categorization occurs when a listener makes judgements about a speaker based on their linguistic cues, which reflect the social belonging of speakers. Then, listeners infer the social belonging of the speaker and the stereotypical traits associated with the social belonging are attributed to the speakers. This does not mean, nonetheless, that the evaluative reactions to languages remain the same. Social conventions are always fluctuating. Some languages can precipitately become more attractive than others. For instance, if a community of speakers of a certain language acquires significant importance (economical, political, cultural, etc.), it is highly likely that the attributes that are held toward that language are modified. If the influence of the community of the speakers of the language is positive, the language then becomes privileged, and it is usually perceived and evaluated as aesthetically more pleasant and vice versa (Leeman et al., 2015).

3.2 Imposed-norm Hypothesis

There are a few studies that aim at investigating why certain languages or varieties of languages are considered more aesthetically pleasant than others. To test any of these two hypotheses, it is important to take into consideration previous exposure to a language. The less exposed someone is to the languages, the more reliable their evaluation toward the languages is.

In a study by Giles et al. (1974b), two different Greek accents were studied: Athenian and Cretan. To Greek speakers, Athenian is more prestigious than Cretan Greek and therefore, it is considered more attractive than Cretan. In the study, both accents were aesthetically evaluated by British listeners, who were unfamiliar with the language varieties. The results revealed no significant difference between Cretan and Athenian regarding the pleasantness of the accents.

Another remarkably similar study by Giles et al., (1974a) almost replicated the previous study but in this case, different varieties of French were evaluated by listeners from Wales. Speakers of Canadian French perceive their dialects as aesthetically less pleasant than the European French dialects, however, for the Welsh speakers, the two dialects sounded equally pleasant. The results of the study revealed that listeners did not show any inclination for any of the French varieties when evaluating them aesthetically.

The research conducted by Leeman et al., (2015) supports the latter studies. Two Swiss German dialects were aesthetically evaluated: Bern Swiss German and Thurgau. Bern Swiss is perceived as aesthetically more appealing than Thurgau Swiss. In the study, participants unfamiliar with the dialects listened to them and provided aesthetic ratings. The findings revealed that the participants did not exhibit a preference for either of the presented dialects. The authors

argue that this lack of preference may be attributed to the fact that the population did not associate any specific social connotations with the dialects.

The results of these different studies provide evidence to the *imposed-norm hypothesis*, suggesting that pleasantness of a language is dependent on the exposure to the languages and the social connotations that the speakers hold toward them.

3.3 Inherent-value Hypothesis

However, there is also research that does not exclude the *inherent-value hypothesis* and provides evidence for it.

In a study by Moreau et al. (2014), two distinct groups listened to Senegalese Wolof. The first group encompassed Wolof speakers and the second one non-Wolof listeners. The latter group consisted of European listeners whose native language was either Catalan, French, Portuguese, Italian or Icelandic. All the participants were unfamiliar with the Wolof language. The listeners listened to different Wolof recordings and inferred the social status of the speakers. The results revealed that the average of correct answers regarding the status of the speakers, was considerably high in Senegalese and European participants, with just a slight difference between the responses of both groups. The authors ponded the dilemma of whether some cross-linguistic traits, i.e., verbal fluency and control of vocal intensity and confidence and assertiveness, denote prestige because the traits are inherently valuable or because the value is socially attributed. Nonetheless, given that the European listeners did not have any knowledge about the sociolinguistic traits of Senegalese Wolof, it might be that the linguistic traits previously mentioned, cause certain language varieties to be perceived as more prestigious. This study allows the *imposed-norm hypothesis* and the *inherent-value hypothesis* to be reconsidered.

The research by Hilton et al. (2021) is one of the most recent studies that tests the *imposed-norm hypothesis* and the *inherent-value hypothesis*. In the investigation, two typologically related languages were studied: Swedish and Danish. For the experiment, a matched-guise test[1] was designed and was conducted with standard Chinese-speaking participants with no previous exposure to Scandinavian languages. The participants listened to

[1] The matched-guise test was developed by Lambert et al., (1960) that "consists of lexically identical speech samples from a balanced bilingual speaker. The recordings of the bilingual are played interspersed with other recordings (distractors) to avoid listeners being aware of hearing the same speaker twice. Listeners are then asked to evaluate the speakers that they are hearing for different personality traits […]. By eliciting evaluations about the speakers rather than the languages themselves, the listeners are less likely to base their evaluation on overtly held stereotypes, and possibly instead on privately held opinions. In addition, since the two varieties spoken by the bilingual are in fact produced by the same speaker, language usage is the only feature that is being evaluated (and not voice characteristics, for instance)" (Hilton et al., 2021).

different recordings in Swedish and Danish and evaluated the speaker aesthetically. In Scandinavia, Swedish culture has a higher reputation than Danish culture and the social connotations that exist toward these civilizations are mirrored in the languages. Swedish language holds more prestige than Danish language. The results of this experiment revealed that Swedish was evaluated more positively than Danish by the Chinese listeners. Considering that the listeners of the experiment were not familiar with the languages, it can be assumed that the evaluations of them were merely based on the recordings, this means, on the phonetics of each language. The results could imply that maybe it is not only the language attitudes that make Swedish a preferred language but the traits of the language. Different than Danish, Swedish employs an extensive pitch range and is a pitch-accent language, therefore, it is considered a language with a lively intonation (Hilton et al., 2021).

Since it has been suggested that a varied speech is perceived as more attractive than a monotonous speech (Van Bezooijen, 1988, as cited in Hilton et al., 2021), the authors of the investigation speculated that the vivacity of Swedish speech could explain the outcome of the study, so with the intention of exploring whether the intonation of the languages influenced the perception of the listeners, a follow-up experiment was conducted. In this part of the study, the recordings of the first study were monotonized so that the intonation between Danish and Swedish was aligned. The experiment was presented to Mandarin speakers, different from the ones of the first experiment. Interestingly, the results of the follow-up experiment showed that the ratings of the monotonized Swedish and Danish were not significantly different. Swedish was judged only slightly more positive than Danish. The results demonstrated that pitch has an influence on the perceptions and the evaluations of both languages, meaning that listeners that are unfamiliar with a language can show a preference toward the sounds of them (Hilton et al., 2021). However, linguistic features in Swedish are not necessarily universally pleasing. As the authors of the research mention, “the higher degree of variation in pitch contours in Swedish could be an attractive trait to Chinese listeners due to the relative importance of tone in their native language” (Hilton et al., 2021, p,15). Chinese is a tonal language; hence, it could be that Chinese listeners find features in Swedish attractive because they are familiar with the sounds of that language. That being the case, there is still the question whether there are linguistic traits that are inherently pleasant.

Another important research that explores the phonaesthetical perception of language was conducted by Susanne Reiterer et al., (2020) and involves the aesthetic evaluation of 16 European languages. The auditory stimuli for evaluation were recordings of Aesop’s fable *The North Wind and the Sun* narrated by native speakers. The languages represented four language

families: Romance (French, Italian, Spanish, and Catalan); Germanic (German, English, Icelandic, and Danish); Slavic (Russian, Polish, Serbo-Croatian, and Ukrainian) and other smaller languages or isolates (Hungarian, Greek, Basque, and Welsh). Participants' first languages (L1s) included Slovenian, German, English, Serbo-Croatian, Finnish, Italian, Kazakh, and Portuguese. The speaker population consisted of an equal distribution of male and female voices. Listeners were tasked to rate 22 binary characteristics of language aesthetics, such as Beauty, Coolness, Culture, Elegance, Eroticism, Fashion, Fun, Generosity, Importance, Intelligence, Melody, Memorability, Orderliness, Pleasantness, Romanticism, Seductiveness, Sexiness, Softness, Status, Sweetness, Wealth, and Welcomeness. Three other variables were considered for the analysis: guess success, recognition rate and voice of the speaker. The study conducted an explanatory factor analysis, initially resulting in five categories: Beauty, Status, Eros, Orderliness, and Sweetness. However, Sweetness was later merged into the Beauty category, resulting in four final factors: "Erotic/Sexy", "Beautiful/Sweet", "Status," and "Orderly/Structured".

The findings highlighted two main factors influencing listeners' aesthetic evaluations: voice likability and familiarity. A strong correlation was observed between Voice and Beauty, Eros, Status, and Orderliness. Moreover, the likability ratings between female and male voices were significantly different, with a preference for female voices. In terms of familiarity, participants derived more pleasure from listening to languages they recognized. Notably, listeners did not show preference for languages that were their L1 or closely related to it. Instead, languages associated with foreign, or second language-learning experience were favored. The authors came to the conclusion that: "familiarity effect is not a result of L1 or cultural entrenchment, but of foreign language learning (FLL) habits in terms of cultural and educational L2 language" (Reiterer et al., 2020, p, 186). The languages that sounded exotic but that at the same time sounded familiar, were the most favored ones. This phenomenon is known as the "exotic touch".

Another study by Kogan & Reiterer (2021) was published as an extension of the previous one. The results of this research revealed that aesthetical evaluations of a language are influenced by different factors, e.g., phonetic complexity, musical acoustic properties, musical expertise of the listener, speaker's voice characteristics and familiarity with the language (Kogan & Reiterer., 2021).

The last research by Phonaesthetics Research Group was conducted by Winkler, Kogan and Reiterer (2023). This study was also an extension of previous studies. The objective of it was to portrait the effects of personality traits in language ratings. In the study twenty-three languages were evaluated in terms of erotism, beauty, status, and orderliness. The results showed that Romance languages were rated higher in terms of erotism, but Germanic languages were rated

higher in terms of Status. Regarding the personality traits, it was found that personality has an impact on language perception, however, other individual differences such as familiarity with the languages and native language (L1) of the participants influence personality traits as well.

The most recent study in the field of Phonaesthetics is the research by Anikin et al., (2023). In this project, a corpus of recordings in hundreds of languages was used as stimuli. The recordings belonged to the soundtrack of a religious film available in hundreds of languages (https://live.bible.is). The audios were normalized for rms amplitude; long pauses were trimmed, and low-frequency noise and poor-quality recordings were removed. The final selection consisted of 2,125 recordings from 229 languages that lasted 55 to 127 seconds. For each language, 5 to 11 different recordings were used, resulting in an approximate of 11 different speakers, both male and female. The recordings were evaluated on pleasantness on a horizontal Visual Analog Scale (VAS) by three different groups: native speakers of English, Chinese (Mandarin/Cantonese, Hakka) and Semitic languages (Arabic/Hebrew/Maltese). Participants listened to the recording and then rated how much they liked the sound of the language they just heard. Then, they were asked if they recognized the language and if they did, they indicated the language geography of it. In total, participants listened to 50 random language recordings.

The findings revealed that phonesthetic preferences are influenced by a familiarity effect and by culture-specific biases (Anikin et al., 2023). To obtain better results, the analyses were replicated by excluding the languages with substantial familiarity. 20% was removed based on the distribution of reported familiarity rates. Moreover, 19 acoustic characteristics were extracted. The language scores by English, Chinese and Semitic speakers were compared. After accounting for familiarity and acoustic controls, the scores were calculated from mixed models.

The findings showed that the languages of the experiment were correlated between the rates of the groups (Pearson's r = 0.21 to 0.23) exhibiting some cross-cultural concordance in language preference. Moreover, the concordance between English Chinese, and Semitic raters increased when acoustic predictors (i.e., cepstral peak prominence, entropy, spectral novelty, pitch, and pitch variability) were controlled, suggesting some cross-cultural agreement on which languages are intrinsically beautiful (Anikin et al., 2003). These results are in line with the inherent-value hypothesis.

All these different studies aim at investigating and understanding what drives our language preferences. It has not yet been resolved whether certain languages possess inherent linguistic traits that make them more appealing or if external factors, such as familiarity, play a role. There

is still a long way to go to find an accurate answer, but the field of Phonaesthetics remains an evolving realm within the Cognitive Sciences, promising continued exploration in language aesthetics.

4. Familiarity & Cognition

As Reiterer et al., (2020) claim, in the field of Linguistics, the umbrella term *familiarity* encompasses different concepts, such as familiarity with the languages, their intelligibility, being able to understand them, recognizing or knowing or having proficiency in them (p,184). This investigation is an extension of the Phonaesthetics research by Susanne Reiterer and the Phonaesthetics Research Group, therefore, the concept of *familiarity* will be approached under the description mentioned before.

4.1 Mere Exposure Phenomenon

When studying familiarity, an important phenomenon that has been discussed for decades by psychologists comes into play, the *mere exposure phenomenon*. Robert Zajonc was one of the pioneer investigators of this phenomenon. The researcher claimed that mere repeated exposure of an individual to a stimulus enhances their attitudes toward it (Zajonc, 1968). In other words, being familiar with an object can increase the preference for it.

A large variety of studies were elaborated to support this hypothesis. The first study and one of the most popular ones, is contained in the article *Attitudinal Effects of Mere Exposure* (Zajonc, 1968) in which it is declared that we tend to use more frequently the words that have a positive meaning. In the study, a correlation between the frequency of a word and a positive sense was found. The objective of Zajonc was to determine if this correlation was based on the argument that people who are constantly exposed to positive words cause them to be preferred over other words, or that people talk more frequently about positive subjects. To learn about this, a series of experiments were carried out, in which subjects were exposed at different frequencies to novel stimuli (e.g., nonsense syllables, Chinese ideographs, photographs of male faces). After this, participants were asked to evaluate the stimuli according to their preference toward them. The results demonstrated that the stimuli that were constantly exhibited obtained the most positive evaluations, providing evidence to the mere exposure's hypothesis.

After these studies were published, the mere exposure phenomenon was under the spotlight of many scientists, who attempted to validate it. Therefore, the relationship between exposure and preference was further investigated.

4.2 Inverted U-shaped Function

Berlyne (1970) and Stang (1974) presented the two-factor model, which proposes that evaluations of encountered stimuli form an inverted U-shaped function of arousal potential (Szpunar et al., 2004). The researchers confirm the mere exposure effect. They claim that increased exposure to a stimulus increases preference toward it, however, if the stimulus has too little or too much arousal potential, the preference toward it tends to decrease. This means that the stimuli that are very familiar or very unfamiliar are not favored. The authors suggest that stimuli with intermediate levels of arousal potential are preferred.

This model is explained by two opposing processes: neophobia or “learned safety” and boredom, phenomena observed in human beings and in other animals (Sluckin et al., 1982). Neophobia is the phenomenon in which enhanced affect originates as a stimulus becomes an object of learning. The exposure to it generates acceptance. The stimulus progressively becomes more familiar and less menacing (hence, the term “learned safety”). Nevertheless, increasing exposure can cause a decrease in likability, inducing satiation since it is not possible to learn from the stimulus anymore. These processes generate the inverted U-curve that correlates liking to familiarity. In summary, the model shows an increase in liking due to neophobia, followed by a decrease in liking due to satiation (Szpunar et al., 2004).

However, studies by Sluckin et al., (1982), concluded that the inverted-U curve correlating liking to familiarity does not always occur. They realized that this correlation is revealed only under conditions of a wide range of exposure. Different studies were designed to investigate this phenomenon and based on the results, the authors proposed a theory named the *preference-feedback hypothesis*, a self-regulating mechanism that prevents stimuli from causing satiation or boredom. According to this hypothesis, there are two classes of stimuli: stimuli whose frequency of exposure depends on voluntary choice, and stimuli whose frequency of exposure is beyond voluntary control (Sluckin et al., 1982). In this manner, the relationship between likability and familiarity do not result in an inverted-U curve, but instead in a straight line: a positive correlation.

4.3 Balance Theory

As a continuation of the mere exposure effect research, the balance theory was implemented. The balance theory, proposed by Heider (1958) claims that beliefs about people comprise unit relations and sentiment relations. Unit relations signify people being together or apart, while sentiment relations denote being liked or disliked. According to this theory, greater balance is achieved when these beliefs align harmoniously; for instance, a positive unit relationship

corresponds with a positive sentiment relationship, such as the association of a married couple with love, or a divorced couple with hate (Moreland & Topolinski, 2010).

Based on Heider's balance theory, Moreland (Moreland & Topolinski, 2010) came up with the assumption that a relationship between familiarity, similarity, and liking exists. He claims that familiar people are perceived as more likable and as more similar to oneself and vice versa. In order to provide some evidence for this reasoning, some experiments were developed. In the first experiment (Moreland & Zajonc, 1982, as cited in Moreland & Topolinski, 2010), different photographs of faces were presented to participants at different exposure frequencies. Likability and familiarity to themselves was rated. The results showed that the faces that were presented more frequently received higher rates of likability and similarity. In a follow-up experiment, the same photographs were presented to the participants at the same exposure frequency. False information about how similar the faces of the pictures were to their own faces was provided. In this experiment, participants rated likability and familiarity, and the faces that were thought to be more like their own, received higher rates in both categories. The results of the studies show an association between familiarity, similarity, and liking, association denominated as "affinity" by Robert Zajonc (Moreland & Topolinski, 2010).

4.4 Perceptual Fluency

One of the most recent approaches to study the relationship between recognition and familiarity is *processing fluency*, which emerged from cognitive and social psychology. Processing fluency is the speed and efficiency of processing a stimulus (Reber et al., 2004) and it emerged as an explanation to the mere exposure phenomenon. Processing fluency is based on two assumptions, first, that repeated processing of a stimulus originates greater processing fluency and second, that a more positive effect is generated automatically by greater fluency (Moreland & Topolinski, 2010). Fluency-gains in processing results in a positive affect that induces a preference for the stimuli that are constantly being exposed.

For example, the *hedonic fluency model* by Winkielman & Cacioppo (2001), provides evidence that ease of processing correlates with positive affect. According to the authors, when processing is facilitated, it triggers a genuine affective reaction. This suggests that if the process of recognizing and interpreting a stimulus is straightforward, it tends to be more enjoyable and rewarding. Consequently, the motivation to accomplish a specific goal successfully is enhanced. When a stimulus is recognized as familiar, it is perceived as non-threatening, increasing the affinity toward it. In essence, the experience of fluency can lead to a positive emotional experience

because it signifies a favorable situation within the cognitive system or in the external world (Winkielman & Cacioppo, 2001).

According to Reber et al., (2004), recognized and novel stimuli differ from each other with respect to three parameters associated with fluency. First, familiar stimuli are processed faster than novel stimuli; second, familiar stimuli elicit less attentional orienting than novel stimuli; third, familiar stimuli have more organized processing dynamics than novel stimuli. In sum, fluency prompts positive reactions that are based on processing dynamics (e.g., repeated exposure).

But what is responsible for perceptual fluency? Is it a result of nature? Of nurture? Perceptual fluency can be explained by different theories. Apparently, humans have perceptual mechanisms that result in higher processing fluency for certain kinds of stimuli (Reber et al., 2004). However, socialization and experience play an important role too. For example, the more exposed humans are to certain frequency ratios or sounds (e.g., music), the easier it is to process them and to prefer them. Also, as another example, it has been observed that certain types of faces, e.g., average faces, are favored among newborns. The reason behind this can be that an innate processing facilitates the recognition of face-like features. Infants prefer prototypical faces until they are exposed to the different faces of their environments. This exposure to faces but also to culture and society influences the aesthetic preferences of individuals. Concisely, according to Reber et al., (2004), aesthetic preferences depend on fluency, which is driven by biology and socialization.

There is also another potential explanation for the relationship between processing fluency and preferences that has emerged in recent years. Processing fluency has also been studied through an embodied approach. Moreland & Topolinski (2010) suggest an association between the concept of fluency and embodiment, implying that stimuli are represented by covertly simulating sensorimotor responses that are connected to those stimuli. This covert simulation is repeated every time we encounter the same stimulus, causing the simulation to become more fluent. This fluency gain generates a positive affect and therefore, the stimulus that is repeatedly encountered is preferred over the stimuli that are not encountered that often. This statement proposes that it is the fluency of the embodied simulations what shapes our experiences and preferences.

In order to study embodiment and the mere exposure phenomenon, Topolinski & Strack (2009) developed a series of experiments that aimed at blocking covert stimulus of motor simulations. A decrease in the exposure effect was expected to occur when sensorimotor simulations related to an encountered stimulus were blocked. For the stimuli not associated with the blocked motor system, it was expected that they remained stable. The authors decided to

implement words as stimuli in the experiments. The reason, as they mention, is that words associated with dominant response (pronunciation) are well-established, therefore, the motor system responsible for that response (mouth) can be identified and blocked (Moreland & Topolinski, 2010). A positive effect was expected to occur due to the increased fluency of the motor simulation when pronouncing a word, leading to an inclination for the repeated words. In the first experiment, participants were presented with visual characters i.e., Chinese ideographs and ancient Greek words (nonsense words). Motor tasks were assigned to different groups and had to be performed during the experiment. One group was given a manual task (i.e., kneading a soft foam ball) and another one an oral motor task (i.e., chewing gum). Participants were asked to rate the liking of the visual stimuli. The results of this first experiment showed that the oral motor task attenuated the mere exposure effect for the words. In a second experiment, the only difference was that there was only the oral motor task, which consisted of continuously whispering the same word with the mouth shut. Just as in the first experiment, mere exposure was blocked for words. Lastly, for the third experiment, melodic stimuli were studied with the objective of approaching a different motor system and confirming that every motor simulation is related to a different motor system, for instance, that words are associated with oral muscles and that tunes with vocal folds. As the authors state, “mere exposure effects for stimuli that are associated with different motor systems depend on specific motor simulations in these different motor systems by specifically blocking motor simulations” (Topolinski & Strack, 2009, p,347). In the experiment, participants were presented with the nonsense words of the previous experiments, which they read and evaluated while listening to played tunes. Later, to block the motor simulations, participants were asked to perform a motor task: either an oral task or a vocal task. The first one consisted of tongue movements and the second one of humming “mm-hm,” a two-tone-pitch while listening to any external prompt. The results showed that, as expected, in the oral task, exposure effects were attenuated for words, while in the vocal task, mere exposure effects were attenuated for the tone sequences.

The research by Topolinski & Strack (2009) demonstrated that a certain stimulus elicits simulations of motor systems that are explicitly associated with that stimulus. When the stimulus is repeatedly encountered, the fluency of the motor simulations originates an increased preference due to the positive affect that high fluency produces. In sum, the study demonstrated that body reactions are elicited by a repeated stimulus and these dynamics of motor efference result in affective responses, i.e., preferences (Moreland & Topolinski, 2010). This correlation between embodiment, familiarity, and preferences is of great concern to the Cognitive Science and the Embodiment paradigm.

In conclusion, various theories strive to comprehend the impact of familiarity on our perception of stimuli. While no single theory fully explains this phenomenon, it is evident that exposure to a stimulus significantly influences our cognitive processes and perception of it. Emerging paradigms within the Cognitive Sciences will continue to investigate these phenomena, providing more answers that will allow us to have better understanding of our minds.

5. Familiarity

Given the observed correlation between familiarity and liking, different research in various fields aims at exploring the phenomenon. Some of these studies, specifically about familiarity and aesthetic preferences, will be mentioned in this section.

5.1 Familiarity & Arts

The study conducted by Leder (2001) investigated the relationship between familiarity and aesthetic responses to understand appreciation of art. The research consisted of five studies in which reproductions of paintings by Vincent van Gogh served as stimuli. In each study, participants appreciated several van Gogh paintings and rated how familiar these were for them and how much they liked them. The results of the studies exhibited a positive correlation between liking and familiarity, meaning that participants showed a preference for the paintings they reported as familiar. The more exposed subjects were to the paintings, the more they preferred them. The research also aimed at investigating how manipulation of knowledge influenced the evaluations of the artworks, i.e., how familiarity and likability were affected by knowing that the stimuli were either fake or non-existing van Gogh paintings. The results showed that the familiarity-liking relationship was reduced, meaning that prior knowledge about an artwork has an influence on its impressions. Additionally, it was found that prolonged exposure time to the stimuli led to a lower correlation between liking and familiarity. According to Leder (2001), it is possible that familiarity has a greater impact on aesthetic evaluations in shorter exposure times. Another explanation could be the inverted U-curve, meaning that prolonged exposure to a stimulus initially causes an increase in linking followed by a decrease in liking, forming the inverted U-curve.

Another example of research in familiarity and painting is the one conducted by Cutting (2006) which was centered on the relationship between repeated exposure to art and preference. In the study, pairs of French Impressionist images were presented to participants. The images were selected based on their reproduction frequency, i.e., how often they were found in different art books. Participants were asked to indicate which image from the pair they preferred. The

researcher found that, among the pair, participants preferred the image that was more frequently reproduced. The findings suggest that repeated exposure to specific images creates and reinforces preferences.

5.2 Familiarity & Literature

With respect to literature, the neuroscientific study by Bohrn et al. (2012) aimed at investigating the neural correlates of aesthetic evaluation of literature. In the experiment, participants were requested to read one-line proverbs/sentences, in an MRI scanner, followed by a fixation cross and a blank screen. A semantic categorization task was presented after each item, in which proverbs had to be matched with a category (e.g., familiar proverbs, unfamiliar proverbs, proverb variants, proverb substitutions and non-rhetorical sentences). Subsequently, outside the MRI, subjects provided their aesthetic and familiarity judgements, rating the items. The results revealed a positive correlation between Beauty and familiarity. Familiar proverbs were preferred over the other proverb categories. Positive correlations occurred in the ventral striatum and in medial prefrontal cortex suggesting that encountering an aesthetically pleasing proverb was a rewarding experience for the participants. Also, midline structures and bilateral temporoparietal regions were found to be positively correlated with familiarity. The less familiar a proverb was, the stronger the activation of the perceptual and semantic system in the bilateral inferior occipital cortex, inferior frontal cortex, and left MTG/STG. These findings imply that familiarity does affect the fluency of the processing of a written text. Authors interpret that when the stimulus novelty increases, the perceptual and semantic systems become more engaged leading to a decrease in liking (Bohrn et al., 2012).

5.3 Familiarity & Music

Regarding the relationship between music preference and familiarity, Russel (1986) designed a study in which preferences, familiarity, and chat performance recordings were analyzed. This last variable was selected following the logic that the more familiar the chart recordings are, the more success they have. The results of the study showed a positive correlation between pleasantness and familiarity. The records that were rated as more pleasant were rated also as more familiar.

Different research conducted by Szpunar et al., (2004) investigated the relationship between familiarity and preference in music, specifically, liking music and explicit memory as a function of previous exposure. The study revealed that exposure to focused listening to music gives rise to an initial increase in liking followed by a decrease, causing an inverted U-shaped function of arousal potential, and therefore, providing evidence for the two-factor model by Berlyne

(1970) and Stang (1974) (Szpunar et al., 2004). However, in the case of incidental listening, the liking of the music increases when there is a more frequent exposure to it. The authors interpret that these contrasting results are a consequence of ecological validity. As the ecological validity increased (i.e., incidental listening), the association between frequency of listening to music and of liking ratings turned stronger. The more the listeners listened to music, the higher the liking ratings were. In addition, it also was found that satiation effects in repeated exposures to complex stimuli are prone to occurring in contrast to simple stimuli. A plausible reason behind this is that complex stimuli produce large increases in liking as a function to exposure, and equally, if there is a significant increase in liking, there is a significant decrease in liking as well (Szpunar et al., 2004). In brief, the research showed that ecological validity is a crucial factor in research about preference and familiarity.

5.4 Familiarity & Physical Attractiveness

Familiarity and preferences have not only been investigated in the Arts. For instance, the study by Peskin et al., (2004) explored the relationship between facial attractiveness and familiarity. The research consisted of a set of experiments in which participants were presented with various monochrome photographs of unfamiliar female faces. Participants rated attractiveness, distinctiveness, and familiarity of every face. A positive correlation between attractiveness and familiarity was encountered. A follow-up experiment aimed at investigating the effects of episodic familiarity or exposure. In the experiment, participants were exposed to pictures for a longer period of time. As a result, a positive correlation between increased exposure to faces and increased perception of attractiveness was found. Based on this, the authors suggest that if we are gradually more exposed to a face, we are prone to consider it more attractive than before (Peskin et al., 2004), providing evidence for the statement that the pleasure a person derives from something is influenced by exposure.

5.5 Familiarity & Food

Unsurprisingly, the influence of familiarity on preferences has also been studied in food. The research by Birch & Marlin (1982) had the objective of demonstrating that familiarity affects food preference. Animals, including humans, tend to prefer the food that they are familiar with. Neophobia plays a leading role in food selection. In nature, eating a novel food can be potentially dangerous and cause fatal consequences. To elude that risk, the organism fears and actively avoids unfamiliar elements that can cause illness and/or death, therefore, familiar foods are favored. However, repeated exposure to new substances diminishes the negative effects and

elicit preference. Based on the argument that humans become more neophobic as they grow older (Peryam, 1963; Itani, 1958, as cited in Birch & Marlin, 1982), the authors designed two experiments with children as participants. In the first experiment children were presented with distinct types of cheese, in the second one, they were presented with different fruits. The stimuli were presented in pairs. Each of them with a different exposure time that was slightly different in the two experiments. Children tasted the pair of food and indicated which one they preferred. The data of the two experiments revealed that exposure to food increases the preferences for it. Children favored the food that they were more familiar with. This confirms again that familiarity does affect liking. Nevertheless, the authors pointed out that exposure to food is not the only factor that affects inclination toward it. The social context in which the stimulus is presented influences the preferences as well. In their words, “familiarity is not an intrinsic characteristic of a stimulus but is a function of the individual’s exposure to an experience with that stimulus” (Birch & Marlin, 1982, p,353).

5.6 Familiarity & Behavior

Finally, among the vast research exploring familiarity, it is worth mentioning the investigation led by Roopnarine (1985) which approached familiarity and human behavior. The researcher studied changes in peer-directed behavior after preschool experience. Two experiments in which the behavior of children was observed during their third week in nursery school were designed. The observed behaviors consisted of parallel play, joint positive play, and negative activity. The author discovered that social interaction increased as the children were exposed to their peers, demonstrating that exposure has positive impact on social interactions.

Numerous studies have explored the correlation between familiarity and liking across various domains. While we have highlighted only a few, it is essential to recognize that these findings align with theoretical frameworks investigating the underlying mechanisms of familiarity. In all these different studies it is shown that encountering a familiar stimulus enhances likability, probably due to the ease of processing it. These results emphasize the familiarity phenomenon and its implications across different contexts.

6. Chinese Language

We considered it crucial to incorporate a section dedicated to the Chinese language, as well as an exploration of studies regarding familiarity within Chinese populations. This section will provide

some insights into familiarity within specific linguistic and cultural context of China, contributing to a better understanding of this research.

6.1 Chinese Languages

First, it is important to clarify that there is no singular “Chinese” language, rather, there exist numerous Chinese languages, also known as Sinitic languages, which belong to the Sino-Tibetan language family. This language family comprises more than two-hundred languages and dialects. The substantial number of speakers makes it the second language family with more speakers, after the Indo-European family (Egerod, 2018).

There are different varieties of Chinese which are commonly named dialects; however, they are generally classified as separate languages (Egerod, 2022). It is mainly in pronunciation and vocabulary where the differences among the varieties lie; in terms of grammar, the differences are minimal. Chinese languages divide into Northern and Southern groups. The dialects of the first group share more similarities among them than the ones of the second group. The northern group comprises Mandarin dialects, and the second one Wu, Min, Gan, Hakka, Xiang, and Yue (Cantonese).

Chinese languages share a common literary language named *wenyan,* which is written in characters and based on a common body of literature (Egerod, 2022). Wenyan has no specific standard pronunciation; this means that it can be read and pronounced according to the rules of pronunciation of any language. Nearly all ancient Chinese texts were written using wenyan, nonetheless, it has been replaced by the vernacular style *baihua*, which was implemented in 1917 by the philosopher and historian Hi Shi to make literary language accessible to all people. Since then, it is the language of almost all written texts in China (Kuiper, 2016).

Regarding the spoken language, in the early 1900’s the Modern Standard Chinese was introduced for the unification of the national language. This standard language was based on Mandarin. Later in 1956 a system of romanization was introduced. It was called Pinyin or Chinese Phonetic Alphabet, which is based on the pronunciation of the Beijing dialect of Mandarin Chinese. Pinyin became the official transcription used in China in 1979.

6.2 Chinese Linguistic Traits

Chinese is a tonal language, meaning that the tones in the language establish the differences between the meanings of words or syllables that are identical in sound (i.e., that have the same consonants and vowels). Modern Standard Chinese has four tones, different to Ancient Chinese that uses six.

In general, Chinese words often have only one syllable, but modern Chinese tends to use compound words which are built by an important number of suffixes and only with a few prefixes or infixes. Also, most of the words of Chinese languages end in a consonant (except in archaic dialects e.g., Cantonese). The form of the words is invariable, indicating that there are no inflectional markers to indicate parts of speech, however, even if Chinese does not have word inflection, words have a fixed order. Modern Sinitic languages share a variety of typological features. First, they have a maximum syllabic structure of the type: consonant-semivowel-vowel-semivowel-consonant, nonetheless, some languages are missing one set of semivowels and others have gemination or clustering or vowels.

Also, Chinese uses a system of tones (i.e., pitch and contour), with or without concomitant glottal features, and sometimes stress. Tones are mainly lexical but, in some languages, they also hold a grammatical meaning. The nontonal grammatical units (i.e., affixes) tend to be smaller than syllables. Words can consist of one syllable, or two or more syllables, each carrying an element of meaning, or two or more that individually carry no meaning (Egerod, 2022).

For practical purposes, in this research, we will refer to all Chinese languages (Mandarin, Cantonese, etc.,) only as Chinese, without any differentiation.

6.3 Second Language (L2) in China

A statistical study made in 2006 about the language situation in China was published by the Steering Group Office for Survey Language Situation in China (SGO) (Wei & Su, 2012). The study revealed that in 2006, English was the most learned language in China with a 93.8% of the respondents, followed by Russian (7.07%), Japanese (2.54%), French (0.29%), Arabic (0.13%), German (0.13%), Spanish (0.05%) and others (0.16%).

Historically, English was the language used for trading in China during the Opium wars (1839-1842 and 1856-1860). Since then, it has become a learned language. However, during the era of the Chinese Communist government, there was a decline in the study of the language, with further suppression during the Cultural Revolution. In the year 1976, two years after The Cultural Revolution, the *Open Door Policy* was recovered and foreign languages, particularly English, were incorporated into society and turned core subjects in the Chinese educational system. English became the principal language, namely because accessing the language meant accessing the modern scientific and technological knowledge (Adamson, 2002, as cited in White, 2013). In addition to this, in the late 1800s and 1900s, different merchants and traders were established in the port cities of China (e.g., Macau, Hong Kong, Shanghai), so foreign languages, such as Portuguese, French, and also English, were learned to communicate with these

populations. Russian also became an important language in the borders of the country, because when the People's Republic of China was created under communist rule, the language was needed to communicate and collaborate with Rusia, therefore, it emerged as the second most studied language (Tang & Gao, 2000, as cited in White, 2013),

In the year 2001, the official national introduction of foreign language into primary schools was implemented. Second languages, especially English, were imposed to be studied at a primary level (i.e., at the age of 8/9 years old). Learners would study foreign languages for 2-3 years in primary school, 3-4 years in junior secondary school and 3 years in senior secondary school (White, 2013).

6.4 Chinese & Familiarity

Different research has focused on language perception of native Chinese speakers. A large part of this research is centered around the English language and its various dialects.

For instance, the study led by Zhang & Hu (2015) aimed at researching language attitudes of second language speakers (L2) toward different varieties of English: American, British, and Australian. The participants of the study consisted of Chinese native speakers based in the United States. In the experiment, participants listened to these English varieties and rated distinct categories: language-related qualities, person-related, and teaching qualities. The studies showed that speakers preferred the varieties of English that they have been exposed to, proving that exposure influences perception of languages, and in this case, of a second language (L2).

A similar study about native Chinese speakers' attitudes toward varieties of English was conducted by Xu, Wang, and Case (2010). In their study, Chinese participants listened to American English, British English, and Chinese English. There were two different speakers for each. Participants evaluated the varieties according to various categories: social status (intelligent and wealthy), social attractiveness (pleasant, confident, modest, gentle, reliable, and sociable), and language-related qualities (clear and fluent). The results of the study showed that native varieties were favored over the non-native varieties. In addition, the standard varieties were preferred over the non-standard ones. The researchers claim that the preferences for the English varieties were affected by second language-learning experience, i.e., learning material and learning environment (Xu, Wang, and Case, 2010). These results suggest that exposure to a language's variety influences the preference toward it. Familiarity plays a key role in the attitudes toward English. The results are consistent with the research by Reiterer et al., (2020), who claim: "familiarity effect is a result of foreign language learning habits in terms of cultural and educational L2 language" (p,186).

The research by Zhang (2011) was also interested in the attitudes toward English varieties: Standard Southern British English, Standard Scottish English, Singapore English, Indian English, Chinese-accented English, and Korean-accented English. The study was performed with Chinese students studying at the University of Edinburgh and at the Pekin University. The experiment consisted of listening to the various English varieties and rating them according to eight adjectives on a bipolar semantic differential scale (Zhang, 2011, as cited in White 2013). The research revealed that the most favorable ratings were given to the native varieties of English. The non-native varieties received the least favorable evaluations. Also, a hierarchy among the English varieties was found. Standard Southern British English stood in the first place, followed by Standard Scottish English, Singapore English, Korean-accented English, Indian English, and lastly, Chinese-accented English. In addition, the results showed that the ratings toward the English varieties were influenced by the exposure to them (e.g., participants who studied in Edinburgh and were more exposed to English accents, rated these accents more positively). Again, these results reinforce the argument that exposure and familiarity affect the attitudes toward languages or language varieties. Like in Kogan & Reiterer ‘s (2021) research, in which participants did not show a preference for their native language, in Zhang’s study (2011) Chinese participants did not show a preference for the Chinese-accented English varieties. Moreover, they favored the variation they had been more exposed to.

Finally, the study by White (2013) aimed at determining the attitudes toward Asian varieties of English not only among Chinese speakers, but also among Japanese and Korean populations. The author performed a cross-cultural comparative study with a mixed methodological approach (i.e., direct, and indirect methods). The participants were university students from China, Japan, and Korea. The first part of the experiment comprised a verbal-guise technique (VGT) (an adaptation of the matched-guise technique (MGT)). For the verbal-guise technique, native speakers of each guise were selected. The recordings consisted of English speech recordings by female native speakers from China, Hong Kong, India, Japan, and Korea. After listening to the speakers, participants evaluated the speech recordings in a scale bounded by bipolar adjectives: confident/unconfident, friendly/unfriendly, cute/not cute, young/old, clear/unclear, energetic/tired, and happy/unhappy. Participants were also asked to identify the country of origin from the speakers. In addition to this, a perceptual dialectology experiment was implemented to measure explicit attitudes. In this part, participants were asked to provide descriptions about the personality of a person from China, Japan, and Korea.

The results of the study showed that the explicit attitudes, i.e., stereotypes toward national groups, affected the implicit attitudes, i.e., language attitudes. As the author mentions: “listening

to the speaker varieties evoked stereotypical attitudes toward the speakers among the informants, perhaps as a result of their perceived group membership of the speakers" (White, 2013, p,216). These results prove that the stereotypes that are held toward certain communities have an important influence on language perception, providing evidence to the social connotation hypothesis. In the study, Indian and Japanese speakers of English were evaluated more positively than the rest. The Chinese English variety received the lowest evaluations, nevertheless, Chinese and Hong Kong varieties obtained more favorable evaluations by the Chinese participants. The same happened with Japanese participants. The author claims that this might be due to a positive ingroup bias (i.e., speakers of the same national membership show preference toward the speakers). Conversely, this did not happen with Korean informants, who exhibited a negative ingroup bias toward the Korean speaker of English. A possible explanation for this is that Koreans are stricter with themselves than with others (White, 2013).

The author concluded that the recognition of the speech forms may have occurred without conscious categorization of the speakers into group membership. This recognition prompted the social connotations that individuals hold toward the social groups of the speakers, and these connotations influenced the evaluations of the speakers.

These studies, conducted with Chinese populations, once again demonstrate that familiarity influences language perception and that the information held about social groups has an impact on speech evaluations. This research serves as a theoretical framework for our study, which will be explained in detail in the following section.

7. Methods

As mentioned earlier, the research conducted by the Phonaesthetics Research Group in Vienna focuses on exploring the phonaesthetical perception of languages. In the experiment conducted by Reiterer & Kogan (2020), 22 characteristics describing the aesthetics of language were selected for rating. The descriptors included Beauty, Coolness, Culture, Elegance, Eroticism, Fashion, Fun, Generosity, Importance, Intelligence, Melody, Memorability, Orderliness, Pleasantness, Romanticism, Seductiveness, Sexiness, Softness, Status, Sweetness, Wealth, and Welcomingness. These dimensions were subsequently combined into categories through explanatory factor analysis and condensed them into: Beauty, Status, Eros, Orderliness, and Sweetness. However, later, Sweetness was merged into the Beauty category, resulting in four factors: "Erotic/Sexy," "Beautiful/Sweet," "Status," and "Orderly/Structured." These resultant

factors have been utilized in subsequent investigations by the Phonaesthetics Research Group (Reiterer et al., 2020; Kogan & Reiterer, 2021; Winkler et al., 2023), and they also serve as the framework for the current study, which builds upon the previous research conducted by the Phonaesthetics Research Group.

7.1 Stimuli

For this study, a set of recordings of European languages was used, comprising twenty-three European languages from various families, including Romance, Slavic, Germanic, Uralic/Baltic and Celtic families, along with some isolated languages. The languages that used as stimuli were: Albanian, Breton, Catalan, Czech, Danish, Estonian, Finnish, Greek, Hungarian, Icelandic, Irish, Latvian, Maltese, Norwegian, Polish, Portuguese, Romanian, Slovene, Swedish, Turkish, Ukrainian, and Welsh. The Corsican language was included in the experiment; however, it was excluded from the analysis due to its poor audio quality, as observed in a previous study by Winkler et al. (2023), where it received low ratings. The selection of languages aimed at reducing familiarity as previous studies (Reiterer et al., 2020; Kogan & Reiterer, 2021) indicated that familiarity significantly influenced participants' responses. The languages that served as stimuli in the research were the ones that were thought to be less familiar to both speakers and non-speakers of European languages. Moreover, these languages were selected to raise awareness of lesser-researched languages.

For each language, two distinct sets of voices were used, resulting in a total of forty-six recordings. Unlike some previous studies (Reiterer et al., 2020; Kogan & Reiterer, 2021), only female voices were included in this experiment. All the recordings were normalized in terms of volume. The recordings consisted of readings of the fable: *The Northwind and the Sun* by Aesop, which was translated by specialists to every language that was included in the experiment.

Most of the stimuli were recorded at the MediaLab of The University of Vienna. The only language that was not recorded there was Breton since no native speakers of this language were found in Vienna. Breton recordings were recorded at Radio Kreiz Breizh by native speakers from Brittany and were sent to the Phonesthetics Research Group.

7.2 Participants

To explore how individuals whose first language (L1) is typologically unrelated to European languages perceive the aesthetic characteristics of European languages, we chose to compare two distinct speaker populations: one composed of European speakers, and another composed of non-European speakers. Specifically, we selected German speakers and Chinese speakers as

our two population groups for comparison. The native German speakers were extracted from the research by Winkler et al., (2023). The decision to select German speakers was influenced by the substantial number of German speakers in the aforementioned research (n = 67). This population was large enough for the present study to be compared to the Chinese population.

As for the native Chinese speakers, the largest part of them was recruited through two online research platforms: CloudResearch and Prolific. In both platforms only native Chinese speakers were accepted. Since this research concerns only L1, there were no L2 requirements for recruitment. Another portion of the participants consisted of students from *Macao Institute for Tourism Studies,* contacted via email by Professor Rachel Luna Peralta. The remaining participants were recruited through personal contacts in China, Finland, and France. Overall, the Chinese population comprised 82 participants.

7.3 Experiment

The experimental design replicated that of the pilot study by Winkler et al., (2023). It consisted of a language rating experiment, programmed as a website that was accessible internationally. This accessibility was optimal for the present research since we required a population that was not easily reachable.

Because the experiment was originally designed in English and targeted native Chinese speakers, the instructions of the experiment were translated into Standard Chinese by a native speaker. This was done to accommodate participants who might not have had any knowledge of English. We decided to translate only the instructions and inform the participants that they could use a specific bowser (e.g., Google Chrome or Baidu, the last one being more accessible in China) to translate the entire experiment to their preferred language. This approach allowed participants to answer some questions in their native language, which were then translated into English for analysis purposes.

Some of the requirements for performing the experiment were utilizing a computer or laptop, using speakers or headphones, ensuring a stable internet connection, and refraining from closing the experiment once initiated. After accepting the conditions, participants were prompted to insert a participant ID for registration. Then, they were asked to provide demographic data including age, place of birth, biological gender, countries where they have stayed for longer than 1 month (mobility). Additionally, participants were requested to rate their musicality on a scale from 0 (*not musical at all*) to 10 (*very musical*). Following this, they were asked if they played any instrument and if applicable, they were requested to rate their musical instrument skill (*how well do you play the musical instrument you're most skilled at?*) on a scale from 0 (*very poorly*) to 10

(*very well*). Participants also rated their singing ability (*how would you rate your singing ability?*) on the same scale. Furthermore, participants were requested to provide information about their language background, naming the languages they spoke with the corresponding estimated proficiency levels from A1 to C1, rating this on a scale from 0 (*I know a few words*) to 100 (*I'm fluent in this language*).

After this questionnaire, the experiment started. First, a speakers/headphone test was presented to ensure the technical equipment of the participants was working correctly. When this was confirmed, the languages were presented one by one in random order. Participants had to listen to the stimuli and rate them firstly in terms of Eros (*How sexy does this language sound to you? /How erotic do you think it is?)*, then Beautiful/Sweet (*How beautiful/sweet does this language sound to you?)*, Status (*What is your impression of the social status of this language? How high or low is its social status in your opinion? How respected or honored is it for you?*), and Orderliness/Structure (*How well-structured/orderly does this language sound to you?*), on a scale from 0 to 100.

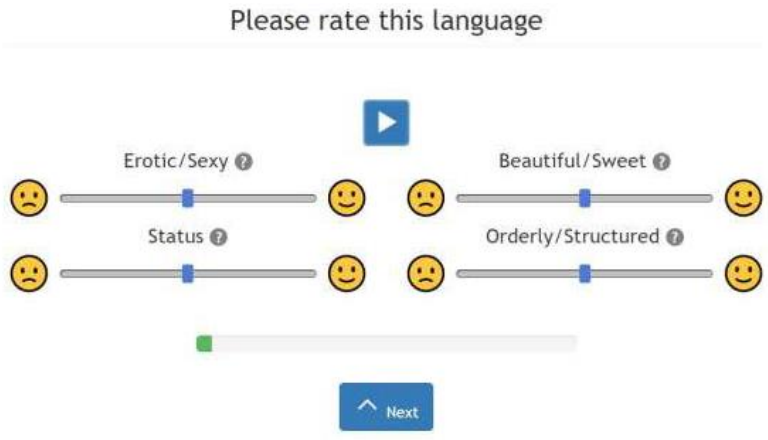

Figure 1. User interface of the language assessment experiment.

Furthermore, participants were requested to indicate if the language sounded familiar to them (*did the language sound familiar?*) on a scale from 0 (*I didn't recognize the language*) to 10 (*I recognized the language*) and also, how pleasant they found the voice of the speaker (*please rate how much you (dis)liked the speaker's voice, again, using a scale from 0 (very unpleasant voice) to 10 (very pleasant voice*). Finally, participants were requested to answer open questions regarding which language they thought they had listened to (*what language is this?*), and which language might be a close relative to the stimulus (*what could be a close relative of this language?*). To facilitate this process, when a letter was typed in the answer box, a list with

different possibilities was displayed by autofill function. All the presented languages consisted of European languages and not only the ones used in the experiment.

This procedure had to be repeated for each of the 23 languages presented to the participants. After listening to and rating each language, participants had almost completed the quest. As an ultimate step, they were given the option to receive updates about the results of the experiment and to provide comments, limited to a maximum of 300 characters. Finally, participants had to click a “Submit” button to conclude the experiment.

8. Demographic Data

The total of participants was 149, from which 82 were native Chinese speakers-listeners and 67 were native German speakers-listeners.

8.1 Chinese-speaking Participants

From the 82 Chinese participants, 44 were female, 37 male and 1 identified as other gender. The mean age was 32.69 (SD = 8.66). The oldest participant was 54 and the youngest 19 years old. Most of the participants were born in China (n = 75), only some of them were born in other country. These other countries were the United States of America (n = 3), Canada (n = 1), Chile (n = 1), Taiwan (n = 1), and the United Kingdom (n = 1).

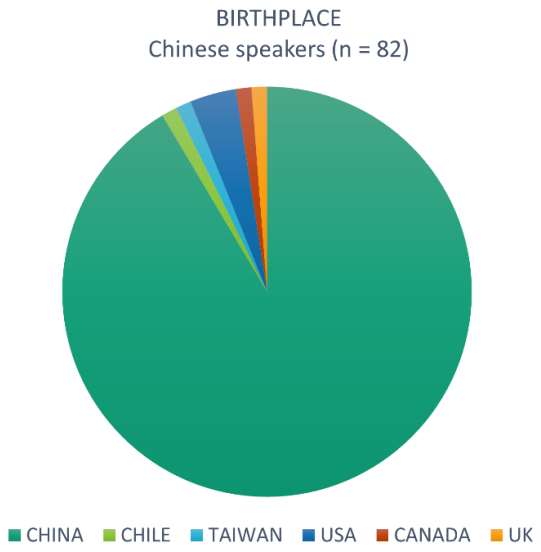

Figure 2. Proportion of Chinese-speaking participants' birthplaces.

The native language of all Chinese participants (n = 82) was Chinese. Unfortunately, in most cases the Chinese language was not specified (n = 60). Some of the Chinese languages named by the participants were Mandarin (n = 18), Cantonese (n = 12), Wu (n = 2) and Hakka (n = 1).

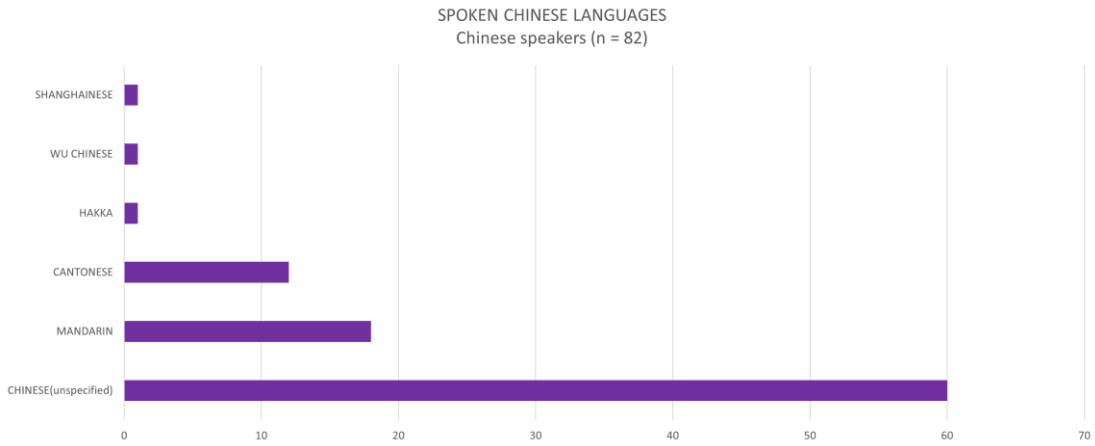

Figure 3. Chinese-speaking participants' native Chinese languages.

As for the second language knowledge (L2), the average number of spoken languages was 1.76 (SD = 1.59). The maximum number of spoken languages was 9 while the minimum was 0. The reported L2 were English (n = 58), German (n = 15), Japanese (n = 8), Spanish (n = 6), Finnish (n = 4), French (n = 4), Catalan (n = 1), Italian (n = 1), Portuguese (n = 1), and Swedish (n = 1). To prevent familiarity bias in the study, the ratings of the languages that were learned as a second language and that served as stimuli in the experiment, were removed from the data (i.e., Catalan, Finnish, Portuguese and Swedish).

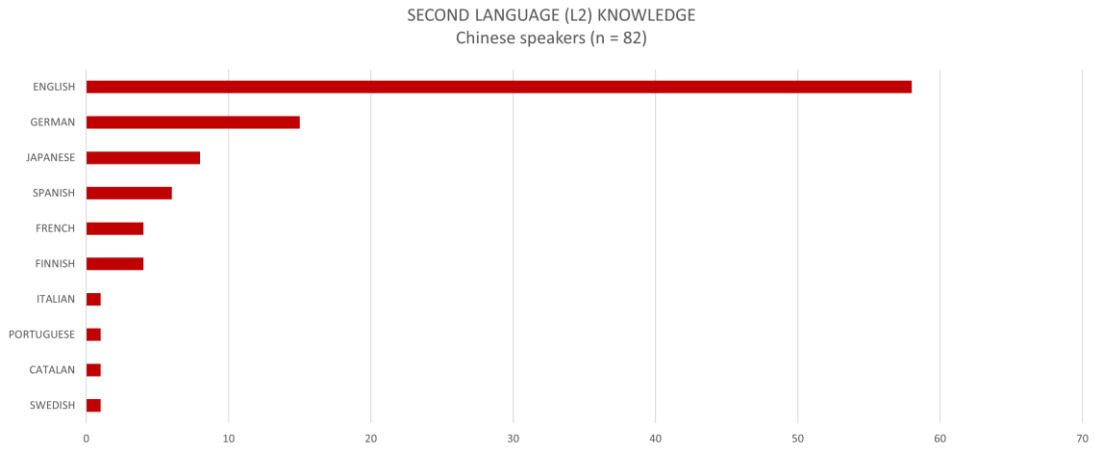

Figure 4. Chinese-speaking participants' second languages.

Participants also reported on the countries they had visited for more than a month, referred to as “mobility” in the study. The average number of visited countries was 1.19 (SD = 1.29, min. = 0, max. = 6) with the top three visited countries being Germany (n = 15), Finland (n = 12) and the United States of America (n = 10).

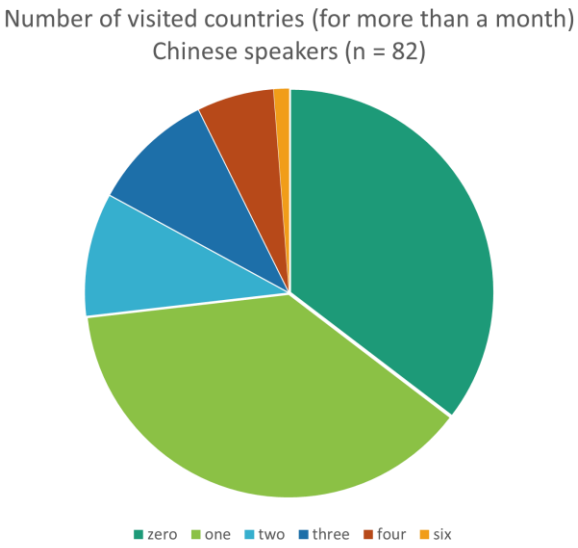

Figure 5. Proportion of visited countries by Chinese-speaking participants.

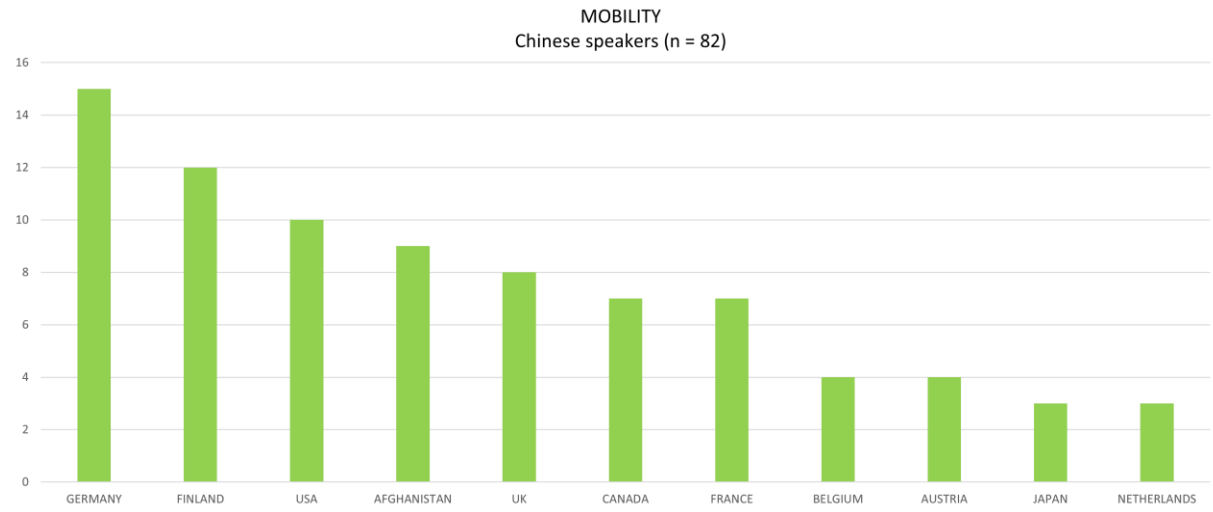

Figure 6. Top visited countries by Chinese-speaking participants.

8.2 German-speaking Participants

As for the native German speakers, out of the 67 participants, 52 were female and 15 male. The average age was 34.85 years old (SD = 11.83) with participants ranging from 14 to 75 years old. The majority of the participants was born in Austria (n = 38), followed by Germany (n = 22), Switzerland (n = 2), Bulgaria (n = 1), Italy (n = 1), Luxembourg (n = 1), Romania (n = 1), and Slovenia (n = 1).

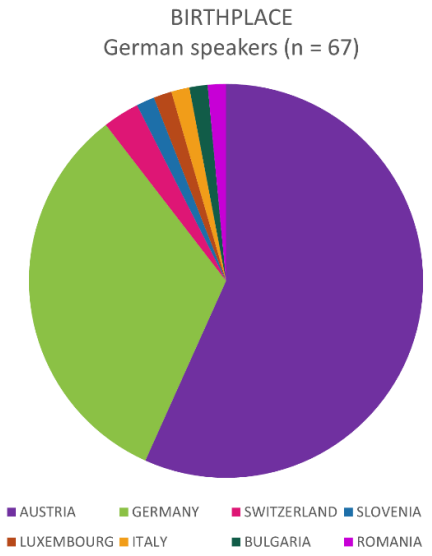

Figure 7. Proportion of German-speaking participants' birthplaces.

All the participants reported German as their first language, nevertheless, a few of them (n = 6) reported being bilingual. The reported native languages apart from German were English (n = 1), Finnish (n = 1), French (n = 1), Malayalam (n = 1), Persian (n = 1), and Romanian (n = 1).

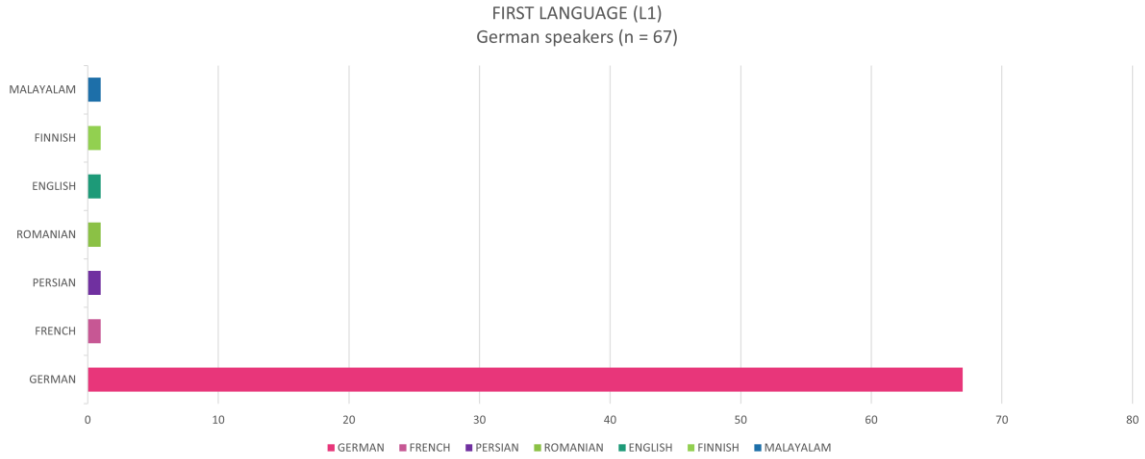

Figure 8. German-speaking participants' first languages.

With respect to second language knowledge (L2), the average number of L2 was 4.86 (SD = 1.95), this being almost three times higher than the average number of L2 of Chinese speakers (M = 1.76). The maximum number of spoken languages for the German group was 10 and the minimum was 1. The most spoken second language among the participants was English (n = 61), followed by French (n = 35), Spanish (n = 28), Italian (n = 19), Russian (n = 12), Dutch (n = 10), Swedish (n = 8), Norwegian (n = 5), Danish (n = 4), and Finnish (n = 4). As it is shown, German speakers present a higher second language knowledge than Chinese speakers.

Like with the Chinese speakers, to prevent familiarity, the ratings of the languages that were learned as a second language and that served as stimuli in the experiment were removed (i.e., Danish, Finnish, Norwegian and Swedish).

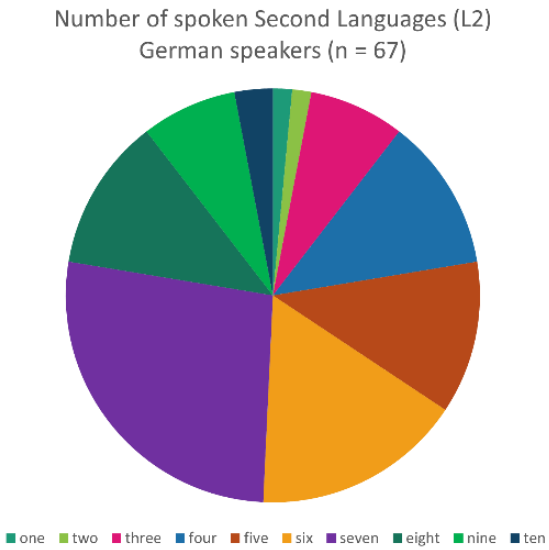

Figure 9. Proportion of German-speaking participants speaking one or more foreign languages.

In terms of mobility, the average number of countries that were visited for more than a month was 2.82 (SD = 2.47, min. = 0, max. = 10). The top three visited countries were the United Kingdom (n = 18), Italy (n = 17), and France (n = 16).

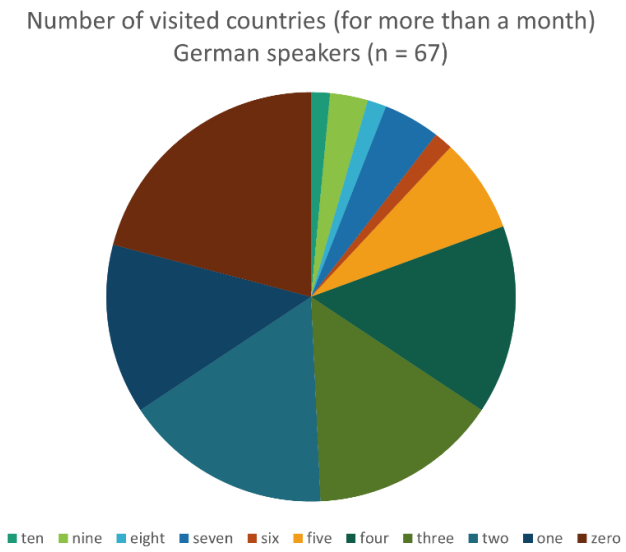

Figure 10. Proportion of visited countries by German-speaking participants.

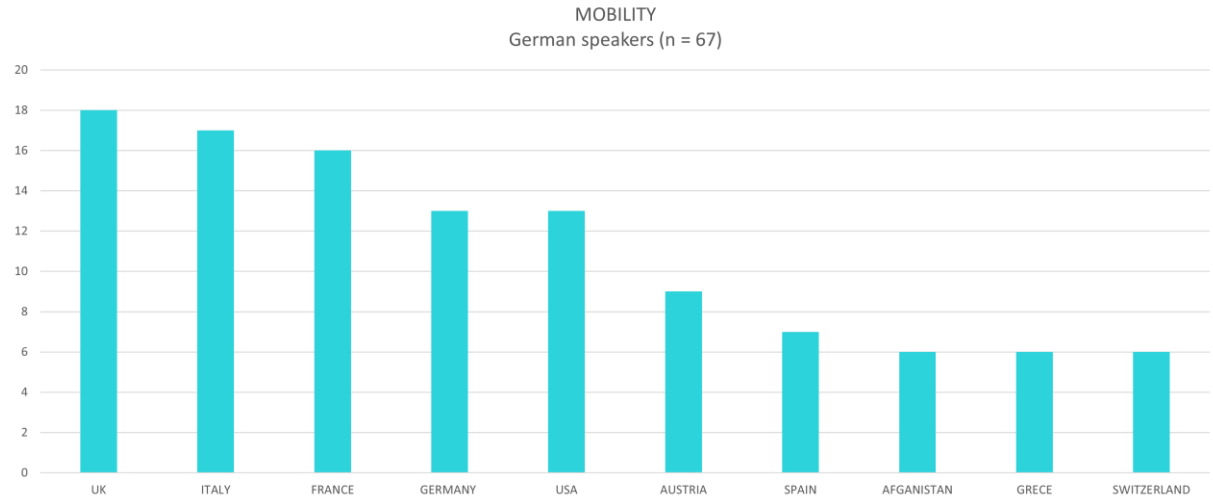

Figure 11. Top visited countries by German-speaking participants.

9. Results

All collected data and results were analyzed using statistical programs such as RStudio and JASP, mainly employing correlation, t-tests, and ANOVA analyses. As mentioned earlier, evaluations languages by participants who reported the assessed language as a second language (L2) were excluded from the analyses for the factors of Eros, Beauty, Status, Order, the

voices of the speakers and self-perceived familiarity. The results of the analyses are presented in this section.

A Repeated Measures ANOVA was performed for each factor i.e., Eros, Beauty, Status, Order, Voice, and Self-perceived Familiarity. To adjust the p-value and avoid a type I error, a correction for multiple comparisons or Post Hoc Test was performed. In these analyses we opted for the Holm correction.

9.1 Results within Groups

9.1.1 Eros

Chinese speakers

First, for the Chinese group, the languages that received the highest mean rating with respect to the factor Eros were Irish (mean = 54.93, SD = 20.54), Latvian (mean = 54.40, SD = 19.78), Albanian (mean = 53.64, SD = 21.52), and Greek (mean = 52.78, SD = 21.66, while the lowest rated languages were Romanian (mean = 45.52, SD = 22.35), Danish (mean = 45.28, SD = 20.76), and Welsh (mean = 42.36, SD = 19.70).

The Repeated Measures ANOVA showed that there was a statistically significant difference in the rating of the languages between at least two of them ($p < .001$). Post Hoc Test (Holm's correction) found that Irish was the language that presented the most differences with the other languages. The significant differences were found between the pairs: Irish and Danish ($p < .001$), Irish and Estonian ($p = 0.043$), Irish and Romanian ($p = 0.003$), and Irish and Welsh ($p < .001$); between Latvian and Danish ($p = 0.005$), Latvian and Romanian ($p = 0.016$), and Latvian and Welsh ($p < .001$); Albanian and Danish ($p = 0.008$), Albanian and Romanian ($p = 0.029$), and Albanian and Welsh ($p < .001$); Greek and Welsh ($p = 0.005$); and finally between Slovene and Danish ($p = 0.005$), Slovene and Romanian ($p = 0.018$), and Slovene and Welsh ($p < .001$).

German speakers

As for the German group, the language with the highest mean rating for the factor Eros was Greek (mean = 54.39, SD = 18.08), followed by Swedish (mean = 49.70, SD = 20.17) and Breton (mean = 48.67, SD = 21.36). The languages that received the lowest evaluations were Czech (mean = 37.32, SD = 21.85), Welsh (mean = 35.43, SD = 24.12), and Danish (mean = 35.09, SD = 21.73).

A significant difference was found ($p < .001$) within the group with respect to the languages. Greek and Czech ($p = 0.030$) showed a significant difference in the evaluations, also Greek and Danish ($p < .001$); Greek and Norwegian ($p = 0.006$); and Greek and Welsh ($p = 0.004$).

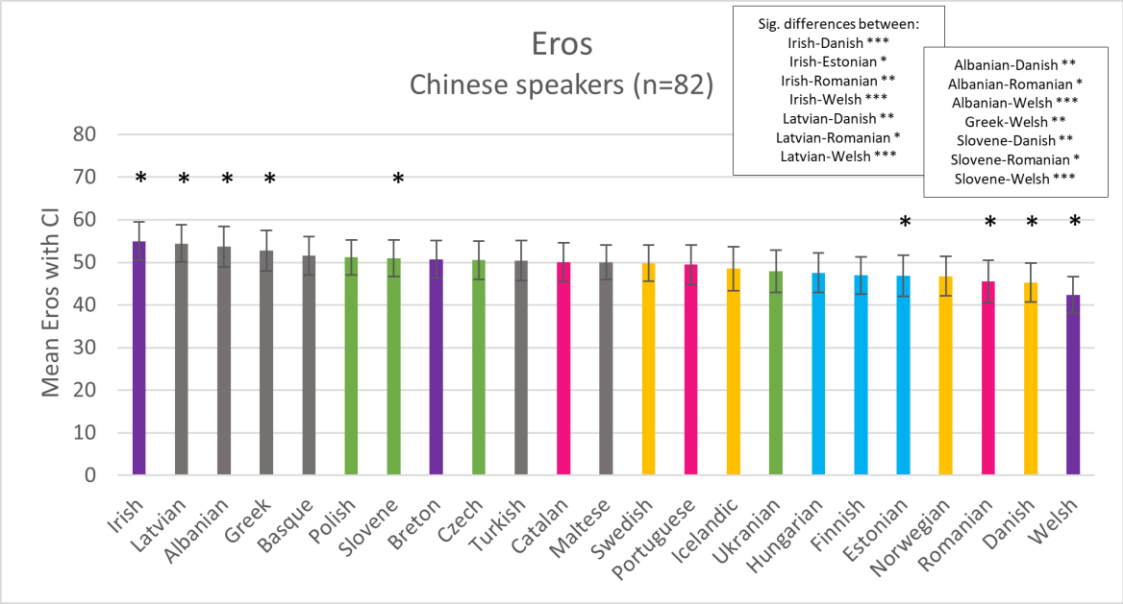

Figure 12. Mean Eros ratings with Confidence Interval whiskers and significant differences (Chinese speakers).

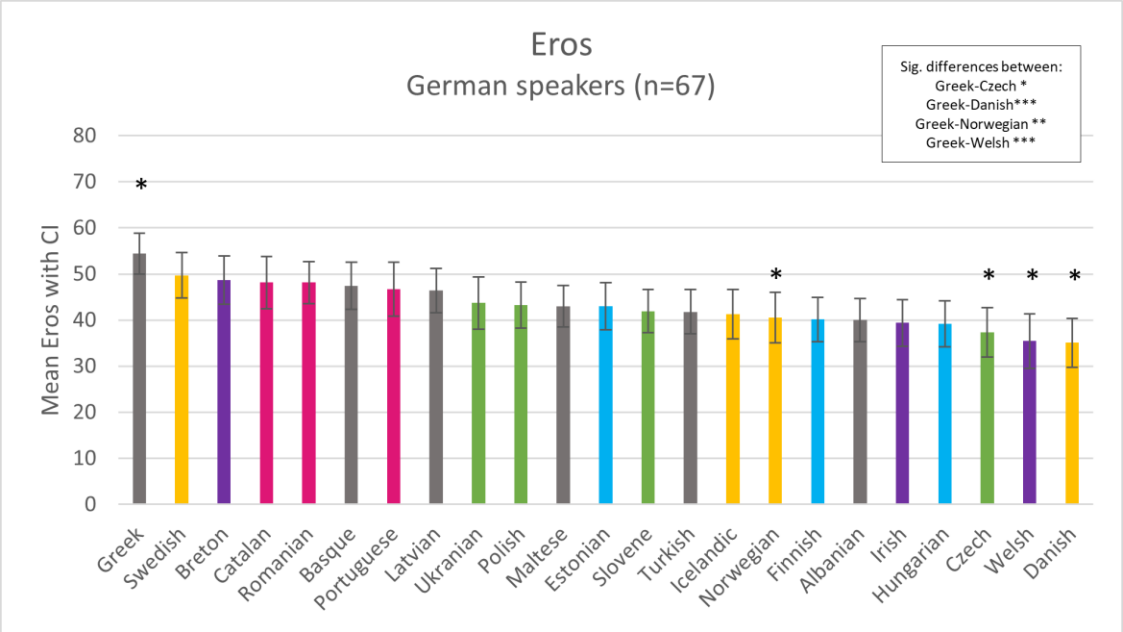

Figure 13. Mean Eros ratings with Confidence Interval whiskers and significant differences (German speakers).

9.1.2 Beauty

Chinese speakers

Similar to Eros, the highest rated languages for Beauty by the Chinese participants were Irish (mean = 61.12, SD = 19.57), Greek (mean = 58.48, SD = 20.11), Latvian (mean = 58.28, SD = 20.19), and Albanian (mean = 57.18, SD = 20.30). The lowest ratings were given to Ukrainian (mean = 50.38, SD = 20.60), Norwegian (mean = 47.15, SD = 21.35) and Welsh (mean = 45.19, SD = 20.12).

A statistically significant difference was also found in Beauty ($p < .001$). The significant differences were found between the languages Irish and Hungarian ($p = 0.035$), Irish and Norwegian ($p < .001$), Irish and Romanian ($p = 0.022$), Irish and Ukrainian ($p = 0.013$), and Irish and Welsh ($p < .001$); Greek and Norwegian ($p = 0.005$), and Greek and Welsh ($p < .001$); Latvian and Norwegian ($p = 0.005$), and Latvian and Welsh ($p < .001$); Albanian and Norwegian ($p = 0.003$), and Albanian and Welsh ($p < .001$); Polish and Welsh ($p = 0.012$); Basque and Norwegian ($p = 0.030$), Basque and Welsh ($p = 0.005$); and Czech and Welsh ($p = 0.010$).

German speakers

German speakers also rated the languages in terms of Beauty similarly to Eros. The highest rated language was again Greek (mean = 62.80, SD = 20.17), followed by Swedish (mean = 59.44, SD = 21.43), and Estonian (mean = 57.52, SD = 25.26). Slovene (mean = 48.74, SD = 21.07), Turkish (mean = 47.61, SD = 20.31) and Czech (mean = 44.79, SD = 23.66) were evaluated as the least beautiful.

Beauty also exhibited a statistically significant difference in the ratings of the languages ($p < .001$). Again, the differences were only found between Greek and few languages: Greek and Czech ($p = 0.005$), Greek and Polish ($p = 0.037$), Greek and Slovene ($p = 0.022$), and Greek and Turkish ($p = 0.027$).

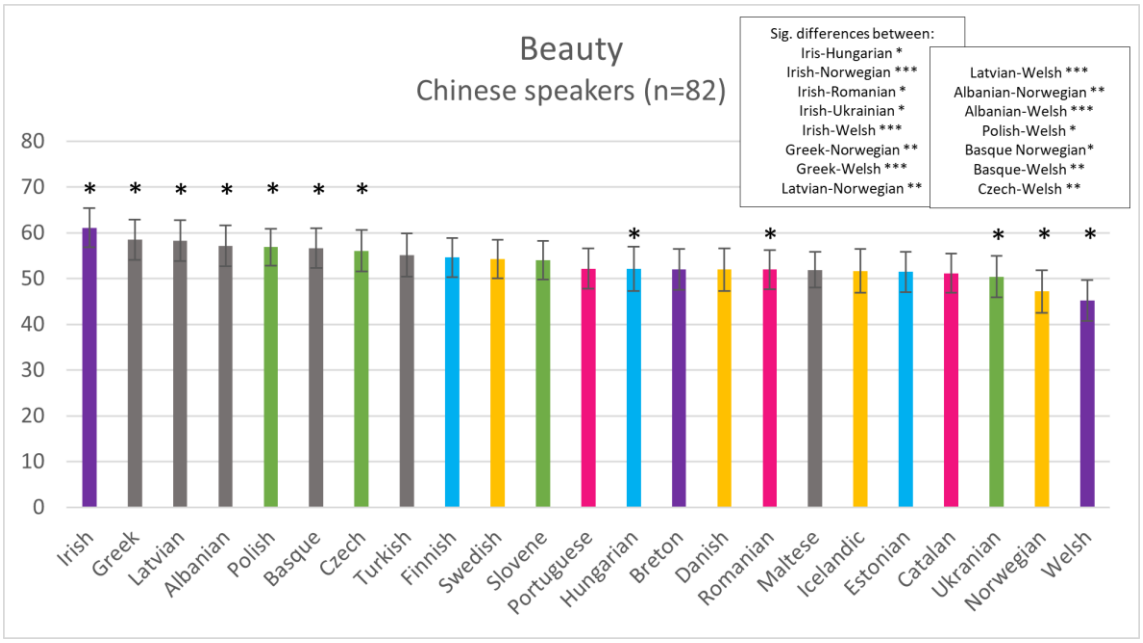

Figure 14. Mean Beauty ratings with Confidence Interval whiskers and significant differences (Chinese speakers).

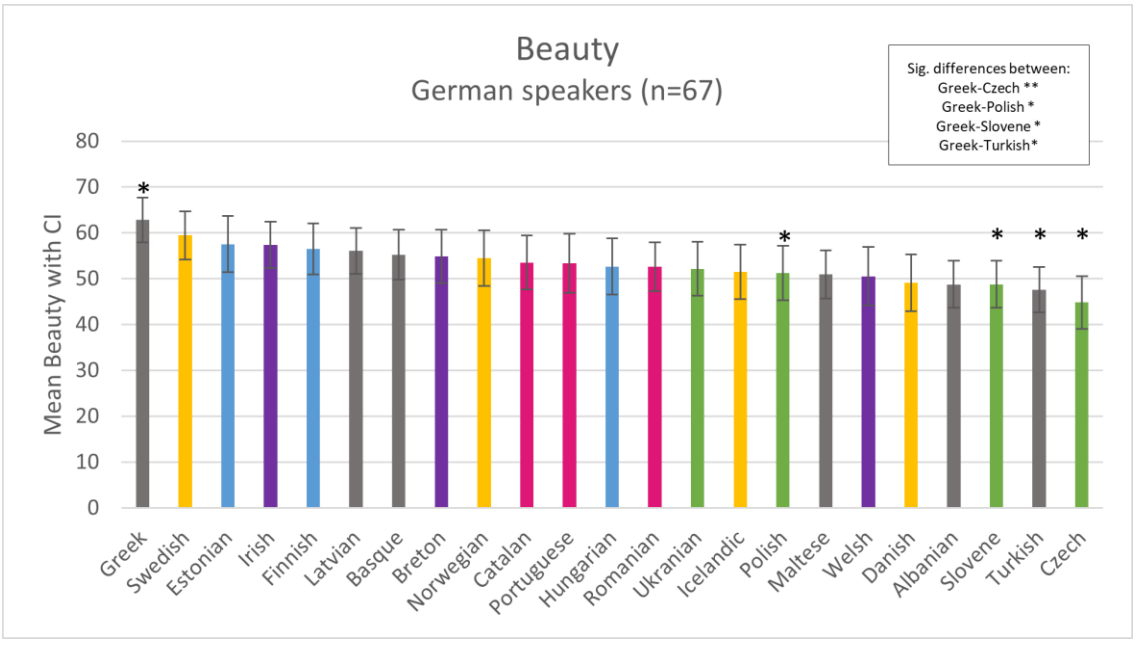

Figure 15. Mean Beauty ratings with Confidence Interval whiskers and significant differences (German speakers).

9.1.3 Status

Chinese speakers

Regarding Status, Hungarian (mean = 56.26, SD = 17.57), Polish (mean = 56.25, SD = 17.01) and Irish (mean = 56.19, SD = 18.05) were rated the highest, while Maltese (mean = 52.80, SD = 14.92), Estonian (mean = 51.54, SD = 19.12), and Romanian (mean = 51.37, SD = 18.51) were rated the lowest.

No statistically significant difference was found in the evaluations of the languages with respect to Status ($p > .001$), indicating that languages were not evaluated significantly differently.

German speakers

On the other hand, the highest evaluated languages by German speakers in terms of Status were Swedish (mean = 57.01, SD = 21.22), Norwegian (mean = 55.89, SD = 19.83), and Greek (mean = 54.68, SD = 16.99); while the lowest were Turkish (mean = 45.46, SD = 18.36), Czech (mean = 45.05, SD = 18.53), and Albanian (mean = 45.01, SD = 18.96).

Like with the Chinese speakers, no statistically significant difference was found ($p > .001$), in terms of Status.

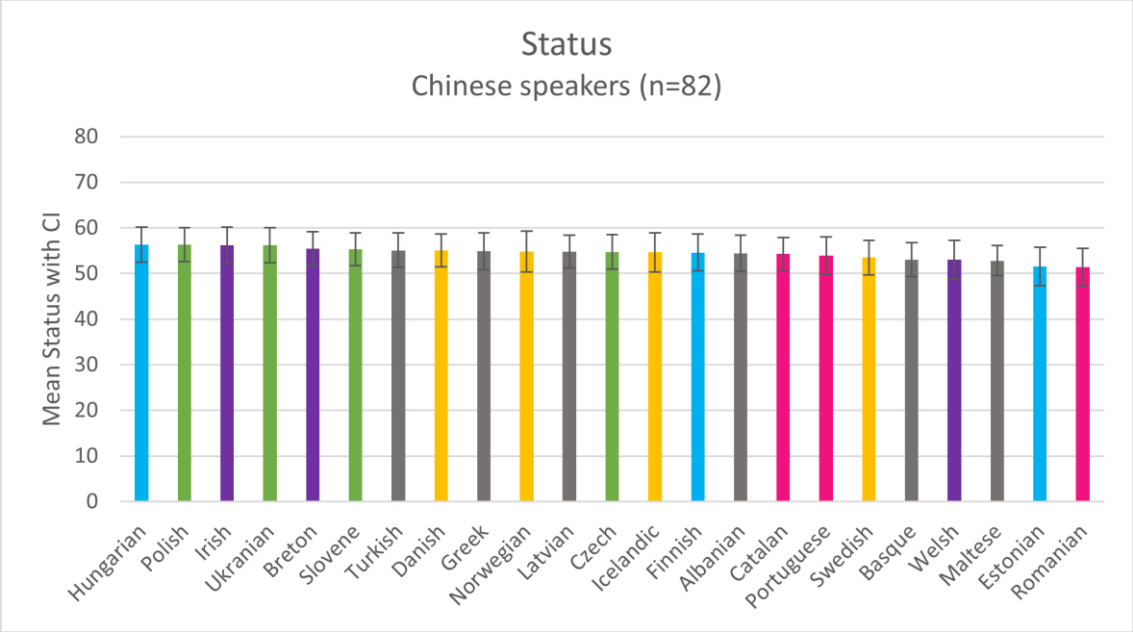

Figure 16. Mean Status ratings with Confidence Interval whiskers (Chinese speakers).

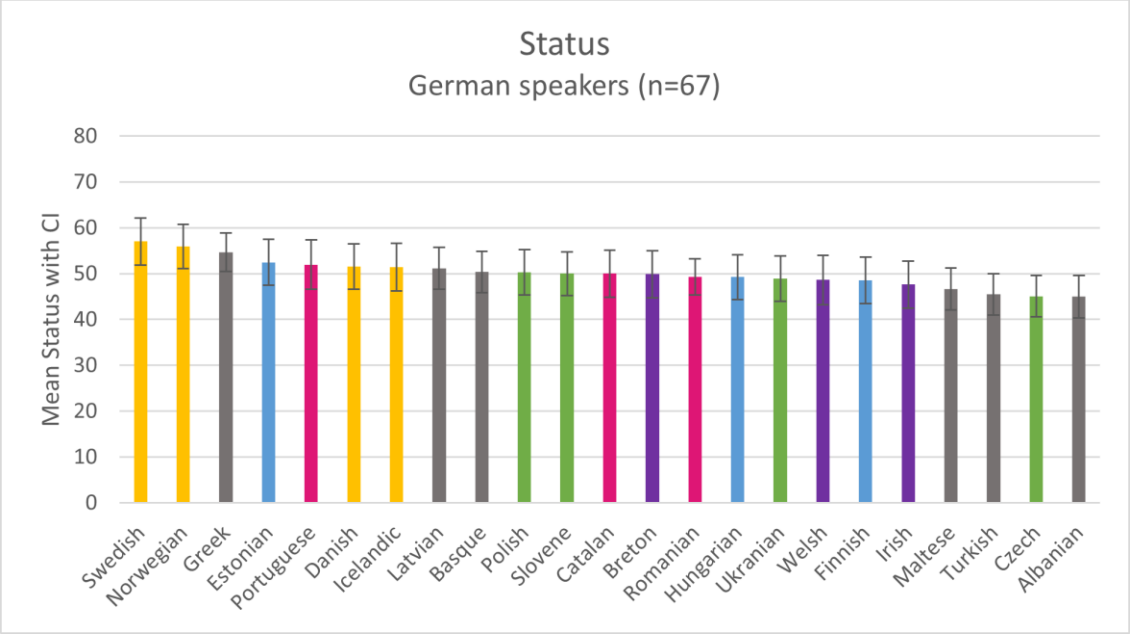

Figure 17. Mean Status ratings with Confidence Interval whiskers (German speakers).

9.1.4 Order

Chinese speakers

Concerning Orderliness, the top three rated languages were Polish (mean = 60.09, SD = 17.85), Latvian (mean = 59.35, SD = 15.97), and Hungarian (mean = 59.24, SD = 19.37). The three least favored languages were Estonian (mean = 54.23, SD = 20.15), Maltese (mean = 53.01, SD = 17.07), and Romanian (mean = 51.32, SD = 17.32).

As in Status, no significant differences were found regarding Order ($p > .001$).

German speakers

Meanwhile, for German speakers, Slovene (mean = 61.76, SD = 16.09), Hungarian (mean = 59.68, SD = 20.88), and Finnish (mean = 58.88, SD = 16.31) received the highest scores. The lowest ratings were given to Maltese (mean = 52.26, SD = 18.18), Turkish (mean = 51.46, SD = 18.42), and Albanian (mean = 51.31, SD = 18.34).

Such as in Status, no significant differences were encountered in Order ($p > .001$).

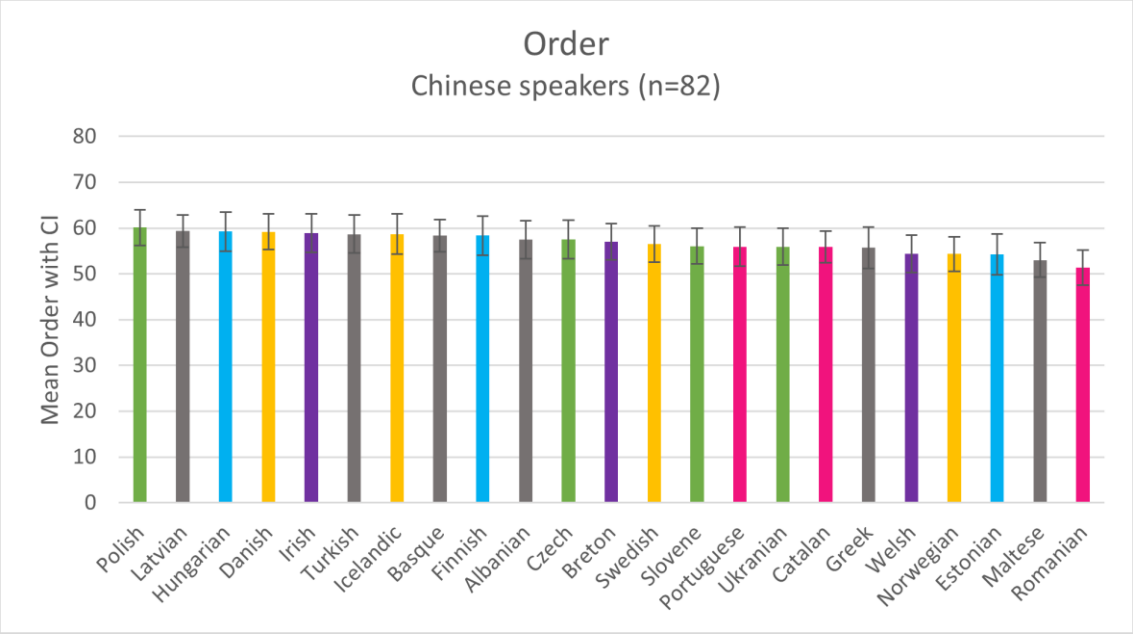

Figure 18. Mean Order ratings with Confidence Interval whiskers (Chinese speakers).

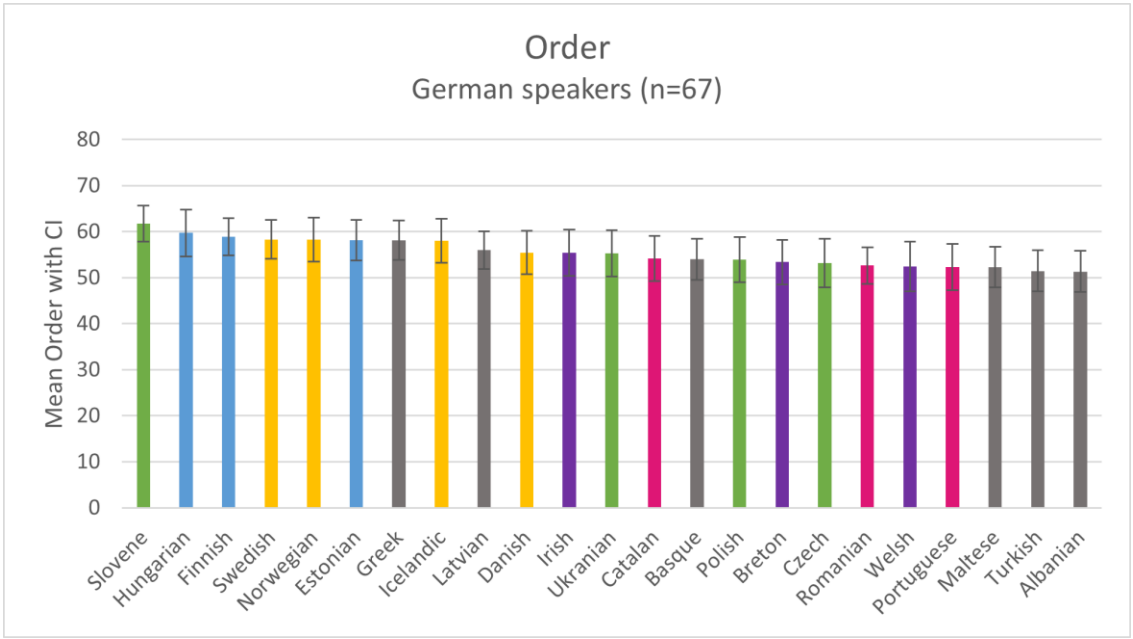

Figure 19. Mean Order ratings with Confidence Interval whiskers (German speakers).

9.1.5 Voice

The factor Voice was operationalized in two ways: by direct subjective opinion ratings (“voice rating”), and by an objective experimental manipulation of which the participants were unaware.

As already mentioned, two different stimulus voice sets were used. Every set consisted of 23 recordings, thus, there were a total of 46 different speakers, two for every language. For the present study, each stimulus set was not analyzed separately. The results for Voice were calculated from both stimulus sets together.

Chinese speakers

The languages whose voices received the highest mean ratings by the Chinese speakers were Irish (mean = 60.79, SD = 24.16), Polish (mean = 57.70, SD = 21.92), and Greek (57.56, SD = 24.94). The lowest ratings were given to Danish (mean = 50.47, SD = 23.59), Norwegian (mean = 50.01, SD = 25.39), and Welsh (mean = 46.30, SD = 24.74).

ANOVA results showed a significant difference in the evaluations of the languages ($p < .001$). The significant differences in the Holm's test were found between Irish and Norwegian ($p < .001$), Irish and Welsh ($p < .001$); Polish and Norwegian ($p = 0.024$), Polish and Welsh ($p = 0.002$); Latvian and Welsh ($p = 0.008$); and Albanian and Welsh ($p = 0.013$).

German speakers

As for the German speakers, the preferred voices were of the languages Greek (mean = 71.14, SD = 22.32), Latvian (mean = 69.19, SD = 20.64), and Swedish (mean = 68.58, SD = 21.06). The least favored voices were Portuguese (mean = 59.38, SD = 27.65), Czech (mean = 58.47, SD = 26.77), and Welsh (mean = 48.58, SD = 26.15).

The Repeated Measures ANOVA revealed statistical significance ($p < .001$). After the Post Hoc Test, significant differences were found between Greek and Portuguese ($p = 0.022$), Greek and Welsh ($p < .001$); Latvian and Welsh ($p = .006$); Swedish and Welsh ($p = 0.002$); Irish and Welsh ($p < .001$), Albanian and Welsh ($p = 0.007$); and Maltese and Welsh ($p = 0.029$). Notably, Welsh stood as the most divergent language in ratings compared to others. Interestingly, it was the least favored language among both, the Chinese and German speakers.

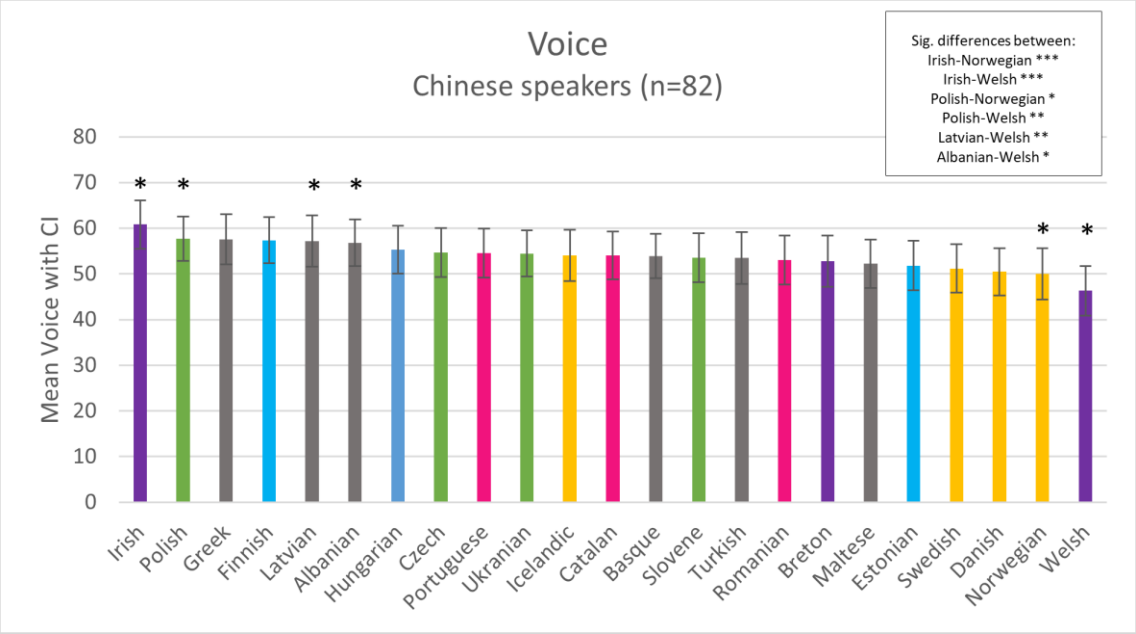

Figure 20. Mean Voice ratings with CI, whiskers, and significant differences (Chinese speakers).

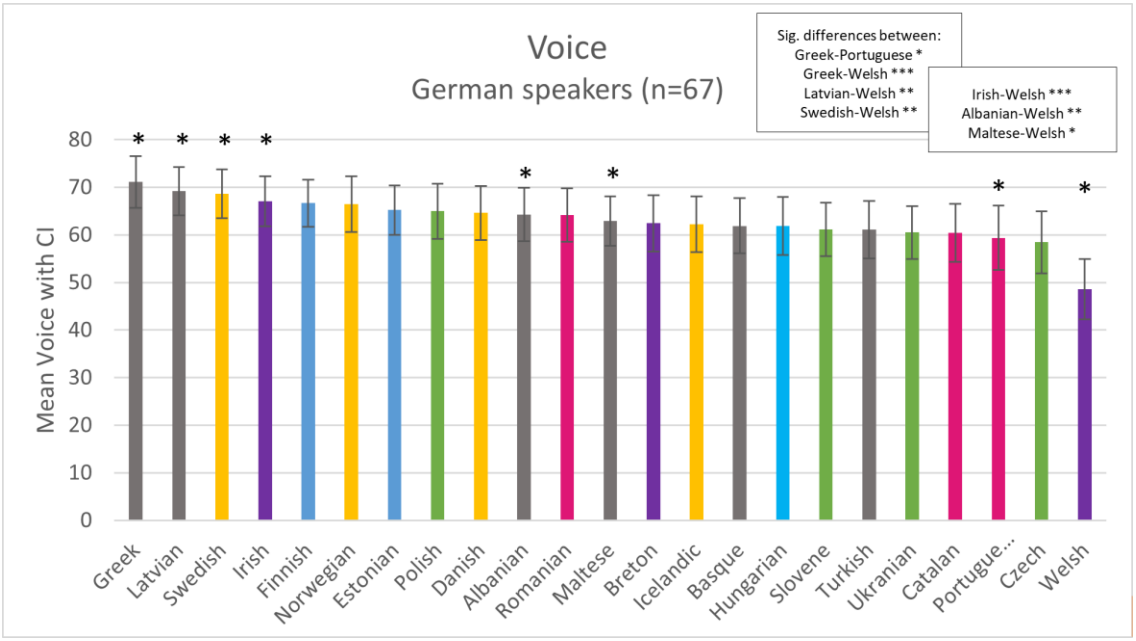

Figure 21. Mean Voice ratings with CI, whiskers, and significant differences (German speakers).

9.1.6 Self-perceived Familiarity

In the experiment, participants were asked to indicate how familiar language they listened to sounded. This Self-perceived Familiarity was also calculated.

Chinese speakers

Chinese participants reported feeling more familiar with the languages Finnish (mean = 31.94, SD = 31.93), Danish (mean = 30.58, SD = 27.55), and Irish (mean = 30.39, SD = 29.97), while the languages with which they felt less familiar were Romanian (mean = 21.67, SD = 25.09), Latvian (mean = 21.50, SD = 25.47), and Turkish (mean = 21.30, SD = 24.44).

For this self-perceived familiarity, a significant difference was also encountered ($p < .001$). This was only between the languages Finnish and Turkish ($p = 0.044$).

German speakers

In the case of German speakers, they reported feeling more familiar with Norwegian (mean = 50.33, SD = 36.48), Greek (mean = 46.65, SD = 34.02), and Portuguese (mean = 44.20, SD = 39.76). The languages they considered they were less familiar with were Maltese (mean = 20.83, SD = 25.00), Latvian (mean = 17.08, SD = 22.57), and Albanian (mean = 16.68, SD = 23.78).

The result of the ANOVA proved to be statistically significant ($p < .001$). The differences in the evaluations were exhibited mainly between Norwegian and Albanian ($p = 0.004$), Norwegian and Czech ($p = 0.029$), Norwegian and Latvian ($p < .001$); and Greek and Latvian ($p = 0.006$).

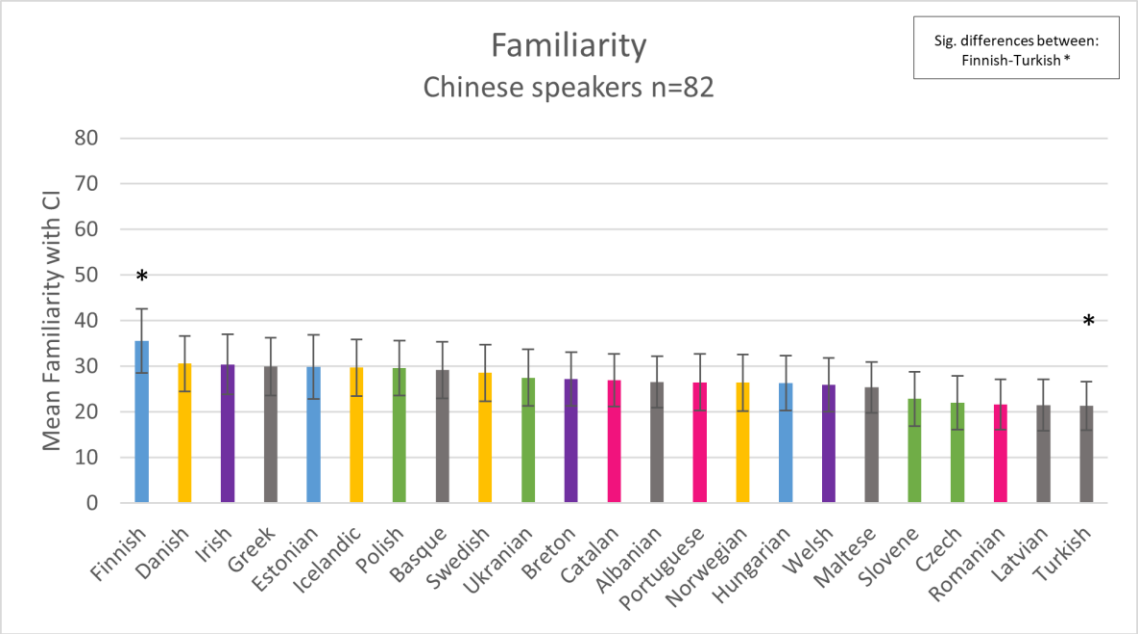

Figure 22. Mean Self-perceived Familiarity ratings with Confidence Interval whiskers and significant differences (Chinese speakers).

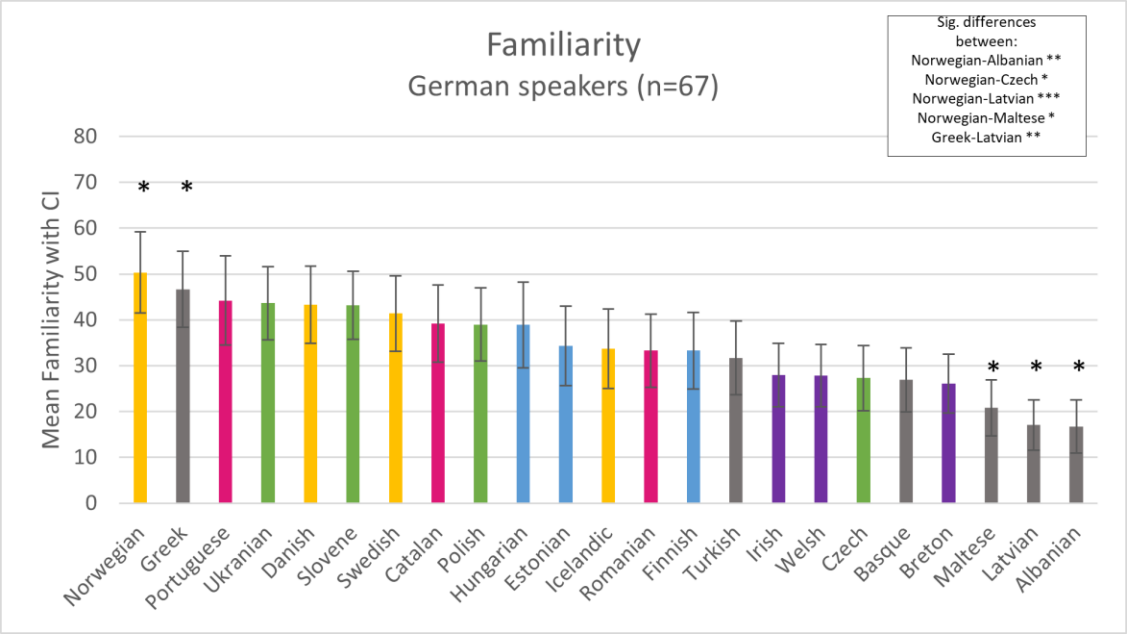

Figure 23. Mean Self-perceived Familiarity ratings with Confidence Interval whiskers and significant differences (German speakers).

9.1.7 Recognition Scores

Apart from the Self-perceived Familiarity, a true recognition of the languages was also calculated. This score was obtained from the question *What was the language you just heard?* and it was conceptualized as a 4-point scale (0-1-2-3). The participants were granted three points for correct identification of the language, two points for naming a close language relative (e.g., Belarusian for Ukrainian, languages that belong to the Slavic language Family); one point for naming the correct language family; and zero points for naming a language completely unrelated to the language or for giving another answer (e.g., “I do not know”). For this specific study, only the correct identification of the language was considered, this means that only the answers with three points were counted.

Chinese participants

Regarding Chinese participants, the languages were accurately identified in 3% of attempts. The most correctly identified languages were Finnish (10%), Swedish (7%), and Portuguese (6%). Conversely, Albanian, Breton, Rumanian, and Slovene had the lowest recognition rates, each at 0%.

German participants

Among German speakers, the overall recognition rate was 20%. The top three languages correctly identified were Greek (46%), Portuguese (39%), and Hungarian (34%). Albanian (4%), Latvian (4%), and Slovene (3%) were among the least recognized languages.

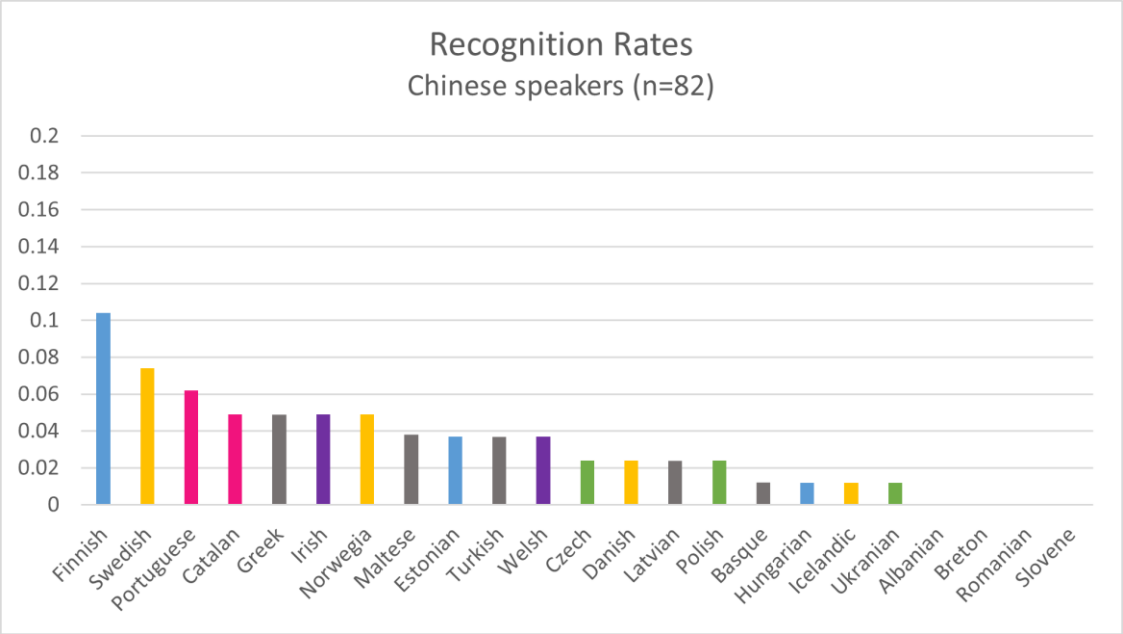

Figure 24. Mean recognition ratings (Chinese speakers).

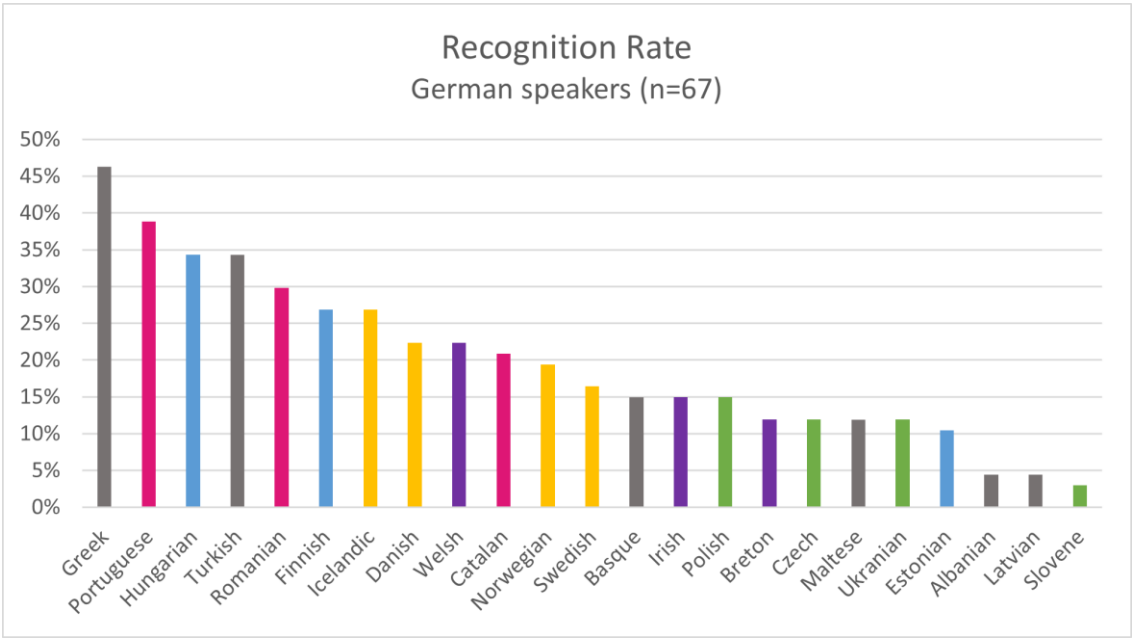

Figure 25. Mean recognition ratings (German speakers).

As it is shown, German speakers demonstrated significantly higher language recognition rates compared to Chinese speakers, almost seven times as much. Chinese speakers achieved a notably low recognition score of 3%.

9.2 Results between Groups

A Mixed repeated measures ANOVA was performed to assess the differences between the two separate groups. An ANOVA was performed for each factor, comparing the means of all the languages between Chinese and German speakers. Once again, to adjust the p-value, we opted for the Holm correction as our Post Hoc Test. Differences between groups would indicate that a language was evaluated significantly differently by the two groups.

9.2.1 Eros

For the factor Eros, the result of the tests showed significant differences between the Chinese and German groups. The languages rated significantly different were Albanian ($p = 0.002$), Czech ($p < .001$), Danish ($p = 0.015$), Irish ($p < .001$), and Slovene ($p = 0.038$). As observed, Chinese speakers rated these languages significantly higher in Eros compared to the German speakers.

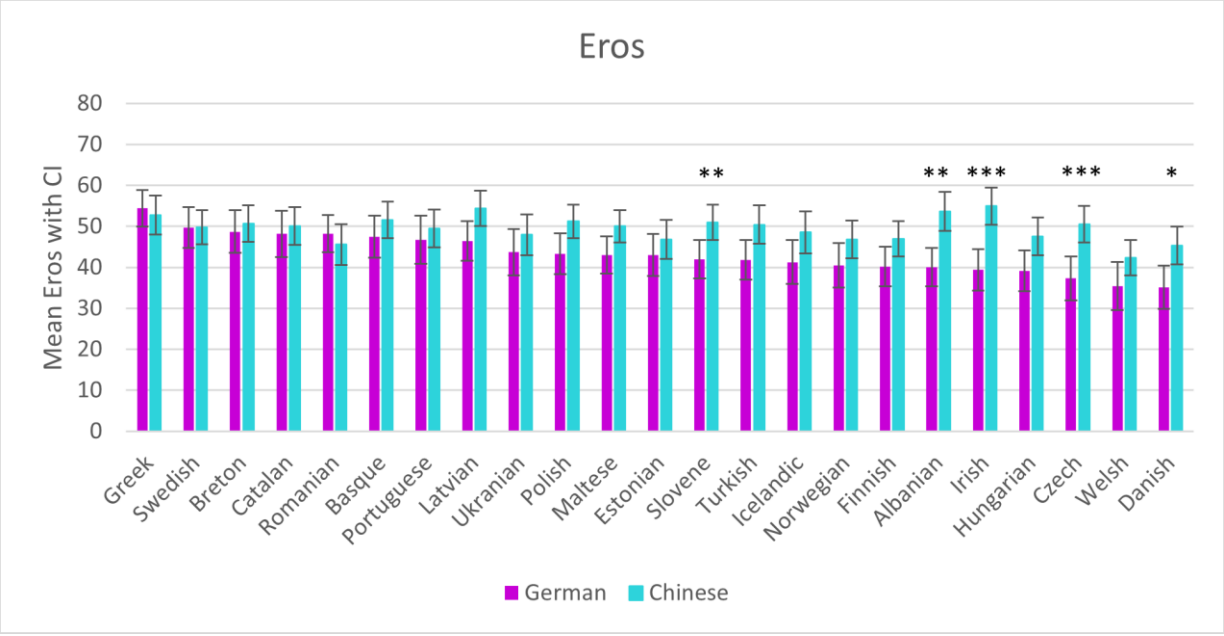

Figure 26. German and Chinese speakers' Eros ratings with Confidence Interval whiskers and significant differences.

9.2.2 Beauty

With respect to Beauty, Czech (p = 0.002) was the only language that presented a significant difference between both groups of speakers. Czech was rated significantly higher by the Chinese speakers in comparison to the German speakers, indicating Czech was found to be more beautiful among the Chinese group than among the German group.

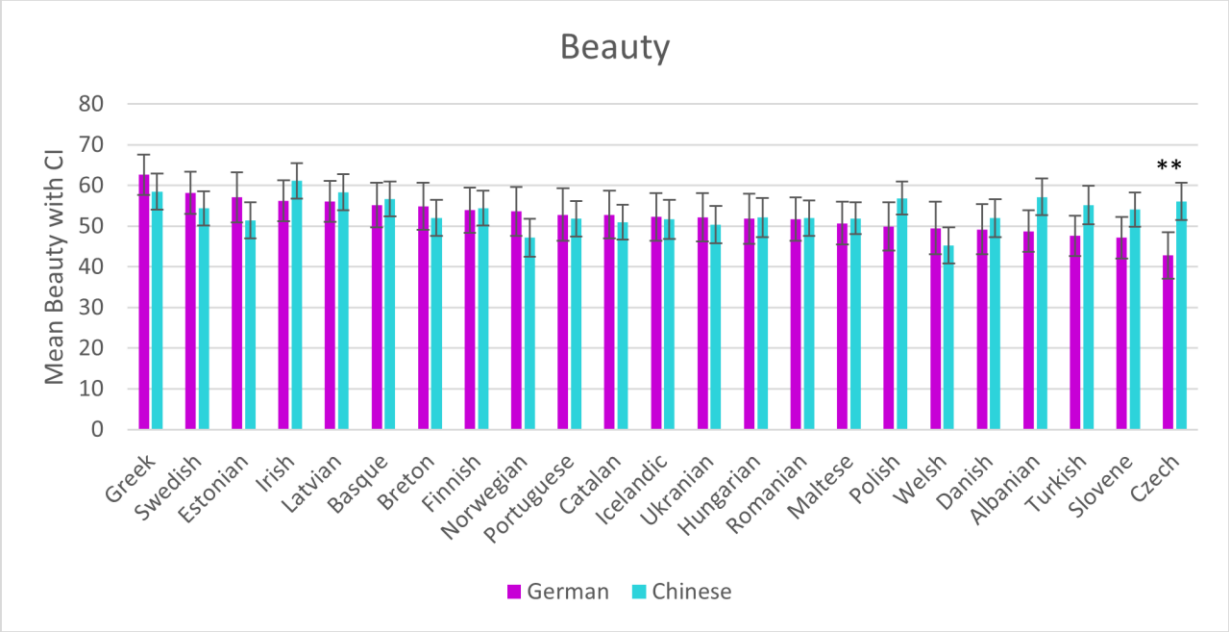

Figure 27. German and Chinese speakers' Beauty ratings with Confidence Interval whiskers and significant differences.

9.2.3 Status

Regarding Status, Albanian (p = 0.044), and Czech (p < .001) were rated significantly differently by the two groups. Again, the Chinese-speaking group assigned higher ratings to these languages compared to the German-speaking group.

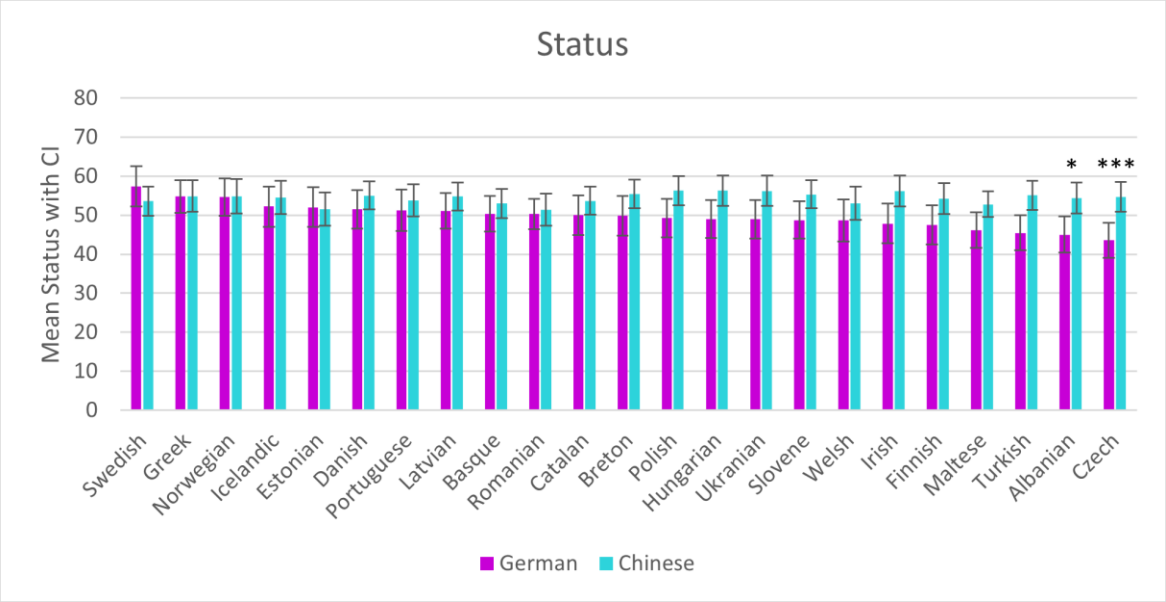

Figure 28. German and Chinese speakers' Status ratings with Confidence Interval whiskers and significant differences.

9.2.4 Order

Concerning Order, the ANOVA revealed that there was no significant difference between the groups, suggesting that languages were perceived similarly in terms of orderliness by both the Chinese and German speakers.

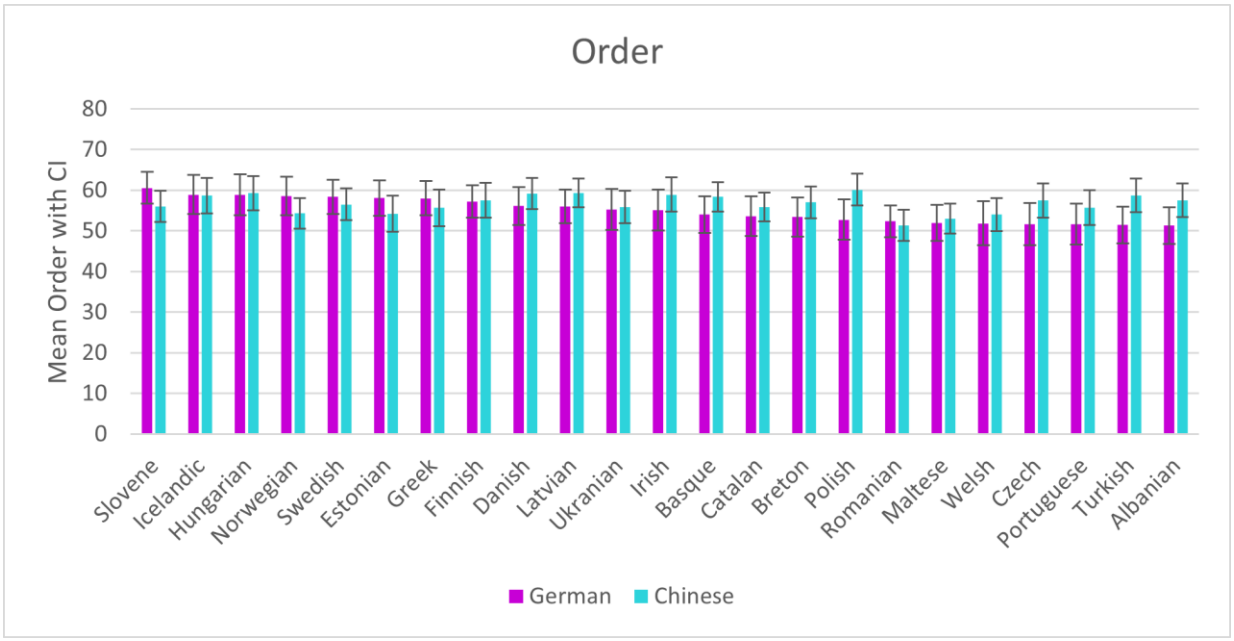

Figure 29. German and Chinese speakers' Order ratings with Confidence Interval whiskers and significant differences.

9.2.5 Voice

For the factor Voice, a significant difference was observed for Estonian (p = 0.023), and Latvian (p = 0.044) between the Chinese and German groups. German speakers favored the voices associated with these languages in comparison to Chinese speakers.

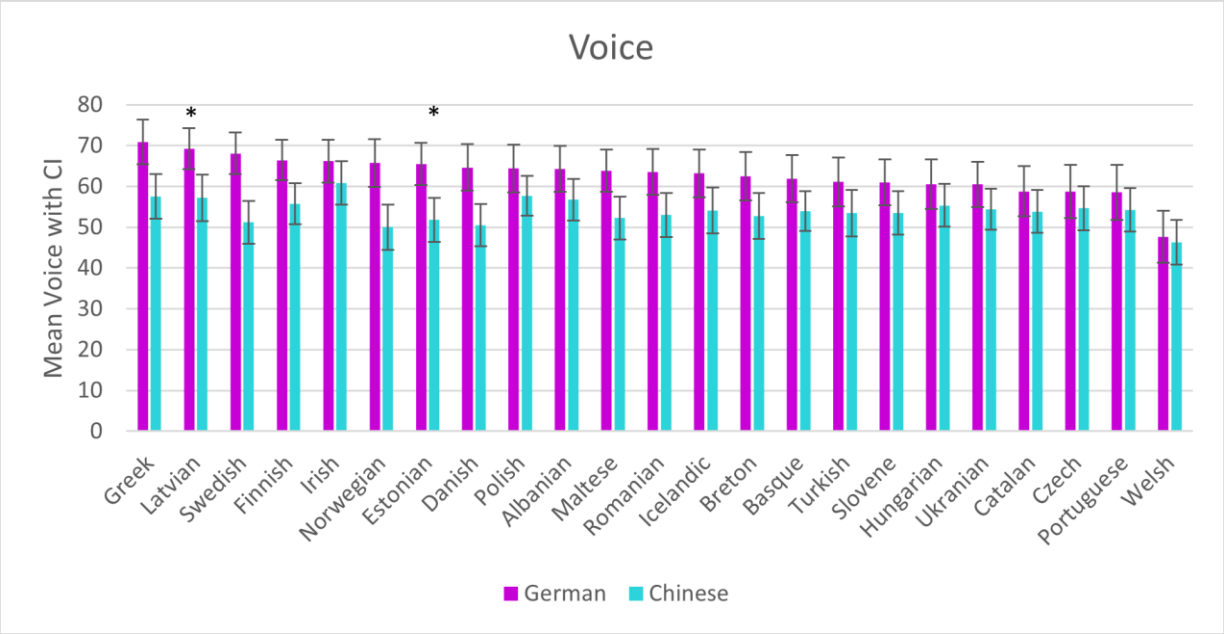

Figure 30. German and Chinese speakers' Voice ratings with Confidence Interval whiskers and significant differences.

9.2.6 Self-perceived Familiarity

Finally, Greek (p = 0.04), Norwegian (p = 0.006), Portuguese (p = 0.04), Slovene (p = 0.002), and Ukrainian (p = 0.021) exhibited significant differences between the groups in terms of Self-perceived Familiarity. German speakers reported feeling significantly more familiar with these languages in comparison to Chinese speakers.

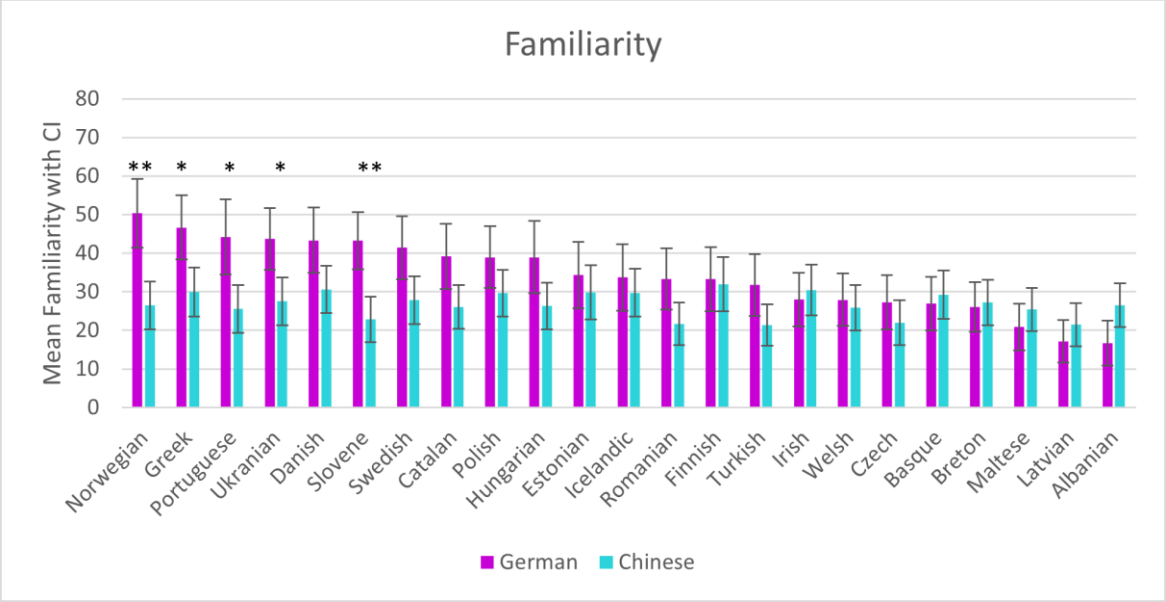

Figure 31. German and Chinese speakers' Voice ratings with Confidence Interval whiskers and significant differences.

9.3 Correlations

In order to assess the linear relationship between the two groups of speakers with respect to the different investigated factors, i.e., Eros, Beauty, Status, Order, Voice, and Self-perceived Familiarity, a one-tailed Pearson correlation was computed based on the mean of the 23 languages.

A significant correlation ($r = 0.51$, $p = 0.01$) between the groups was shown with respect to the factor Voice. Eros exhibited a moderate positive correlation ($r = 0.38$, $p = 0.07$), indicating marginal statistical significance. Familiarity ($r = 0.25$, $p = 0.05$), Beauty ($r = 0.20$, $p = 0.37$), and Order ($r = 0.12$, $p = 0.58$) demonstrated weak positive correlations. As for Status, it showed a weak negative correlation ($r = -0.16$, $p = 0.47$).

Notably, Voice and Eros were found to be the factors with a stronger correlation between the Chinese and German speakers, highlighting the significance of the speaker's voice in phonaesthetical perception, as hypothesized. The results will be further discussed in the next section.

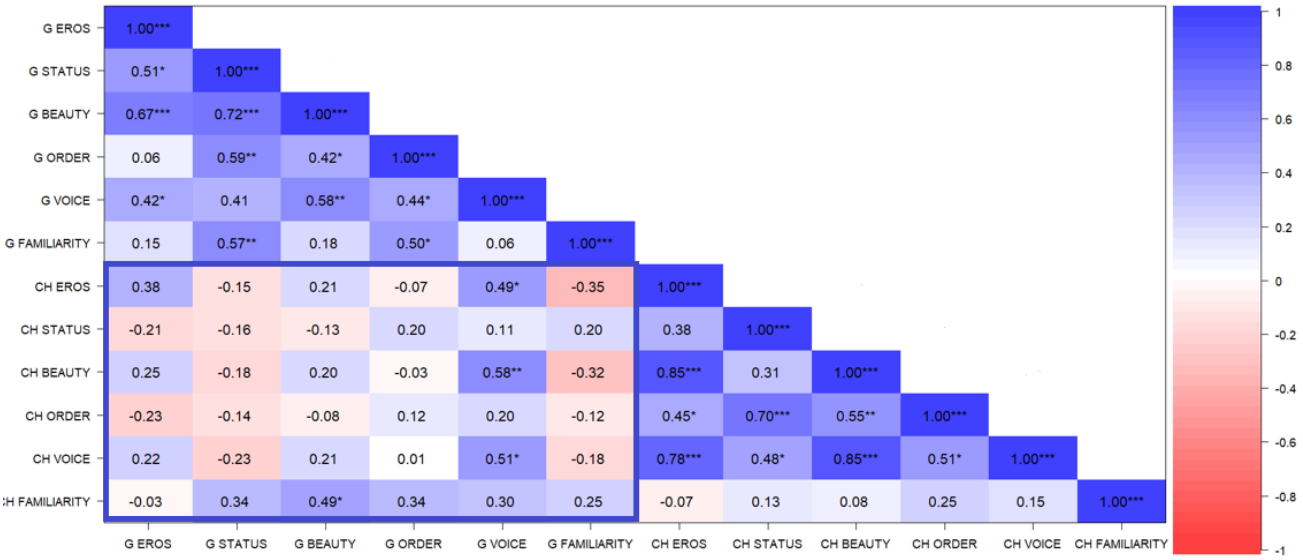

Figure 32. Correlogram (Chinese and German comparison) based on the means of the languages (n=23).

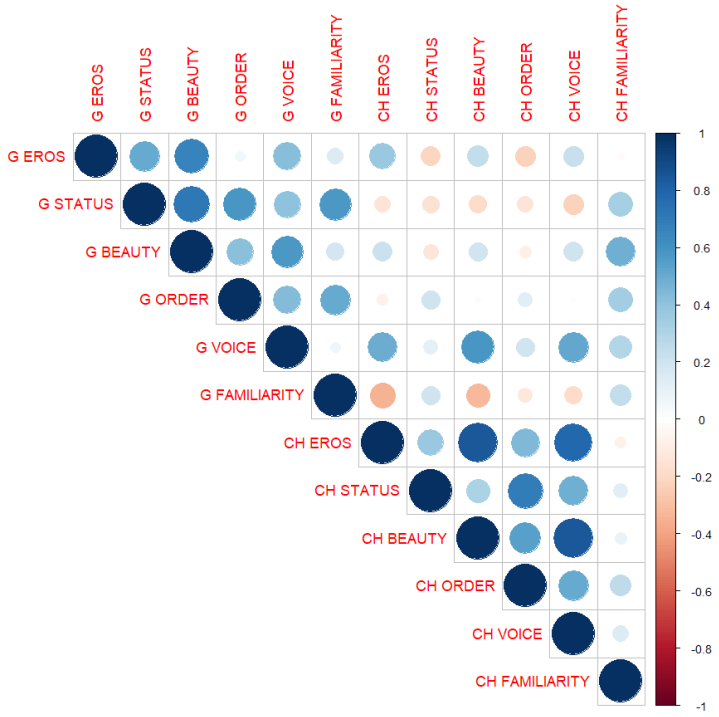

Figure 33. Correlogram (Chinese and German comparison) based on the means of the languages (n=23) CH – Chinese, G – German.

9.4 Results with Excluded Participants

Three participants were excluded from the German group of speakers (4.48% of the participants), and fifteen from the Chinese group (18.29% of the participants) resulting in a total of 131 participants (12.12% of the participants), 64 German speakers and 67 Chinese speakers.

After the removal of participants, the ratings underwent changes, particularly in the Chinese group. Although the changes were not major, most languages shifted positions with the language that preceded or followed them. Notably the least preferred languages remained the same after participant exclusion. The results of the Chinese-speaking group will be described below.

In terms of Eros, Irish (mean = 56.28, SD = 21.54), initially rated as the most erotic language, exchanged places with Latvian (mean = 56.79, SD = 19.22), which moved to second place in the evaluations. Welsh retained its position as the least erotic language (mean = 42.68, SD = 19.59).

Regarding Beauty, Irish remained the most beautiful language (mean = 63.92, SD = 19.73), followed by Latvian (mean = 61.22, SD = 19.25) and Greek (mean = 60.92, SD = 20.59). The latter two languages switched places compared to the initial ratings. Norwegian (mean = 47.77, SD = 22.42) and Welsh (mean = 46.02, SD = 20.50) remained as the least beautiful languages.

Concerning Status, Polish (mean = 58.40, SD = 17.15) became the top-rated language, followed by Hungarian (mean = 58.37, SD = 17.97), with these two languages swapping places. Maltese (mean = 53.24, SD = 16.45), Estonian (mean = 52.90, SD = 20.12), and Romanian (mean = 52.76, SD = 18.33), still received the lowest evaluations.

Similar to Status, Polish (mean = 63.05, SD = 17.64) retained its top rating, and Hungarian (mean = 62.59, SD = 18.28) came second in terms of Order. Welsh (mean = 56.13, SD = 18.87), Maltese (mean = 53.69, SD = 18.87) and Rumanian (mean = 52.41, SD = 18.20) persisted as the least preferred languages.

With respect to Voice, the highest-rated voice was Irish (mean = 66.20, SD = 21.34), consistent with the initial data. Irish was followed by Polish (mean = 61.80, SD = 18.56) and by Latvian (mean = 61.52, SD = 23.53), which exchanged places with Greek (mean = 59.86, SD = 24.74). As for the least preferred voices, Norwegian (mean = 51.89, SD = 25.31) and Welsh (mean = 48.19, SD = 24.01) remained in the last positions.

Finally, regarding Self-perceived Familiarity, Finnish was still perceived as the most familiar language (mean = 32.69, SD = 33.29), followed by Irish (mean = 30.91, SD = 30.98), and

Greek (mean = 30.55, SD = 29.90). The least familiar language was Romanian (mean = 20.47, SD = 24.33).

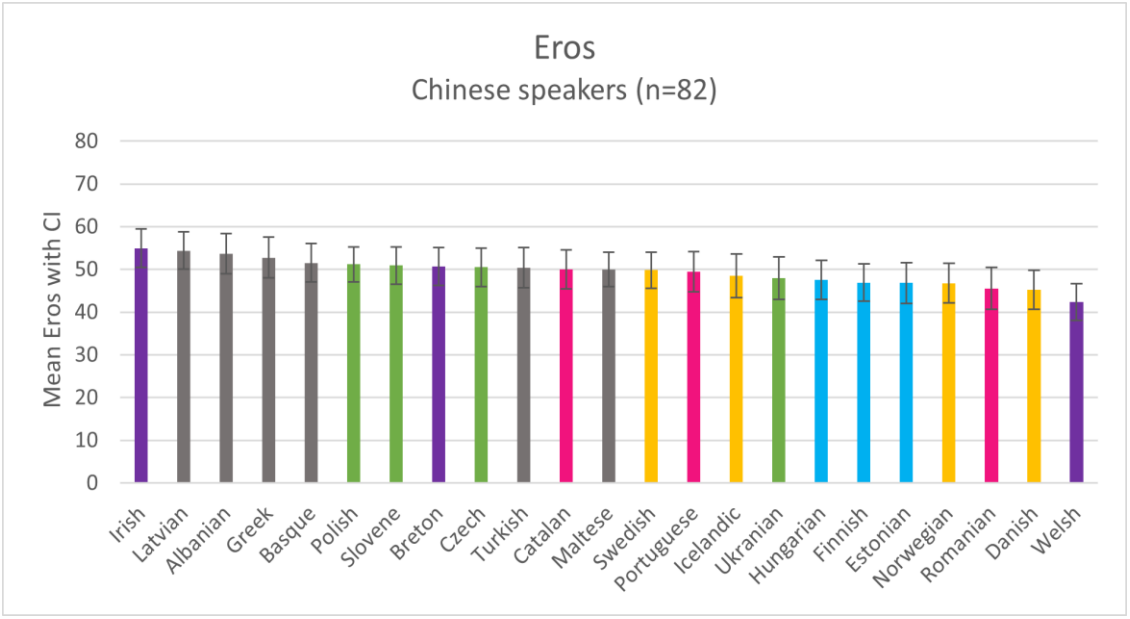

Figure 34. Mean Eros ratings with Confidence Interval whiskers and significant differences (Chinese speakers).

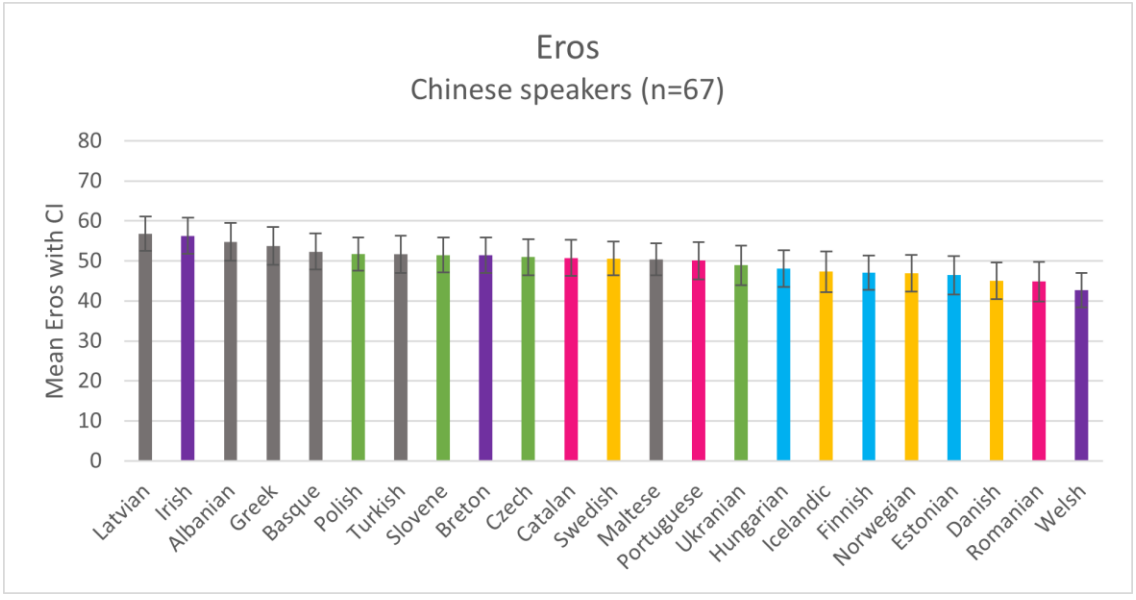

Figure 35. Mean Eros ratings with Confidence Interval whiskers and significant differences with excluded participants (Chinese speakers).

9.4.1 Differences Between Groups

A Mixed repeated measures ANOVA was conducted to assess the differences between the Chinese and German groups, without the eighteen participants. As in the initial analyses, separate ANOVAs were performed for each factor, i.e., Eros, Beauty, Status, and Order, with a Holm correction applied to adjust the p-values.

Regarding Eros, significant differences between the Chinese and German groups were observed in the languages Albanian ($p = 0.002$), Czech ($p = 0.003$), Danish ($p = 0.040$), and Irish ($p < .001$). In terms of Beauty, the only significant difference in ratings between the groups was found in Czech ($p < .001$). As for Status, Albanian ($p = 0.021$), Czech ($p < .001$), Hungarian ($p = 0.040$), and Turkish ($p = 0.015$) showed significant differences in the language evaluations. Concerning Order, significant differences between the group's ratings were found in Polish ($p = 0.046$). Finally, no significant differences were found regarding the voice of the speaker.

9.4.2 Correlations

A one-tailed Pearson correlation was computed based on the average of the 23 languages in the data without the eighteen participants.

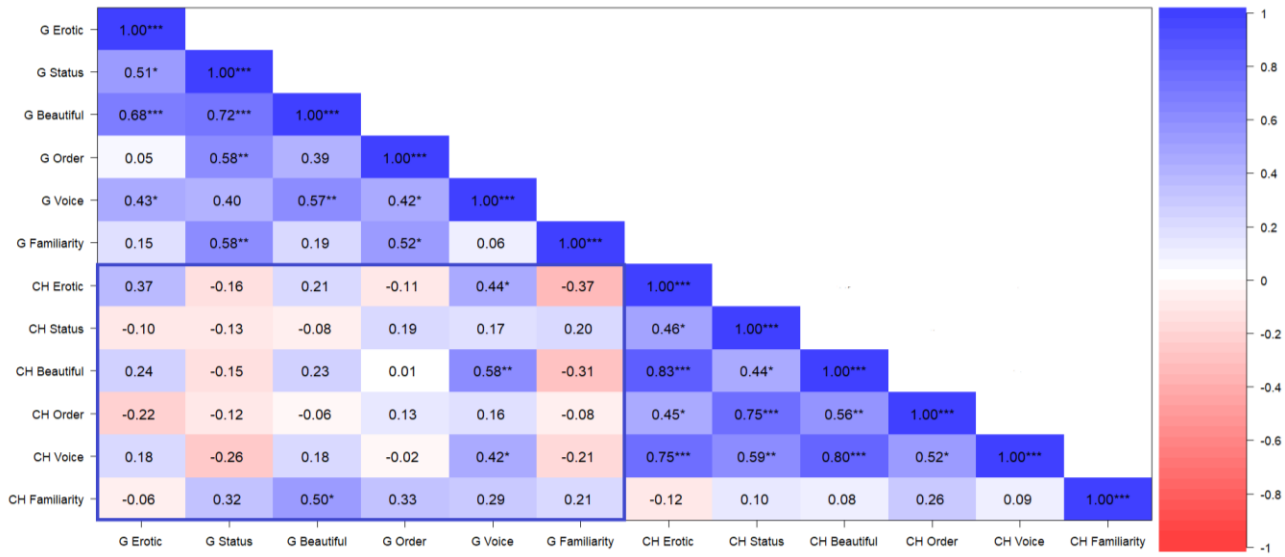

Figure 36. Correlogram (Chinese and German comparison) based on the means of the languages (n=23) with excluded participants.

The factor Voice was found to be positively correlated ($r = 0.42$, $p = 0.04$) between the groups. Eros was found to be moderately positively correlated between the Chinese and German speakers ($r = 0.37$, $p = 0.08$), indicating marginal statistical significance. Familiarity ($r = 0.21$, $p = 0.05$), Beauty ($r = 0.23$, $p = 0.29$), and Order ($r = 0.13$, $p = 0.56$) were also found to be positively

correlated, however not statistically significant, whereas Status exhibited a weak negative correlation (r = -0.13, p = 0.54), also not significant.

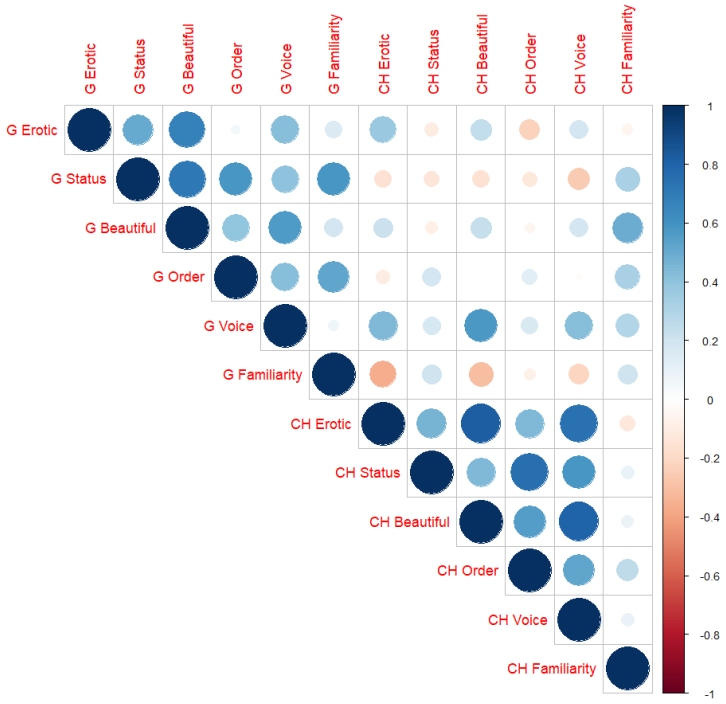

Figure 37. Correlogram (Chinese and German comparison) based on the means of the languages (n=23) with excluded participants.

10. Discussion

The purpose of this study was to investigate the influence of first language (L1) on language perception and to examine how speakers with a native language that is typologically unrelated to European languages evaluate the aesthetic characteristics of these languages. To achieve this, we compared two distinct groups: a group comprising speakers of a European language, specifically German speakers, and a group of non-European language speakers, represented by Chinese speakers. Both groups listened to recordings of 23 different European languages and rated them based on dimensions of eroticism, beauty, status, and orderliness.

We hypothesized that listeners with a L1 typologically unrelated to the European languages would perceive these languages differently from listeners with a L1 typologically related to these same languages. Consequently, it was expected that the group of Chinese speakers would rate the languages of the experiment differently from the group of German speakers. Based on the results of previous research (Reiterer et al., 2020, Kogan & Reiterer,

2021; Winkler et al., 2023) where familiarity had a particularly important impact on language perception, we hypothesized that the group of speakers of a European language would be more familiar with the stimuli. In the study by Reiterer & Kogan (2021) it was concluded that participants derived more pleasure from listening to languages they recognized and that were associated with foreign or second language-learning experience. In this research, we anticipated that the languages that served as stimuli would receive higher ratings from the German-speaking group compared to the Chinese-speaking group. This assumption stemmed from the belief that native German speakers might have had greater exposure to European languages than native Chinese speakers. However, contrary to our expectations, this hypothesis was not entirely supported.

After performing correlations and ANOVA analyses, we found in our study that German speakers obtained a higher score of language recognition than the Chinese speakers. The German group recognized the languages in 20% of the attempts, whereas the Chinese group recognized the languages in 3% of attempts, this being almost seven times as less as the German speakers. Despite this, in general terms, Chinese-speaking participants rated the languages higher than the German-speaking participants and not the other way around, contrary to our expectations based on previous research findings. Greek, Portuguese, and Hungarian were the three most recognized languages by the German group whereas Finnish, Swedish, and Portuguese were the top three recognized languages by the Chinese group. These results could be explained by the fact that a 15% of the participants (n = 12) reported to have lived in Finland for more than a month, with Finland occupying the second place in mobility. These participants might have felt being more familiar with Finnish and Swedish because these are the official languages in the country. Even if Finnish and Swedish were the most recognized languages by the Chinese speakers, they did not obtain higher ratings than the other languages. This is important to consider because in this scenario, familiarity did not correlate with language preference. Conversely, for the German-speaking group, recognition of Greek was better, and they rated it as the most erotic and beautiful language.

10.1 Preferred languages

In terms of the ratings, our findings exposed notable distinctions between the two groups of speakers. Notably, while numerous factors exhibited significant differences between the German and Chinese groups, the only exception was the factor of Order, which did not demonstrate any significant differences.

Regarding Eros, the significant differences between the groups were found in Albanian, Czech, Danish, Irish, and Slovene. For the factor Beauty, Czech was the only language that was

found to be significantly different between the groups. Significant differences in Status were noted in Albanian and Czech. In terms of Voice, German and Chinese speakers assessed Estonian and Latvian significantly differently. Lastly, concerning Self-perceived Familiarity, Greek, Norwegian, Portuguese, Slovene, and Ukrainian were revealed as significantly different between the groups.

On most factors, Greek was the language that received the highest scores by the German group. It received the highest ratings in Eros, Beauty, and Voice. As previously mentioned, Greek was also the most recognized language by this group, so probably familiarity with the language influenced the preference for it.

Concerning the Chinese group, Irish emerged as the most favorably evaluated language across several factors. It received the highest ratings in Eros, Beauty, and Voice, the latter mirroring the preference of Greek by the German-speaking group. Notably, Irish was not among the most recognized languages. Unlike the German group, where familiarity might have influenced preferences, it seems plausible that the favorable evaluation of Irish by the Chinese speakers could be attributed to tonality. It could be that Irish shares tonal qualities with Chinese, providing a sense of familiarity. Alternatively, it could be that the pitch of Irish does not resemble that of Chinese, leading participants to favor pitches that sound different from their own. This tendency may result in a lack of preference or even dislike toward their native pitch, aligning with findings from previous studies (Sluckin et al., 1982; Szpunar et al., 2004).

Despite these variations, a closer examination revealed more similarities than differences with respect to the evaluations of the languages. Anikin et al., (2023) convey that cross-cultural convergence in pleasantness scores can be a consequence of preferences for specific voices rather than language-specific phonetics or a consequence of indirect familiarity effects, i.e., lexical-phonetic resemblance to recognized languages with strong cultural connotations. This hypothesis is consistent with the study by Hilton et al., (2021) in which Swedish and Danish were aesthetically evaluated by Chinese speakers who had not been exposed to the Scandinavian languages before. The results showed that Swedish was preferred over Danish. As mentioned earlier, the authors of the study suggest that Swedish might have been found more attractive by Chinese speakers due to the presence of familiar sounds in the language. Swedish exhibits a high degree of variation in pitch contours and tone which could hold significance for Chinese speakers, particularly because Chinese is a tonal language (Hiton et al., 2021).

Nevertheless, in the study by Anikin et al., (2023), phonetic overlap with the mother tongue of the listeners was not associated with pleasantness. Surprisingly, speakers of a tonal language, such as the Chinese participants, did not exhibit a preference for tonal languages. In fact, the Chinese group, evaluated other tonal languages less favorably than non-tonal languages. While

the current thesis did not delve into pitch assessment, it becomes important to incorporate pitch analysis in future extensions of this research. This continuation of the topic would determine whether tonality plays a significant role in the study and in the perception of languages.

Another reason why Irish might have received the highest rating in Eros, Beauty, and Voice is that Chinese participants confused Irish with English, however, only 16 out of 82 participants reported Irish as English (19.5%) so this hypothesis might not be accurate.

A further hypothesis is that the voice of the speaker of Irish influenced the other factors. This presumption will be further discussed.

10.2 Cross-cultural Concordance in Language Preference

Remarkably, our study can be compared in several aspects to the study conducted by Anikin et al., (2023), which is one of the most extensive investigations into Phonaesthetics. The study seeks to determine if the phonaesthetical perception of a language is merely based on the sound of languages or if it is influenced by extralinguistic factors. The results of the research revealed that the languages of the experiment were correlated between the groups' rates (Pearson's r = 0.21 to 0.23), revealing some cross-cultural concordance in language preference.

The results of our investigation are consistent with the ones of the former study. In the study by Anikin et al., (2023), the aesthetics of the languages were approached from an integral perspective. The authors were interested in the pleasantness derived by the languages. Our study is also interested in this pleasantness, however, this research and previous research by Reiterer et al., (2020) employ different traits to describe the aesthetics of a language, i.e., Eros, Beauty, Status, and Order. If we consider these categories as separate concepts, then Eros and Beauty could be comparable to the concept of pleasantness that the study by Anikin et al., investigates.

In our study, Eros was found to be moderately positively correlated between the Chinese and German-speaking groups ($r = 0.38$, $p = 0.07$) indicating a marginal statistical significance and suggesting that, such as in the study by Ankin et al., (2023), there could be some cross-cultural concordance in language attractiveness. Beauty ($r = 0.20$, $p = 0.36$), and Order ($r = 0.12$, $p = 0.58$) were found to be positively correlated between the groups, contrary to Status, which was found to be weakly negatively correlated ($r = -0.16$, $p = 0.47$). In fact, an interesting observation is that Status was found to be negatively correlated with all Phonaesthetic factors except for Self-perceived Familiarity. This is an important aspect to consider, since it diverges from the patterns observed in of the factors. The anomaly could be a result of social standards. It is plausible that within the cultures of native Chinese speakers and native German speakers, status is associated to specific languages or varieties of languages. During the experiment, participants may have

associated languages perceived as having higher status with those that hold prestige in their respective cultures. This suggests some relation between linguistic perception of status and social connotations, which should be further explored.

Notably, this cross-cultural concordance not only concerns the preferred languages but also the least preferred ones. In the study by Anikin et al., (2023) significant cross-cultural agreement was found with respect to the most unattractive languages. These results were also observed in our study. We found a concordance in phonaesthetical judgements regarding the unattractive languages, for instance, Welsh emerged as the least preferred language by both Chinese-speaking and German-speaking raters in terms of Eros. It could be that this language is inherently unpleasant, however, it is also possible that, as Anikin et al., (2023) suggest, the negative judgement was caused by the voice of the speaker which resulted unpleasant for the listeners. Interestingly, the voice for Welsh was also rated as the least attractive by both, the Chinese and German groups. Moreover, this finding was not unique to our study. In the study by Winkler et al., (2023), in which the same stimuli set was used, Welsh was also identified as the lowest-rated language ($n = 145$, mean = 42.07, SD = 27.02). As expected, Voice emerged as the factor with the strongest correlation between the Chinese and German speakers ($r = 0.51$, $p = 0.01$). These results serve to affirm that voice plays a substantial role in language perception, aligning consistently with findings from numerous studies.

10.3 Voice Preferences

It is crucial to highlight that voice always manifested a robust positive correlation with the primary factors within the groups. Within the Chinese group, Voice exhibited a significant positive correlation with Eros ($r = 0.78$, $p < 0.05$), Beauty ($r = 0.85$, $p < 0.05$), Status ($r = 0.48$, $p = 0.02$), and Order ($r = 0.51$, $p = 0.01$). Similarly, within the German group, Voice displayed significant positive correlations with Eros ($r = 0.42$, $p = 0.04$), Beauty ($r = 0.58$, $p = 0.004$), Order ($r = 0.44$, $p = 0.04$), and marginally significant with Status ($r = 0.41$, $p = 0.05$). These results demonstrate that Voice is strongly correlated with phonaesthetical perception of languages, especially with Beauty and Eros. In fact, this voice effect was also perceived in previous phonaesthetical studies (Reiterer and Kogan, 2020; Reiterer and Kogan, 2021; Winkler et al., 2023). For instance, in the research by Winkler et al., (2023), Voice rating contributed about 30% of the variance in phonaesthetical evaluations; and in the study by Reiterer and Kogan (2021), Voice correlated highly with the ratings of Beauty, Eros, Softness, and Melody ($r = 0.8$, $p = 0.000$**), and Status ($r = 0.5$, $p = 0.04$).

Also, in the study by Anikin et al., (2023), the voice of the speakers had a significant impact on the preferences. First, female voices were preferred over male voices. This finding regarding voice gender, sums up to the other studies in which female voices were favored (Reiterer et al., 2020; McMinn et al., 1993; Whipple and McManamon, 2002). In addition, the female voices that were preferred were classified as breathy and with lower-pitch variability (Anikin et al., 2023). This aligns with the findings of Kreiman and Sidtis (2011), who identified breathiness as an attractive quality of women's voices. Authors argue that this is probably because breathiness is associated with intimacy (Pisanski & Bryant, 2019). These results prompt the question of what specific qualities make certain voices preferred and the underlying reasons, inquiry that is substantial for gaining insights into vocal attractiveness.

Apparently, there are important differences in the perception of male and female voices. As it was already addressed in this thesis, in the study by Reiterer et al., (2020), 16 language recordings were evaluated. Half of them were spoken by male voices and the other half by female voices. Participants were asked how much they liked the voices of the speakers, and it was found that female voices were significantly preferred over male voices. These results incorporated into the current study, in which only female voices were chosen for the set of recordings used in the experiment. Moreover, the speech samples of the experiment were normalized. The objective of including only female voices was to decrease the influence of the voice on language perception, however, the results indicated that this assumption did not hold true, as voice continued to exert a significant impact on the phonaesthetical ratings.

10.4 Vocal Attractiveness & Evolution

Brück et al. (2011) explain that apart from the gender of the voice, a variety of pieces of information are transported to a linguistic stimulus. There are different affects and moods that influence speech. According to the authors, the energy distribution on the frequency spectrum changes depending on the volume, the speaking speed, the pauses, the fundamental frequency, and the voice quality. These alterations serve as expressions of emotions of the speaker and are interpreted by the listener. For instance, frequency and volume of speech often increase when expressing anger, decrease in sadness, show an inclination to rise in pitch and speech rate during fear, and exhibit heightened pitch, loudness, and speech rate when experiencing joy.

But why is it that some voices sound more attractive than others? Vocal attractiveness appears to be linked to physical attractiveness in humans (Pisanski & Bryant, 2019). Positive personality attributes are often ascribed to individuals perceived as vocally attractive, paralleling the associations made with physically attractive individuals. Such attributes include power,

confidence, emotional stability, intelligence, kindness, and social competence. Pisanski & Bryant (2019) indicate that voice pitch and voice formants exhibit sexual dimorphism and play a role in predicting various mate-relevant traits and preferences across mammalian species, including humans. The authors emphasize that voice features have been strongly affected by sexual selection, resulting in distinct voice pitch differences between men and women. These insights are derived from an evolutionary perspective, highlighting the evolutionary pressures that have shaped vocal characteristics related to mate selection and attraction.

According to some research, female voices tend to be related to nurturing, childhood, safety, and security whereas male voices are usually associated with authority, dependability, and strength. (McMinn, Brooks, Triplett, Hoffman, and Huizinga, 1993, as cited in Reiterer et al., 2020). Men's voice pitch (F0) is on average 120 Hz and women's pitch voice (F0) is 210 Hz. This implies that men's voice sounds more 'deeper' than women's voice. Pisanski & Bryant (2019) declare that as a general rule, men and women are attracted to sexual dimorphism in voices of the opposite sex. Cross-culturally, women tend to prefer lower pitch in men's voices, while men typically prefer higher pitch and formants in women's voices. The inclination of men toward femininity in voices of women and women's preferences for masculinity in voices of men likely evolved as a mechanism under sexual selection for identifying high-quality mates. This aligns with the broader evolutionary perspective on mate selection and the role of vocal characteristics in signaling mate quality.

From this dimorphic perspective, a higher voice pitch in a female voice would be preferred by men because it is a good indicator of relatively elevated levels of estrogens, which commonly denote fecundity and reproductive value or fitness, aspects that are propitious for a mating host. Menstrual cycle also influences voice preferences, with voice pitch changing depending on hormone levels, increasing during ovulation. Certain studies suggest that women's voices are judged by men as more attractive during the ovulation period and least attractive around the time of menstruation (Pipitone and Gallup Jr, 2008; Pipitone and Gallup Jr, 2012, as cited in Pisanski & Bryant, 2019). Although high voice pitch in women is generally associated with perceptions of femininity, youthfulness, flirtatiousness, and sexual interest, preferences are not uniform. There can be a preference for relatively lower pitch in women's voices because low pitch can be a communicator of intimacy, maturity, or confidence (Pisanski & Bryant, 2019). Extreme dimorphism, however, is unlikely to be attractive. For instance, Borkowska & Pawlowski (2011) suggest that relatively higher pitch in women's voices, above a 280 Hz threshold, are not preferred. The authors explain that a plausible reason for this is that voice pitches that fall into the range of adolescent voice pitch (above 300 Hz) indicate sexual immaturity rendering them less

desirable. Furthermore, the authors claim that in other studies, listeners associate this high pitch voice with behavioral immaturity, babyishness, submissiveness, and incompetence.

In men's voices, a relatively low voice pitch or formant is genetically indicative of higher levels of circulating testosterone, contrasting with a higher-frequency voice pitch which suggests lower testosterone levels (Pisanski & Bryant, 2019). These higher levels of testosterone are related to various important mating characteristics such as dominance, physical strength and body size, and immune responsiveness, qualities that predict reproductive success. Nevertheless, this may be counterproductive since higher levels of testosterone in men have also been associated with higher levels of infidelity, divorce, aggression, and lower levels of parental and resource investment (Booth and Dabbs, 1993; Eisenegger et al., 2011; Mazur and Booth, 1998, as cited in Pisanski & Bryant, 2019). Research suggests that women's preferences for low voice pitch or formants in men's voices are influenced by considerations of short-term versus long-term relationships. Preferences for more masculine voices are also influenced by women's hormone levels, with a preference for more masculine voices during ovulation (Feinberg et al., 2012; Puts, 2005, as cited in Pisanski & Bryant, 2019). This reflects the complex interplay between hormonal influences, evolutionary preferences, and the nuances of relationship contexts.

Beyond preferences explained by an evolutionary paradigm, research has indicated that individuals with attractive voices tend to have attractive faces too. The authors point out that this hints the possibility of an interaction between different sensory modalities, where information is exchanged between them. For instance, a study conducted by O'Connor et al., (2013) discovered that men prefer more feminine faces and voices over masculine ones, and these cross-modal preferences are positively related.

This insight is crucial for the present research. If preferences extend across multiple sensory modalities, it underscores the necessity for further investigations that explore the relationship between voice and other sensory channels. Such studies could offer valuable insights into attractiveness on a broader sense. By examining how various sensory cues interact, we can obtain a better understanding of how individuals perceive and evaluate attractiveness. This understanding can have implications not only in the field of Phonaesthetics but also across diverse disciplines.

10.5 Vocal Attractiveness over Familiarity

In this study, our attempt to discern distinct perceptions of languages among speakers with a first language (L1) unrelated typologically to certain languages compared to speakers with an L1

typologically related generated inconclusive results. Contrary to our expectations, the differences between these two groups were overshadowed by their similarities.

In this research, familiarity did not exhibit the effect we were expecting. It did not have a significant effect on the evaluation of the languages, but instead, the voice of the speaker did. The study of vocal attraction holds importance for Phonaesthetics and Cognitive Sciences, but also for many other disciplines. Given that human communication relies predominantly on language, particularly speech, the impact of voice on perception becomes crucial. Identifying preferred voices could help to enhance communication in fields such as speech technology, voice interfaces, advertising, media, education, marketing, telecommunications, psychological and counseling services, and more. Understanding vocal attractiveness is fundamental for optimizing the listener's experience in diverse applications.

An intriguing aspect for further study is whether voice preferences manifest cross-cultural consistency or vary across diverse cultures. The results of this research suggest a potential cross-cultural concordance in voice preferences, encouraging exploration into the universality of such preferences.

10.6 Limitations

In this section, the limitations of this research will be exposed.

10.6.1 Participant’s Languages

One major limitation of the study regards the Chinese-speaking population. It would have been optimal to recruit participants that were completely unfamiliar with the languages of study, however, we only controlled for the participant’s first language (L1) by exclusively recruiting native speakers, and for their second language (L2) by removing from the data the ratings of the languages with which participants had prior experience and that were within the languages that were used in the experiment of this study. We did not control the exposure of the participants to other languages, so for future studies, it would be recommendable to recruit participants controlling this previous exposure to the languages. Additionally, it would be advisable to recruit participants who are permanent residents of their respective countries. In our study, many of the participants were residing abroad and therefore, were exposed to the languages spoken in these nations. By selecting participants with limited or no mobility, familiarity will likely decrease, ensuring that the evaluations of the languages are not affected by their previous exposure to them.

In addition, it is important to note that not all Chinese participants spoke the same language; they were speakers of many of the different Chinese languages such as Cantonese, Mandarin, etc. As previously explained, these languages are different from each other. If first language indeed has an impact on language perception, it would be preferable to select speakers of only one Chinese language. Alternatively, another option would be to analyze each group of speakers of the different Chinese languages separately. In our study, the number of participants for each Chinese language was not balanced, so we could not have obtained significant results comparing and analyzing the separate groups of Chinese languages.

10.6.2 Participant Recruitment

Another significant limitation pertains to participant recruitment. As previously mentioned, since the experiment was conducted entirely online and required participants who could not have been locally recruited in Vienna, we chose to utilize online platforms, specifically CloudResearch and Prolific. Conducting experiments online has become increasingly common due to its numerous benefits; however, it is not without its disadvantages. One major issue we encountered with these platforms was the reliability of the participants. Unfortunately, a considerable amount of participant data proved to be unreliable, leading us to exclude participants from the analysis. We attribute this behavior to several factors, such as boredom, a lack of proper understanding of the instructions, or participants only engaging in the experiment for financial gain without genuine interest for the research objectives.

10.6.3 Excluded Participants

In our study, a total of eighteen participants (12.12% of the participants) were removed from the data, three German-speaking participants (4.48% of the participants) and fifteen Chinese-speaking participants (18.29% of the participants). We conducted a reexamination of the data through the application of statistical analyses, namely a Mixed Repeated Measures ANOVA and correlation analyses between both groups of speakers. Distinctions emerged when comparing the results of these analyses with and without the excluded participants.

In terms of Eros, the initial results revealed significant differences in the language evaluations, encompassing Albanian ($p = 0.002$), Czech ($p < .001$), Danish ($p = 0.015$), Irish ($p < .001$), and Slovene ($p = 0.038$). However, in the results with the excluded participants, a reduction in the number of languages exhibiting these significant differences was observed. Significant variations were observed in Albanian ($p = 0.002$), Czech ($p = 0.003$), Danish ($p = 0.040$), and Irish ($p < .001$), while Slovene showed no significant differences. As for Beauty, significant differences

between the groups remained consistent when comparing the results with and without excluded participants. The only significant difference in ratings between the groups was found in Czech. The difference between these results is that in the initial ones ($p = 0.002$), the significant difference was lower than in the results where participants were excluded ($p < .001$). Regarding Status, in the results with the excluded participants, significant differences emerged in Albanian ($p = 0.021$), Czech ($p < .001$), Hungarian ($p = 0.040$), and Turkish ($p = 0.015$). In the initial results, only Albanian ($p = 0.044$) and Czech ($p < .001$) exhibited significant differences. Concerning Order, in the initial results, no significant differences were found, but significant differences between the group's ratings were encountered in Polish ($p = 0.046$) after participants were removed. Finally, contrary to Order, no significant differences were identified in terms of Voice after participant removal, whereas in the original results, significant differences were observed in Estonian ($p = 0.023$) and Latvian ($p = 0.044$).

With respect to the correlations, some differences between the results of the data with and without excluded participants were encountered. Voice was the factor with the most robust positive correlation among all analyzed factors. This result remained consistent after the removal of participants; however, a reduction in the strength of the correlation was observed, decreasing from a correlation coefficient (r) of 0.51 ($p = 0.01$) to an r of 0.42 ($p = 0.04$). Eros showed the second strongest correlation in both sets of results; yet a minor decrease in the correlation coefficient was observed when comparing both results, from $r = 0.38$ ($p = 0.07$) to $r = 0.37$ ($p = 0.08$). Beauty represented the subsequent factor in terms of strength of the positive correlation between the ratings of the two groups of speakers in the results with the excluded participants. The correlation coefficient increased compared to the initial results from $r = 0.20$ ($p = 0.37$) to $r = 0.23$ ($p = 0.29$). A similar increment occurred in Order when comparing the results with and without excluded participants. In the initial data, r was 0.12 ($p = 0.58$) and in the second one r was 0.13 ($p = 0.56$). The positive correlation for Order remained weak. As for Status, it exhibited a weak negative correlation in both sets of results, however, the correlation coefficient increased from -0.16 ($p = 0.47$) to -0.13 ($p = 0.54$) when participants were removed.

The most substantial differences between both sets of results was found in Voice (from $r = 0.51$ to $r = 0.42$). Nevertheless, even with this difference, the positive correlation between the German and the Chinese groups remained significant. This implies that even without the excluded participants, Voice was the most correlated factor, providing some evidence for a cross-cultural perception of voice.

In the absence of 12% of participants, Eros emerged as the second most correlated factor. The distinction between the results with and without the excluded participants is 0.1. Eros retained a positive correlation between both groups of speakers.

These results show that while the differences between the results with and without these eighteen participants do not deviate significantly from the initial results, there is some recognizable variance. This variability is particularly evident in language ratings, for instance, in the case of Eros. In the initial results, Irish was rated as the most erotic language by Chinese speakers. In the results with the excluded participants, Latvian claimed the position of the most erotic language. This exchange in positions occurred across several languages in various categories, i.e., Eros, Beauty, Status, Order, etc., emphasizing the dynamic nature of linguistic perceptions.

It is essential to highlight that the least preferred languages remained unaltered, specifically, those languages rated the lowest across varied factors. This is an important observation that promotes research of the least preferred languages. Furthermore, a more pronounced cross-cultural concordance was observed in the assessment of unpleasant languages than of pleasant languages between both groups, potentially influenced by the perceived unpleasantness of the voice of the speaker. In addition, to address the results better, an analysis and comparison of pitch contours in different languages in future research is recommended.

Dropout rates in empirical research are pervasive. This thesis illustrates how the removal of participants can impact research results. In this case, with eighteen participants excluded (12% of the participants), the difference between the initial results and those with excluded participants does not vary considerably, but several changes are exhibited. It is already common to find unreliable responses in any social experiment, especially in those using qualitative methods, however, it is even more common when experiments are conducted online because the control over the participants is limited. Fortunately, some online participant recruitment platforms provide features that allow the rejection of participants whose responses appear unreliable. However, in other platforms, controlling this aspect is more challenging. Hence, it is crucial for the online platform to facilitate a recruitment process that enables the selection of participants with acceptable performance. In the current online times, considering these factors is vital to ensure truthful and reliable research results.

10.6.4 Voice Adjustment

As for pitch contours for the languages, these were not studied in this research. For a future study, it would be advisable to register the pitch contours of the languages that serve as stimuli and the pitch contours of the native language of the participants to assess phonetic similarities between them. By measuring pitch contours, we could explain, for example, why Irish was the preferred language in terms of Eros and Beauty for the Chinese speakers. This evaluation may solve the disjunctive whether speakers prefer languages whose pitch contours are similar to those of their native language (Hilton et al., 2020) or languages whose pitch contours are different (Anikin et al., 2023).

In this study, there were two different voice sets for each language. In the previous studies where the same experiment was conducted (Winkler et al., 2023), the two voice sets were analyzed separately, revealing no significant differences between them. In this study the voice sets were analyzed jointly, nonetheless, for a follow-up study, it would be recommendable to analyze each voice set separately as in the previous studies, since this differentiation could provide clearer results with regards to the preference of the voice of the speakers.

In addition, a matched-guise test would be an ideal alternative to solve the voice bias, however, it is almost impossible to find a native speaker of so many different languages. Another option is to find similar voices for every language. The most recent and promising option that is being investigated by Susanne Reiterer and the Phonaesthetics Research Group involves generating artificial voices with a natural sound for every language.

10.6.5 Experiment's Environment

It is essential to acknowledge that participants conducted the task in an uncontrolled environment. The equipment participants used varied for each participant and therefore, the quality of the audio probably differed depending on the sound devices. Just like in Hilton et al. (2021), it would be ideal to perform the experiment in the same fixed place, nonetheless, it is complicated to perform such experiment with participants residing in a remote country like China.

10.6.6 Latin Lover Effect

One of the most explored phenomena in Phonaesthetics research is the 'Latin Lover' effect. The 'Latin Lover' effect declares that Romance languages (e.g., French, Italian, Spanish) are perceived as sounding more attractive than non-Romance languages (Winkler et al., 2023). In the previous studies by Reiterer et al., (2020) and Kogan & Reiterer (2021), different European languages were used as stimuli, nevertheless, participants were able to recognize them and

therefore, familiarity had a significant effect on the perception of the languages. For this reason, in the study by Winkler et al., (2023) the most common languages were excluded, and lesser-researched languages were included instead. The research aimed, among other things, at investigating if Romance languages were preferred as it was discovered before. The results suggested that the Romance languages used as stimuli did receive conditional preferential treatment with higher ratings for Eros and Beauty.

In this study, the same lesser-researched languages that were used in the study by Winkler et al., (2023) were utilized. Surprisingly, the results of this investigation showed that Romance languages were not particularly favored by the participants, including both Chinese and German speakers. There was no observed ‘Latin Lover’ effect.

In contrast to Winkler et al.'s (2023) study, a more favorable approach could have involved prioritizing more commonly researched languages over lesser-research ones, as exemplified in the studies by Reiterer et al. (2020) and Kogan & Reiterer (2021). This approach might have prompted more noticeable differences in language ratings between the two groups of speakers, providing clearer insights into familiarity and language perception. This methodology could be considered as a valuable suggestion for further research.

Finally, to summarize, first language did not seem to have a significant effect on language preferences, on the contrary, the results suggest that there could be some cross-cultural convergence regarding language attractiveness. These results are consistent with the research by Anikin et al., (2023), and as the authors point out, “this finding promotes an egalitarian view of extant world languages, demonstrates the feasibility of cross-cultural phonesthetic research, and raises important questions about the role of esthetics in language evolution” (p,1).

11. Conclusions

The realm of Phonaesthetics has gained increasing interest in recent years, with numerous studies seeking to explore the perception of different languages. This is one of the many investigations that aim to contribute to the investigation of this subject. Phonaesthetics, as an interdisciplinary and multidisciplinary field, encompasses various disciplines such as Linguistics, Psycholinguistics, Sociolinguistics, Psychology, Neuroscience, etc., offering multiple lenses through which it can be explored.

This study delves into the impact of first language (L1) on language perception. Previous studies (Reiter er al., 2020; Kogan & Reiterer, 2001; Winkler et al., 2023) emphasized the

importance of familiarity in language perception and suggested a positive correlation between familiarity and language attractiveness. This pilot study replicates and extends this inquiry, however, our focus lies primarily on familiarity, specifically, investigating the effect of L1 on phonaesthetical perception. To assess this, we recruited two groups of speakers with different native languages: German native speakers and Chinese native speakers and conducted a comparative analysis of their responses. Participants were presented with recordings of 23 European languages and were asked to evaluate them based on four phonaesthetical aspects: Eros, Beauty, Status, and Order. Surprisingly, our investigation revealed that L1 did not significantly impact language preferences. This unexpected finding suggests some cross-cultural concordance in phonaesthetical perception, particularly evident in terms of Eros, which aligns with the findings of Anikin et al. (2023). This implies that languages may be perceived similarly across cultures, holding significant implications for future research in Phonaesthetics and Cognitive Sciences. In terms of the remaining phonaesthetical aspects studied, Beauty and Order exhibited positive correlations between Chinese and German speakers, nevertheless, the strength of these correlations was moderate. Conversely, Status demonstrated a weak negative correlation between the groups. The discrepancies in correlation coefficients underscore the need for further investigation and exploration in future research.

Furthermore, the investigation proved the profound influence that voice has on language perception. This finding has already been addressed by Phonaesthetic research (Reiterer et al., 2020; Kogan & Reiterer, 2021; Winkler et al., 2023). The results suggest some cross-cultural concordance on voice perception. It is possible that voice influenced the phonaesthetical preferences of participants of both groups, nonetheless, something noticeable in this study is that preferences regarding voice match regardless of the mother tongue. This is an important finding that also requires future exploration. Investigating voice attractiveness holds potential applications not only within Phonaesthetics but across different areas. Comprehending voice attractiveness could help optimize several applications involving voice usage, spanning from technological interfaces and advertising, to education and psychological services.

In addition, despite excluding 12% of participants from the study due to unreliable responses, the main results remained consistent, with only certain changes. This information may provide an insight into potential differences after participant dropouts, emphasizing the need for robust participant selection and retention strategies in the future.

Moreover, our results may support the inherent-value hypothesis proposed by Giles (1974), suggesting that certain traits of languages are inherently more attractive than others. However, further exploration and substantiation of this hypothesis are necessary.

In essence, this thesis aims to inspire future investigators into the realm of Phonaesthetics; to deepen their exploration into the subject. Beyond theoretical implications, the study of Phonaesthetics can help us understand the relationship between languages, aesthetics, and human cognition. As technology continues to advance and societies become more interconnected, the study of Phonaesthetics can guide us toward a more profound comprehension of the beauty inherent in the sounds that define our linguistic experiences.

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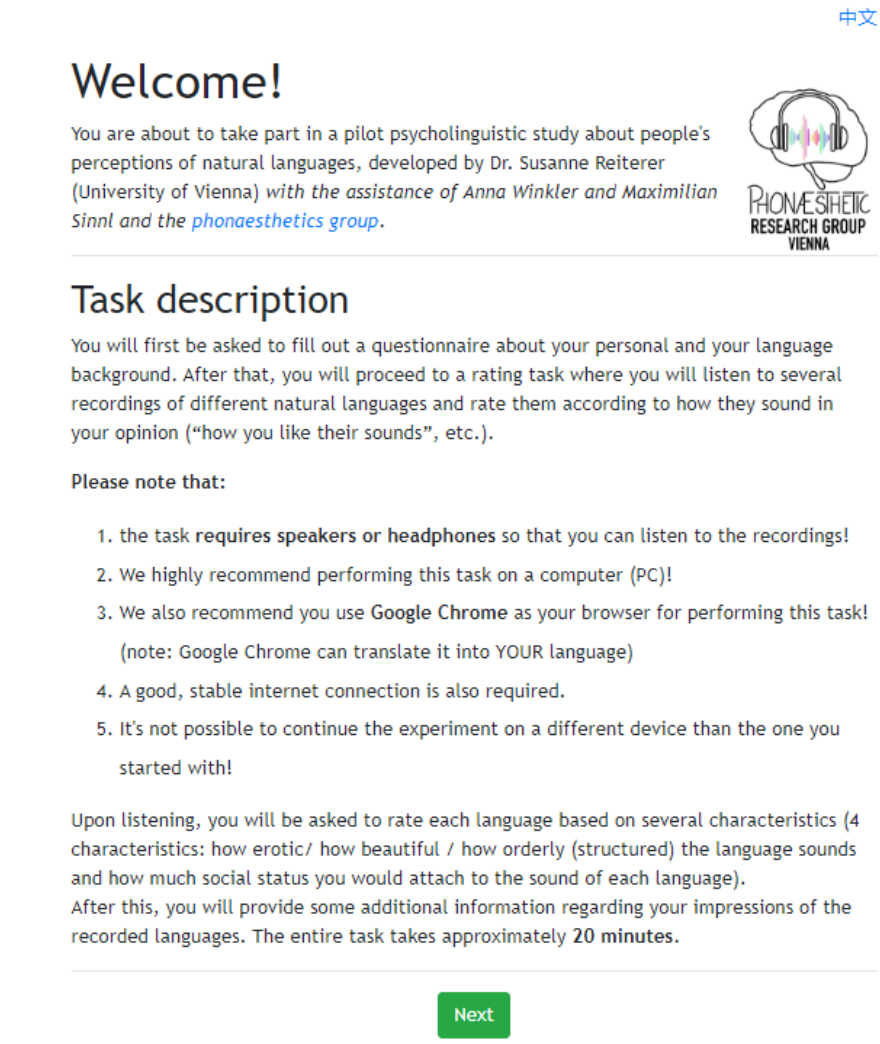
Appendix



中文

Welcome!

You are about to take part in a pilot psycholinguistic study about people's perceptions of natural languages, developed by Dr. Susanne Reiterer (University of Vienna) *with the assistance of Anna Winkler and Maximilian Sinnl and the phonaesthetics group*.

PHONÆSTHETIC RESEARCH GROUP VIENNA

Task description

You will first be asked to fill out a questionnaire about your personal and your language background. After that, you will proceed to a rating task where you will listen to several recordings of different natural languages and rate them according to how they sound in your opinion ("how you like their sounds", etc.).

Please note that:

1. the task **requires speakers or headphones** so that you can listen to the recordings!
2. We highly recommend performing this task on a computer (PC)!
3. We also recommend you use **Google Chrome** as your browser for performing this task!
   (note: Google Chrome can translate it into YOUR language)
4. A good, stable internet connection is also required.
5. It's not possible to continue the experiment on a different device than the one you started with!

Upon listening, you will be asked to rate each language based on several characteristics (4 characteristics: how erotic/ how beautiful / how orderly (structured) the language sounds and how much social status you would attach to the sound of each language).
After this, you will provide some additional information regarding your impressions of the recorded languages. The entire task takes approximately **20 minutes**.

Next

Experiment in English and Chinese

Repeated Measures ANOVA

Within subjects

EROS

CHINESE

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p
Language	17825.140[a]	22[a]	810.234[a]	3.842[a]	< .001[a]
Residuals	334027.990	1584	210.876		

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated (p < .05).

		Mean Difference	SE	t	Pholm
Albanian	Basque	3.110	2.404	1.294	1.000
	Breton	3.932	2.404	1.636	1.000
	Catalan	4.521	2.404	1.881	1.000
	Czech	4.110	2.404	1.710	1.000
	Danish	9.986	2.404	4.155	0.008**
	Estonian	7.726	2.404	3.214	0.307
	Finnish	6.726	2.404	2.798	1.000
	Greek	1.370	2.404	0.570	1.000
	Hungarian	5.986	2.404	2.491	1.000
	Icelandic	6.096	2.404	2.536	1.000
	Irish	−1.301	2.404	−0.541	1.000
	Latvian	−0.342	2.404	−0.142	1.000
	Maltese	4.233	2.404	1.761	1.000
	Norwegian	6.658	2.404	2.770	1.000
	Polish	3.521	2.404	1.465	1.000
	Portuguese	4.082	2.404	1.698	1.000
	Romanian	9.274	2.404	3.858	0.029*
	Slovene	−0.288	2.404	−0.120	1.000
	Swedish	4.301	2.404	1.790	1.000
	Turkish	4.014	2.404	1.670	1.000
	Ukrainian	5.397	2.404	2.245	1.000
	Welsh	11.699	2.404	4.867	< .001***
Basque	Breton	0.822	2.404	0.342	1.000
	Catalan	1.411	2.404	0.587	1.000
	Czech	1.000	2.404	0.416	1.000
	Danish	6.877	2.404	2.861	0.929
	Estonian	4.616	2.404	1.921	1.000
	Finnish	3.616	2.404	1.505	1.000
	Greek	−1.740	2.404	−0.724	1.000
	Hungarian	2.877	2.404	1.197	1.000
	Icelandic	2.986	2.404	1.242	1.000
	Irish	−4.411	2.404	−1.835	1.000
	Latvian	−3.452	2.404	−1.436	1.000
	Maltese	1.123	2.404	0.467	1.000
	Norwegian	3.548	2.404	1.476	1.000
	Polish	0.411	2.404	0.171	1.000
	Portuguese	0.973	2.404	0.405	1.000
	Romanian	6.164	2.404	2.565	1.000
	Slovene	−3.397	2.404	−1.413	1.000
	Swedish	1.192	2.404	0.496	1.000
	Turkish	0.904	2.404	0.376	1.000
	Ukrainian	2.288	2.404	0.952	1.000
	Welsh	8.589	2.404	3.573	0.086
Breton	Catalan	0.589	2.404	0.245	1.000
	Czech	0.178	2.404	0.074	1.000
	Danish	6.055	2.404	2.519	1.000
	Estonian	3.795	2.404	1.579	1.000
	Finnish	2.795	2.404	1.163	1.000
	Greek	−2.562	2.404	−1.066	1.000
	Hungarian	2.055	2.404	0.855	1.000
	Icelandic	2.164	2.404	0.900	1.000
	Irish	−5.233	2.404	−2.177	1.000
	Latvian	−4.274	2.404	−1.778	1.000
	Maltese	0.301	2.404	0.125	1.000
	Norwegian	2.726	2.404	1.134	1.000
	Polish	−0.411	2.404	−0.171	1.000
	Portuguese	0.151	2.404	0.063	1.000
	Romanian	5.342	2.404	2.223	1.000
	Slovene	−4.219	2.404	−1.755	1.000
	Swedish	0.370	2.404	0.154	1.000
	Turkish	0.082	2.404	0.034	1.000
	Ukrainian	1.466	2.404	0.610	1.000
	Welsh	7.767	2.404	3.231	0.290
Catalan	Czech	−0.411	2.404	−0.171	1.000
	Danish	5.466	2.404	2.274	1.000
	Estonian	3.205	2.404	1.334	1.000
	Finnish	2.205	2.404	0.918	1.000
	Greek	−3.151	2.404	−1.311	1.000
	Hungarian	1.466	2.404	0.610	1.000
	Icelandic	1.575	2.404	0.655	1.000
	Irish	−5.822	2.404	−2.422	1.000
	Latvian	−4.863	2.404	−2.023	1.000
	Maltese	−0.288	2.404	−0.120	1.000
	Norwegian	2.137	2.404	0.889	1.000
	Polish	−1.000	2.404	−0.416	1.000
	Portuguese	−0.438	2.404	−0.182	1.000
	Romanian	4.753	2.404	1.978	1.000
	Slovene	−4.808	2.404	−2.000	1.000
	Swedish	−0.219	2.404	−0.091	1.000
	Turkish	−0.507	2.404	−0.211	1.000
	Ukrainian	0.877	2.404	0.365	1.000
	Welsh	7.178	2.404	2.986	0.636
Czech	Danish	5.877	2.404	2.445	1.000
	Estonian	3.616	2.404	1.505	1.000
	Finnish	2.616	2.404	1.089	1.000
	Greek	−2.740	2.404	−1.140	1.000
	Hungarian	1.877	2.404	0.781	1.000
	Icelandic	1.986	2.404	0.826	1.000
	Irish	−5.411	2.404	−2.251	1.000
	Latvian	−4.452	2.404	−1.852	1.000
	Maltese	0.123	2.404	0.051	1.000
	Norwegian	2.548	2.404	1.060	1.000
	Polish	−0.589	2.404	−0.245	1.000
	Portuguese	−0.027	2.404	−0.011	1.000
	Romanian	5.164	2.404	2.149	1.000
	Slovene	−4.397	2.404	−1.829	1.000
	Swedish	0.192	2.404	0.080	1.000
	Turkish	−0.096	2.404	−0.040	1.000
	Ukrainian	1.288	2.404	0.536	1.000
	Welsh	7.589	2.404	3.157	0.368
Danish	Estonian	−2.260	2.404	−0.940	1.000
	Finnish	−3.260	2.404	−1.356	1.000
	Greek	−8.616	2.404	−3.585	0.083
	Hungarian	−4.000	2.404	−1.664	1.000
	Icelandic	−3.890	2.404	−1.619	1.000
	Irish	−11.288	2.404	−4.696	< .001***
	Latvian	−10.329	2.404	−4.297	0.005**
	Maltese	−5.753	2.404	−2.394	1.000
	Norwegian	−3.329	2.404	−1.385	1.000
	Polish	−6.466	2.404	−2.690	1.000
	Portuguese	−5.904	2.404	−2.456	1.000
	Romanian	−0.712	2.404	−0.296	1.000
	Slovene	−10.274	2.404	−4.274	0.005**
	Swedish	−5.685	2.404	−2.365	1.000

* p < .05, ** p < .01, *** p < .001

Note. P-value adjusted for comparing a family of 253

		Mean Difference	SE	t	Pholm
	Turkish	−5.973	2.404	−2.485	1.000
	Ukrainian	−4.589	2.404	−1.909	1.000
	Welsh	1.712	2.404	0.712	1.000
Estonian	Finnish	−1.000	2.404	−0.416	1.000
	Greek	−6.356	2.404	−2.644	1.000
	Hungarian	−1.740	2.404	−0.724	1.000
	Icelandic	−1.630	2.404	−0.678	1.000
	Irish	−9.027	2.404	−3.756	0.043*
	Latvian	−8.068	2.404	−3.357	0.190
	Maltese	−3.493	2.404	−1.453	1.000
	Norwegian	−1.068	2.404	−0.445	1.000
	Polish	−4.205	2.404	−1.750	1.000
	Portuguese	−3.644	2.404	−1.516	1.000
	Romanian	1.548	2.404	0.644	1.000
	Slovene	−8.014	2.404	−3.334	0.205
	Swedish	−3.425	2.404	−1.425	1.000
	Turkish	−3.712	2.404	−1.544	1.000
	Ukrainian	−2.329	2.404	−0.969	1.000
	Welsh	3.973	2.404	1.653	1.000
Finnish	Greek	−5.356	2.404	−2.228	1.000
	Hungarian	−0.740	2.404	−0.308	1.000
	Icelandic	−0.630	2.404	−0.262	1.000
	Irish	−8.027	2.404	−3.340	0.202
	Latvian	−7.068	2.404	−2.941	0.734
	Maltese	−2.493	2.404	−1.037	1.000
	Norwegian	−0.068	2.404	−0.028	1.000
	Polish	−3.205	2.404	−1.334	1.000
	Portuguese	−2.644	2.404	−1.100	1.000
	Romanian	2.548	2.404	1.060	1.000
	Slovene	−7.014	2.404	−2.918	0.786
	Swedish	−2.425	2.404	−1.009	1.000
	Turkish	−2.712	2.404	−1.128	1.000
	Ukrainian	−1.329	2.404	−0.553	1.000
	Welsh	4.973	2.404	2.069	1.000
Greek	Hungarian	4.616	2.404	1.921	1.000
	Icelandic	4.726	2.404	1.966	1.000
	Irish	−2.671	2.404	−1.111	1.000
	Latvian	−1.712	2.404	−0.712	1.000
	Maltese	2.863	2.404	1.191	1.000
	Norwegian	5.288	2.404	2.200	1.000
	Polish	2.151	2.404	0.895	1.000
	Portuguese	2.712	2.404	1.128	1.000
	Romanian	7.904	2.404	3.288	0.239
	Slovene	−1.658	2.404	−0.690	1.000
	Swedish	2.932	2.404	1.220	1.000
	Turkish	2.644	2.404	1.100	1.000
	Ukrainian	4.027	2.404	1.676	1.000
	Welsh	10.329	2.404	4.297	0.005**
Hungarian	Icelandic	0.110	2.404	0.046	1.000
	Irish	−7.288	2.404	−3.032	0.551
	Latvian	−6.329	2.404	−2.633	1.000
	Maltese	−1.753	2.404	−0.729	1.000
	Norwegian	0.671	2.404	0.279	1.000
	Polish	−2.466	2.404	−1.026	1.000
	Portuguese	−1.904	2.404	−0.792	1.000
	Romanian	3.288	2.404	1.368	1.000
	Slovene	−6.274	2.404	−2.610	1.000
	Swedish	−1.685	2.404	−0.701	1.000
	Turkish	−1.973	2.404	−0.821	1.000
	Ukrainian	−0.589	2.404	−0.245	1.000
	Welsh	5.712	2.404	2.377	1.000
Icelandic	Irish	−7.397	2.404	−3.078	0.478
	Latvian	−6.438	2.404	−2.679	1.000
	Maltese	−1.863	2.404	−0.775	1.000
	Norwegian	0.562	2.404	0.234	1.000
	Polish	−2.575	2.404	−1.071	1.000
	Portuguese	−2.014	2.404	−0.838	1.000
	Romanian	3.178	2.404	1.322	1.000
	Slovene	−6.384	2.404	−2.656	1.000
	Swedish	−1.795	2.404	−0.747	1.000
	Turkish	−2.082	2.404	−0.866	1.000
	Ukrainian	−0.699	2.404	−0.291	1.000
	Welsh	5.603	2.404	2.331	1.000
Irish	Latvian	0.959	2.404	0.399	1.000
	Maltese	5.534	2.404	2.302	1.000
	Norwegian	7.959	2.404	3.311	0.221
	Polish	4.822	2.404	2.006	1.000
	Portuguese	5.384	2.404	2.240	1.000
	Romanian	10.575	2.404	4.400	0.003**
	Slovene	1.014	2.404	0.422	1.000
	Swedish	5.603	2.404	2.331	1.000
	Turkish	5.315	2.404	2.211	1.000
	Ukrainian	6.699	2.404	2.787	1.000
	Welsh	13.000	2.404	5.408	< .001***
Latvian	Maltese	4.575	2.404	1.904	1.000
	Norwegian	7.000	2.404	2.912	0.797
	Polish	3.863	2.404	1.607	1.000
	Portuguese	4.425	2.404	1.841	1.000
	Romanian	9.616	2.404	4.001	0.016*
	Slovene	0.055	2.404	0.023	1.000
	Swedish	4.644	2.404	1.932	1.000
	Turkish	4.356	2.404	1.812	1.000
	Ukrainian	5.740	2.404	2.388	1.000
	Welsh	12.041	2.404	5.010	< .001***
Maltese	Norwegian	2.425	2.404	1.009	1.000
	Polish	−0.712	2.404	−0.296	1.000
	Portuguese	−0.151	2.404	−0.063	1.000
	Romanian	5.041	2.404	2.097	1.000
	Slovene	−4.521	2.404	−1.881	1.000
	Swedish	0.068	2.404	0.028	1.000
	Turkish	−0.219	2.404	−0.091	1.000
	Ukrainian	1.164	2.404	0.484	1.000
	Welsh	7.466	2.404	3.106	0.436
Norwegian	Polish	−3.137	2.404	−1.305	1.000
	Portuguese	−2.575	2.404	−1.071	1.000
	Romanian	2.616	2.404	1.089	1.000
	Slovene	−6.945	2.404	−2.889	0.853
	Swedish	−2.356	2.404	−0.980	1.000
	Turkish	−2.644	2.404	−1.100	1.000
	Ukrainian	−1.260	2.404	−0.524	1.000
	Welsh	5.041	2.404	2.097	1.000

		Mean Difference	SE	t	Pholm
Polish	Portuguese	0.562	2.404	0.234	1.000
	Romanian	5.753	2.404	2.394	1.000
	Slovene	−3.808	2.404	−1.584	1.000
	Swedish	0.781	2.404	0.325	1.000
	Turkish	0.493	2.404	0.205	1.000
	Ukrainian	1.877	2.404	0.781	1.000
	Welsh	8.178	2.404	3.402	0.162
Portuguese	Romanian	5.192	2.404	2.160	1.000
	Slovene	−4.370	2.404	−1.818	1.000
	Swedish	0.219	2.404	0.091	1.000
	Turkish	−0.068	2.404	−0.028	1.000
	Ukrainian	1.315	2.404	0.547	1.000
	Welsh	7.616	2.404	3.169	0.356
Romanian	Slovene	−9.562	2.404	−3.978	0.018*
	Swedish	−4.973	2.404	−2.069	1.000
	Turkish	−5.260	2.404	−2.188	1.000
	Ukrainian	−3.877	2.404	−1.613	1.000
	Welsh	2.425	2.404	1.009	1.000
Slovene	Swedish	4.589	2.404	1.909	1.000
	Turkish	4.301	2.404	1.790	1.000
	Ukrainian	5.685	2.404	2.365	1.000
	Welsh	11.986	2.404	4.987	< .001***
Swedish	Turkish	−0.288	2.404	−0.120	1.000
	Ukrainian	1.096	2.404	0.456	1.000
	Welsh	7.397	2.404	3.078	0.478
Turkish	Ukrainian	1.384	2.404	0.576	1.000
	Welsh	7.685	2.404	3.197	0.324
Ukrainian	Welsh	6.301	2.404	2.622	1.000

* p < .05, ** p < .01, *** p < .001

Note. P-value adjusted for comparing a family of 253

EROS

GERMAN

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p
Languages	16719.314[a]	22[a]	759.969[a]	2.360[a]	< .001[a]
Residuals	247987.556	770	322.062		

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated (p < .05).

Post Hoc Tests:

		Mean Difference	SE	t	Pholm
Albanian	Basque	−5.417	4.230	−1.281	1.000
	Breton	−8.500	4.230	−2.009	1.000
	Catalan	−4.083	4.230	−0.965	1.000
	Czech	2.667	4.230	0.630	1.000
	Danish	6.111	4.230	1.445	1.000
	Estonian	−3.583	4.230	−0.847	1.000
	Finnish	−0.111	4.230	−0.026	1.000
	Greek	−13.694	4.230	−3.238	0.307
	Hungarian	2.260×10^{-13}	4.230	5.344×10^{-14}	1.000
	Icelandic	−1.583	4.230	−0.374	1.000
	Irish	−2.750	4.230	−0.650	1.000
	Latvian	−0.194	4.230	−0.046	1.000
	Maltese	−5.167	4.230	−1.221	1.000
	Norwegian	4.361	4.230	1.031	1.000
	Polish	1.194	4.230	0.282	1.000
	Portuguese	−3.889	4.230	−0.919	1.000
	Romanian	−5.611	4.230	−1.327	1.000
	Slovene	1.861	4.230	0.440	1.000
	Swedish	−5.972	4.230	−1.412	1.000
	Turkish	0.167	4.230	0.039	1.000
	Ukranian	1.139	4.230	0.269	1.000
	Welsh	4.611	4.230	1.090	1.000
Basque	Breton	−3.083	4.230	−0.729	1.000
	Catalan	1.333	4.230	0.315	1.000
	Czech	8.083	4.230	1.911	1.000
	Danish	11.528	4.230	2.725	1.000
	Estonian	1.833	4.230	0.433	1.000
	Finnish	5.306	4.230	1.254	1.000
	Greek	−8.278	4.230	−1.957	1.000
	Hungarian	5.417	4.230	1.281	1.000
	Icelandic	3.833	4.230	0.906	1.000
	Irish	2.667	4.230	0.630	1.000
	Latvian	5.222	4.230	1.235	1.000
	Maltese	0.250	4.230	0.059	1.000
	Norwegian	9.778	4.230	2.312	1.000
	Polish	6.611	4.230	1.563	1.000
	Portuguese	1.528	4.230	0.361	1.000
	Romanian	−0.194	4.230	−0.046	1.000
	Slovene	7.278	4.230	1.721	1.000
	Swedish	−0.556	4.230	−0.131	1.000
	Turkish	5.583	4.230	1.320	1.000
	Ukranian	6.556	4.230	1.550	1.000
	Welsh	10.028	4.230	2.371	1.000
Breton	Catalan	4.417	4.230	1.044	1.000
	Czech	11.167	4.230	2.640	1.000
	Danish	14.611	4.230	3.454	0.143
	Estonian	4.917	4.230	1.162	1.000
	Finnish	8.389	4.230	1.983	1.000
	Greek	−5.194	4.230	−1.228	1.000
	Hungarian	8.500	4.230	2.009	1.000
	Icelandic	6.917	4.230	1.635	1.000
	Irish	5.750	4.230	1.359	1.000
	Latvian	8.306	4.230	1.964	1.000
	Maltese	3.333	4.230	0.788	1.000
	Norwegian	12.861	4.230	3.041	0.584
	Polish	9.694	4.230	2.292	1.000
	Portuguese	4.611	4.230	1.090	1.000
	Romanian	2.889	4.230	0.683	1.000
	Slovene	10.361	4.230	2.449	1.000
	Swedish	2.528	4.230	0.598	1.000
	Turkish	8.667	4.230	2.049	1.000
	Ukranian	9.639	4.230	2.279	1.000
	Welsh	13.111	4.230	3.100	0.482
Catalan	Czech	6.750	4.230	1.596	1.000
	Danish	10.194	4.230	2.410	1.000
	Estonian	0.500	4.230	0.118	1.000
	Finnish	3.972	4.230	0.939	1.000
	Greek	−9.611	4.230	−2.272	1.000
	Hungarian	4.083	4.230	0.965	1.000
	Icelandic	2.500	4.230	0.591	1.000
	Irish	1.333	4.230	0.315	1.000
	Latvian	3.889	4.230	0.919	1.000
	Maltese	−1.083	4.230	−0.256	1.000
	Norwegian	8.444	4.230	1.996	1.000
	Polish	5.278	4.230	1.248	1.000
	Portuguese	0.194	4.230	0.046	1.000
	Romanian	−1.528	4.230	−0.361	1.000
	Slovene	5.944	4.230	1.405	1.000
	Swedish	−1.889	4.230	−0.447	1.000
	Turkish	4.250	4.230	1.005	1.000
	Ukranian	5.222	4.230	1.235	1.000
	Welsh	8.694	4.230	2.055	1.000
Czech	Danish	3.444	4.230	0.814	1.000
	Estonian	−6.250	4.230	−1.478	1.000
	Finnish	−2.778	4.230	−0.657	1.000
	Greek	−16.361	4.230	−3.868	0.030*
	Hungarian	−2.667	4.230	−0.630	1.000
	Icelandic	−4.250	4.230	−1.005	1.000
	Irish	−5.417	4.230	−1.281	1.000
	Latvian	−2.861	4.230	−0.676	1.000
	Maltese	−7.833	4.230	−1.852	1.000
	Norwegian	1.694	4.230	0.401	1.000
	Polish	−1.472	4.230	−0.348	1.000
	Portuguese	−6.556	4.230	−1.550	1.000
	Romanian	−8.278	4.230	−1.957	1.000
	Slovene	−0.806	4.230	−0.190	1.000
	Swedish	−8.639	4.230	−2.042	1.000
	Turkish	−2.500	4.230	−0.591	1.000
	Ukranian	−1.528	4.230	−0.361	1.000
	Welsh	1.944	4.230	0.460	1.000
Danish	Estonian	−9.694	4.230	−2.292	1.000
	Finnish	−6.222	4.230	−1.471	1.000
	Greek	−19.806	4.230	−4.682	< .001***
	Hungarian	−6.111	4.230	−1.445	1.000
	Icelandic	−7.694	4.230	−1.819	1.000
	Irish	−8.861	4.230	−2.095	1.000
	Latvian	−6.306	4.230	−1.491	1.000
	Maltese	−11.278	4.230	−2.666	1.000
	Norwegian	−1.750	4.230	−0.414	1.000
	Polish	−4.917	4.230	−1.162	1.000
	Portuguese	−10.000	4.230	−2.364	1.000
	Romanian	−11.722	4.230	−2.771	1.000
	Slovene	−4.250	4.230	−1.005	1.000

		Mean Difference	SE	t	Pholm
	Swedish	−12.083	4.230	−2.857	1.000
	Turkish	−5.944	4.230	−1.405	1.000
	Ukranian	−4.972	4.230	−1.175	1.000
	Welsh	−1.500	4.230	−0.355	1.000
Estonian	Finnish	3.472	4.230	0.821	1.000
	Greek	−10.111	4.230	−2.390	1.000
	Hungarian	3.583	4.230	0.847	1.000
	Icelandic	2.000	4.230	0.473	1.000
	Irish	0.833	4.230	0.197	1.000
	Latvian	3.389	4.230	0.801	1.000
	Maltese	−1.583	4.230	−0.374	1.000
	Norwegian	7.944	4.230	1.878	1.000
	Polish	4.778	4.230	1.130	1.000
	Portuguese	−0.306	4.230	−0.072	1.000
	Romanian	−2.028	4.230	−0.479	1.000
	Slovene	5.444	4.230	1.287	1.000
	Swedish	−2.389	4.230	−0.565	1.000
	Turkish	3.750	4.230	0.887	1.000
	Ukranian	4.722	4.230	1.116	1.000
	Welsh	8.194	4.230	1.937	1.000
Finnish	Greek	−13.583	4.230	−3.211	0.333
	Hungarian	0.111	4.230	0.026	1.000
	Icelandic	−1.472	4.230	−0.348	1.000
	Irish	−2.639	4.230	−0.624	1.000
	Latvian	−0.083	4.230	−0.020	1.000
	Maltese	−5.056	4.230	−1.195	1.000
	Norwegian	4.472	4.230	1.057	1.000
	Polish	1.306	4.230	0.309	1.000
	Portuguese	−3.778	4.230	−0.893	1.000
	Romanian	−5.500	4.230	−1.300	1.000
	Slovene	1.972	4.230	0.466	1.000
	Swedish	−5.861	4.230	−1.386	1.000
	Turkish	0.278	4.230	0.066	1.000
	Ukranian	1.250	4.230	0.296	1.000
	Welsh	4.722	4.230	1.116	1.000
Greek	Hungarian	13.694	4.230	3.238	0.307
	Icelandic	12.111	4.230	2.863	1.000
	Irish	10.944	4.230	2.587	1.000
	Latvian	13.500	4.230	3.192	0.355
	Maltese	8.528	4.230	2.016	1.000
	Norwegian	18.056	4.230	4.269	0.006**
	Polish	14.889	4.230	3.520	0.113
	Portuguese	9.806	4.230	2.318	1.000
	Romanian	8.083	4.230	1.911	1.000
	Slovene	15.556	4.230	3.677	0.063
	Swedish	7.722	4.230	1.826	1.000
	Turkish	13.861	4.230	3.277	0.269
	Ukranian	14.833	4.230	3.507	0.119
	Welsh	18.306	4.230	4.328	0.004**
Hungarian	Icelandic	−1.583	4.230	−0.374	1.000
	Irish	−2.750	4.230	−0.650	1.000
	Latvian	−0.194	4.230	−0.046	1.000
	Maltese	−5.167	4.230	−1.221	1.000
	Norwegian	4.361	4.230	1.031	1.000
	Polish	1.194	4.230	0.282	1.000
	Portuguese	−3.889	4.230	−0.919	1.000

		Mean Difference	SE	t	Pholm
	Romanian	−5.611	4.230	−1.327	1.000
	Slovene	1.861	4.230	0.440	1.000
	Swedish	−5.972	4.230	−1.412	1.000
	Turkish	0.167	4.230	0.039	1.000
	Ukranian	1.139	4.230	0.269	1.000
	Welsh	4.611	4.230	1.090	1.000
Icelandic	Irish	−1.167	4.230	−0.276	1.000
	Latvian	1.389	4.230	0.328	1.000
	Maltese	−3.583	4.230	−0.847	1.000
	Norwegian	5.944	4.230	1.405	1.000
	Polish	2.778	4.230	0.657	1.000
	Portuguese	−2.306	4.230	−0.545	1.000
	Romanian	−4.028	4.230	−0.952	1.000
	Slovene	3.444	4.230	0.814	1.000
	Swedish	−4.389	4.230	−1.038	1.000
	Turkish	1.750	4.230	0.414	1.000
	Ukranian	2.722	4.230	0.644	1.000
	Welsh	6.194	4.230	1.464	1.000
Irish	Latvian	2.556	4.230	0.604	1.000
	Maltese	−2.417	4.230	−0.571	1.000
	Norwegian	7.111	4.230	1.681	1.000
	Polish	3.944	4.230	0.933	1.000
	Portuguese	−1.139	4.230	−0.269	1.000
	Romanian	−2.861	4.230	−0.676	1.000
	Slovene	4.611	4.230	1.090	1.000
	Swedish	−3.222	4.230	−0.762	1.000
	Turkish	2.917	4.230	0.690	1.000
	Ukranian	3.889	4.230	0.919	1.000
	Welsh	7.361	4.230	1.740	1.000
Latvian	Maltese	−4.972	4.230	−1.175	1.000
	Norwegian	4.556	4.230	1.077	1.000
	Polish	1.389	4.230	0.328	1.000
	Portuguese	−3.694	4.230	−0.873	1.000
	Romanian	−5.417	4.230	−1.281	1.000
	Slovene	2.056	4.230	0.486	1.000
	Swedish	−5.778	4.230	−1.366	1.000
	Turkish	0.361	4.230	0.085	1.000
	Ukranian	1.333	4.230	0.315	1.000
	Welsh	4.806	4.230	1.136	1.000
Maltese	Norwegian	9.528	4.230	2.252	1.000
	Polish	6.361	4.230	1.504	1.000
	Portuguese	1.278	4.230	0.302	1.000
	Romanian	−0.444	4.230	−0.105	1.000
	Slovene	7.028	4.230	1.661	1.000
	Swedish	−0.806	4.230	−0.190	1.000
	Turkish	5.333	4.230	1.261	1.000
	Ukranian	6.306	4.230	1.491	1.000
	Welsh	9.778	4.230	2.312	1.000
Norwegian	Polish	−3.167	4.230	−0.749	1.000
	Portuguese	−8.250	4.230	−1.950	1.000
	Romanian	−9.972	4.230	−2.358	1.000
	Slovene	−2.500	4.230	−0.591	1.000
	Swedish	−10.333	4.230	−2.443	1.000
	Turkish	−4.194	4.230	−0.992	1.000
	Ukranian	−3.222	4.230	−0.762	1.000
	Welsh	0.250	4.230	0.059	1.000

		Mean Difference	SE	t	Pholm
Polish	Portuguese	−5.083	4.230	−1.202	1.000
	Romanian	−6.806	4.230	−1.609	1.000
	Slovene	0.667	4.230	0.158	1.000
	Swedish	−7.167	4.230	−1.694	1.000
	Turkish	−1.028	4.230	−0.243	1.000
	Ukranian	−0.056	4.230	−0.013	1.000
	Welsh	3.417	4.230	0.808	1.000
Portuguese	Romanian	−1.722	4.230	−0.407	1.000
	Slovene	5.750	4.230	1.359	1.000
	Swedish	−2.083	4.230	−0.493	1.000
	Turkish	4.056	4.230	0.959	1.000
	Ukranian	5.028	4.230	1.189	1.000
	Welsh	8.500	4.230	2.009	1.000
Romanian	Slovene	7.472	4.230	1.767	1.000
	Swedish	−0.361	4.230	−0.085	1.000
	Turkish	5.778	4.230	1.366	1.000
	Ukranian	6.750	4.230	1.596	1.000
	Welsh	10.222	4.230	2.417	1.000
Slovene	Swedish	−7.833	4.230	−1.852	1.000
	Turkish	−1.694	4.230	−0.401	1.000
	Ukranian	−0.722	4.230	−0.171	1.000
	Welsh	2.750	4.230	0.650	1.000
Swedish	Turkish	6.139	4.230	1.451	1.000
	Ukranian	7.111	4.230	1.681	1.000
	Welsh	10.583	4.230	2.502	1.000
Turkish	Ukranian	0.972	4.230	0.230	1.000
	Welsh	4.444	4.230	1.051	1.000
Ukranian	Welsh	3.472	4.230	0.821	1.000

* p < .05, ** p < .01, *** p < .001

Note. P-value adjusted for comparing a family of 253

BEAUTY

CHINESE

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p
Language	19333.842[a]	22[a]	878.811[a]	3.865[a]	< .001[a]
Residuals	360202.680	1584	227.401		

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated (p < .05).

Post Hoc Tests:

		Mean Difference	SE	t	p_{holm}
Albanian	Basque	1.315	2.496	0.527	1.000
	Breton	5.466	2.496	2.190	1.000
	Catalan	6.137	2.496	2.459	1.000
	Czech	1.658	2.496	0.664	1.000
	Danish	4.890	2.496	1.959	1.000
	Estonian	5.822	2.496	2.332	1.000
	Finnish	3.000	2.496	1.202	1.000
	Greek	0.178	2.496	0.071	1.000
	Hungarian	6.411	2.496	2.568	1.000
	Icelandic	5.507	2.496	2.206	1.000
	Irish	−3.096	2.496	−1.240	1.000
	Latvian	0.233	2.496	0.093	1.000
	Maltese	5.589	2.496	2.239	1.000
	Norwegian	10.904	2.496	4.369	0.003**
	Polish	1.767	2.496	0.708	1.000
	Portuguese	5.849	2.496	2.343	1.000
	Romanian	6.685	2.496	2.678	1.000
	Slovene	3.096	2.496	1.240	1.000
	Swedish	4.110	2.496	1.646	1.000
	Turkish	3.616	2.496	1.449	1.000
	Ukrainian	7.000	2.496	2.804	1.000
	Welsh	11.932	2.496	4.780	< .001***
Basque	Breton	4.151	2.496	1.663	1.000
	Catalan	4.822	2.496	1.932	1.000
	Czech	0.342	2.496	0.137	1.000
	Danish	3.575	2.496	1.432	1.000
	Estonian	4.507	2.496	1.806	1.000
	Finnish	1.685	2.496	0.675	1.000
	Greek	−1.137	2.496	−0.456	1.000
	Hungarian	5.096	2.496	2.042	1.000
	Icelandic	4.192	2.496	1.679	1.000
	Irish	−4.411	2.496	−1.767	1.000
	Latvian	−1.082	2.496	−0.434	1.000
	Maltese	4.274	2.496	1.712	1.000
	Norwegian	9.589	2.496	3.842	0.030*
	Polish	0.452	2.496	0.181	1.000
	Portuguese	4.534	2.496	1.817	1.000
	Romanian	5.370	2.496	2.151	1.000
	Slovene	1.781	2.496	0.713	1.000
	Swedish	2.795	2.496	1.120	1.000
	Turkish	2.301	2.496	0.922	1.000
	Ukrainian	5.685	2.496	2.278	1.000
	Welsh	10.616	2.496	4.253	0.005**
Breton	Catalan	0.671	2.496	0.269	1.000
	Czech	−3.808	2.496	−1.526	1.000
	Danish	−0.575	2.496	−0.231	1.000
	Estonian	0.356	2.496	0.143	1.000
	Finnish	−2.466	2.496	−0.988	1.000
	Greek	−5.288	2.496	−2.118	1.000
	Hungarian	0.945	2.496	0.379	1.000
	Icelandic	0.041	2.496	0.016	1.000
	Irish	−8.562	2.496	−3.430	0.142
	Latvian	−5.233	2.496	−2.096	1.000
	Maltese	0.123	2.496	0.049	1.000
	Norwegian	5.438	2.496	2.179	1.000
	Polish	−3.699	2.496	−1.482	1.000
	Portuguese	0.384	2.496	0.154	1.000
	Romanian	1.219	2.496	0.488	1.000
	Slovene	−2.370	2.496	−0.949	1.000
	Swedish	−1.356	2.496	−0.543	1.000
	Turkish	−1.849	2.496	−0.741	1.000
	Ukrainian	1.534	2.496	0.615	1.000
	Welsh	6.466	2.496	2.590	1.000
Catalan	Czech	−4.479	2.496	−1.795	1.000
	Danish	−1.247	2.496	−0.499	1.000
	Estonian	−0.315	2.496	−0.126	1.000
	Finnish	−3.137	2.496	−1.257	1.000
	Greek	−5.959	2.496	−2.387	1.000
	Hungarian	0.274	2.496	0.110	1.000
	Icelandic	−0.630	2.496	−0.252	1.000
	Irish	−9.233	2.496	−3.699	0.053
	Latvian	−5.904	2.496	−2.365	1.000
	Maltese	−0.548	2.496	−0.220	1.000
	Norwegian	4.767	2.496	1.910	1.000
	Polish	−4.370	2.496	−1.751	1.000
	Portuguese	−0.288	2.496	−0.115	1.000
	Romanian	0.548	2.496	0.220	1.000
	Slovene	−3.041	2.496	−1.218	1.000
	Swedish	−2.027	2.496	−0.812	1.000
	Turkish	−2.521	2.496	−1.010	1.000
	Ukrainian	0.863	2.496	0.346	1.000
	Welsh	5.795	2.496	2.321	1.000
Czech	Danish	3.233	2.496	1.295	1.000
	Estonian	4.164	2.496	1.668	1.000
	Finnish	1.342	2.496	0.538	1.000
	Greek	−1.479	2.496	−0.593	1.000
	Hungarian	4.753	2.496	1.904	1.000
	Icelandic	3.849	2.496	1.542	1.000
	Irish	−4.753	2.496	−1.904	1.000
	Latvian	−1.425	2.496	−0.571	1.000
	Maltese	3.932	2.496	1.575	1.000
	Norwegian	9.247	2.496	3.705	0.052
	Polish	0.110	2.496	0.044	1.000
	Portuguese	4.192	2.496	1.679	1.000
	Romanian	5.027	2.496	2.014	1.000
	Slovene	1.438	2.496	0.576	1.000
	Swedish	2.452	2.496	0.982	1.000
	Turkish	1.959	2.496	0.785	1.000
	Ukrainian	5.342	2.496	2.140	1.000
	Welsh	10.274	2.496	4.116	0.010**
Danish	Estonian	0.932	2.496	0.373	1.000
	Finnish	−1.890	2.496	−0.757	1.000
	Greek	−4.712	2.496	−1.888	1.000
	Hungarian	1.521	2.496	0.609	1.000
	Icelandic	0.616	2.496	0.247	1.000
	Irish	−7.986	2.496	−3.200	0.319
	Latvian	−4.658	2.496	−1.866	1.000
	Maltese	0.699	2.496	0.280	1.000
	Norwegian	6.014	2.496	2.409	1.000
	Polish	−3.123	2.496	−1.251	1.000
	Portuguese	0.959	2.496	0.384	1.000
	Romanian	1.795	2.496	0.719	1.000
	Slovene	−1.795	2.496	−0.719	1.000
	Swedish	−0.781	2.496	−0.313	1.000

		Mean Difference	SE	t	Phoim
	Turkish	−1.274	2.496	−0.510	1.000
	Ukrainian	2.110	2.496	0.845	1.000
	Welsh	7.041	2.496	2.821	1.000
Estonian	Finnish	−2.822	2.496	−1.131	1.000
	Greek	−5.644	2.496	−2.261	1.000
	Hungarian	0.589	2.496	0.236	1.000
	Icelandic	−0.315	2.496	−0.126	1.000
	Irish	−8.918	2.496	−3.573	0.085
	Latvian	−5.589	2.496	−2.239	1.000
	Maltese	−0.233	2.496	−0.093	1.000
	Norwegian	5.082	2.496	2.036	1.000
	Polish	−4.055	2.496	−1.624	1.000
	Portuguese	0.027	2.496	0.011	1.000
	Romanian	0.863	2.496	0.346	1.000
	Slovene	−2.726	2.496	−1.092	1.000
	Swedish	−1.712	2.496	−0.686	1.000
	Turkish	−2.205	2.496	−0.884	1.000
	Ukrainian	1.178	2.496	0.472	1.000
	Welsh	6.110	2.496	2.448	1.000
Finnish	Greek	−2.822	2.496	−1.131	1.000
	Hungarian	3.411	2.496	1.367	1.000
	Icelandic	2.507	2.496	1.004	1.000
	Irish	−6.096	2.496	−2.442	1.000
	Latvian	−2.767	2.496	−1.109	1.000
	Maltese	2.589	2.496	1.037	1.000
	Norwegian	7.904	2.496	3.167	0.355
	Polish	−1.233	2.496	−0.494	1.000
	Portuguese	2.849	2.496	1.142	1.000
	Romanian	3.685	2.496	1.476	1.000
	Slovene	0.096	2.496	0.038	1.000
	Swedish	1.110	2.496	0.445	1.000
	Turkish	0.616	2.496	0.247	1.000
	Ukrainian	4.000	2.496	1.603	1.000
	Welsh	8.932	2.496	3.578	0.083
Greek	Hungarian	6.233	2.496	2.497	1.000
	Icelandic	5.329	2.496	2.135	1.000
	Irish	−3.274	2.496	−1.312	1.000
	Latvian	0.055	2.496	0.022	1.000
	Maltese	5.411	2.496	2.168	1.000
	Norwegian	10.726	2.496	4.297	0.005**
	Polish	1.589	2.496	0.637	1.000
	Portuguese	5.671	2.496	2.272	1.000
	Romanian	6.507	2.496	2.607	1.000
	Slovene	2.918	2.496	1.169	1.000
	Swedish	3.932	2.496	1.575	1.000
	Turkish	3.438	2.496	1.378	1.000
	Ukrainian	6.822	2.496	2.733	1.000
	Welsh	11.753	2.496	4.709	< .001***
Hungarian	Icelandic	−0.904	2.496	−0.362	1.000
	Irish	−9.507	2.496	−3.809	0.035*
	Latvian	−6.178	2.496	−2.475	1.000
	Maltese	−0.822	2.496	−0.329	1.000
	Norwegian	4.493	2.496	1.800	1.000
	Polish	−4.644	2.496	−1.860	1.000
	Portuguese	−0.562	2.496	−0.225	1.000
	Romanian	0.274	2.496	0.110	1.000

		Mean Difference	SE	t	Phoim
	Slovene	−3.315	2.496	−1.328	1.000
	Swedish	−2.301	2.496	−0.922	1.000
	Turkish	−2.795	2.496	−1.120	1.000
	Ukrainian	0.589	2.496	0.236	1.000
	Welsh	5.521	2.496	2.212	1.000
Icelandic	Irish	−8.603	2.496	−3.447	0.134
	Latvian	−5.274	2.496	−2.113	1.000
	Maltese	0.082	2.496	0.033	1.000
	Norwegian	5.397	2.496	2.162	1.000
	Polish	−3.740	2.496	−1.498	1.000
	Portuguese	0.342	2.496	0.137	1.000
	Romanian	1.178	2.496	0.472	1.000
	Slovene	−2.411	2.496	−0.966	1.000
	Swedish	−1.397	2.496	−0.560	1.000
	Turkish	−1.890	2.496	−0.757	1.000
	Ukrainian	1.493	2.496	0.598	1.000
	Welsh	6.425	2.496	2.574	1.000
Irish	Latvian	3.329	2.496	1.334	1.000
	Maltese	8.685	2.496	3.480	0.119
	Norwegian	14.000	2.496	5.609	< .001***
	Polish	4.863	2.496	1.948	1.000
	Portuguese	8.945	2.496	3.584	0.082
	Romanian	9.781	2.496	3.919	0.022*
	Slovene	6.192	2.496	2.481	1.000
	Swedish	7.205	2.496	2.887	0.876
	Turkish	6.712	2.496	2.689	1.000
	Ukrainian	10.096	2.496	4.045	0.013*
	Welsh	15.027	2.496	6.021	< .001***
Latvian	Maltese	5.356	2.496	2.146	1.000
	Norwegian	10.671	2.496	4.275	0.005**
	Polish	1.534	2.496	0.615	1.000
	Portuguese	5.616	2.496	2.250	1.000
	Romanian	6.452	2.496	2.585	1.000
	Slovene	2.863	2.496	1.147	1.000
	Swedish	3.877	2.496	1.553	1.000
	Turkish	3.384	2.496	1.356	1.000
	Ukrainian	6.767	2.496	2.711	1.000
	Welsh	11.699	2.496	4.687	< .001***
Maltese	Norwegian	5.315	2.496	2.129	1.000
	Polish	−3.822	2.496	−1.531	1.000
	Portuguese	0.260	2.496	0.104	1.000
	Romanian	1.096	2.496	0.439	1.000
	Slovene	−2.493	2.496	−0.999	1.000
	Swedish	−1.479	2.496	−0.593	1.000
	Turkish	−1.973	2.496	−0.790	1.000
	Ukrainian	1.411	2.496	0.565	1.000
	Welsh	6.342	2.496	2.541	1.000
Norwegian	Polish	−9.137	2.496	−3.661	0.061
	Portuguese	−5.055	2.496	−2.025	1.000
	Romanian	−4.219	2.496	−1.690	1.000
	Slovene	−7.808	2.496	−3.128	0.401
	Swedish	−6.795	2.496	−2.722	1.000
	Turkish	−7.288	2.496	−2.920	0.792
	Ukrainian	−3.904	2.496	−1.564	1.000
	Welsh	1.027	2.496	0.412	1.000

		Mean Difference	SE	t	p_{holm}
Polish	Portuguese	4.082	2.496	1.635	1.000
	Romanian	4.918	2.496	1.970	1.000
	Slovene	1.329	2.496	0.532	1.000
	Swedish	2.342	2.496	0.938	1.000
	Turkish	1.849	2.496	0.741	1.000
	Ukrainian	5.233	2.496	2.096	1.000
	Welsh	10.164	2.496	4.072	0.012*
Portuguese	Romanian	0.836	2.496	0.335	1.000
	Slovene	−2.753	2.496	−1.103	1.000
	Swedish	−1.740	2.496	−0.697	1.000
	Turkish	−2.233	2.496	−0.895	1.000
	Ukrainian	1.151	2.496	0.461	1.000
	Welsh	6.082	2.496	2.437	1.000
Romanian	Slovene	−3.589	2.496	−1.438	1.000
	Swedish	−2.575	2.496	−1.032	1.000
	Turkish	−3.068	2.496	−1.229	1.000
	Ukrainian	0.315	2.496	0.126	1.000
	Welsh	5.247	2.496	2.102	1.000
Slovene	Swedish	1.014	2.496	0.406	1.000
	Turkish	0.521	2.496	0.209	1.000
	Ukrainian	3.904	2.496	1.564	1.000
	Welsh	8.836	2.496	3.540	0.096
Swedish	Turkish	−0.493	2.496	−0.198	1.000
	Ukrainian	2.890	2.496	1.158	1.000
	Welsh	7.822	2.496	3.134	0.395
Turkish	Ukrainian	3.384	2.496	1.356	1.000
	Welsh	8.315	2.496	3.331	0.202
Ukrainian	Welsh	4.932	2.496	1.976	1.000

* p < .05, ** p < .01, *** p < .001
Note. P-value adjusted for comparing a family of 253

BEAUTY

GERMAN

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p
Language	18980.048[a]	22[a]	862.729[a]	2.472[a]	< .001[a]
Residuals	268736.995	770	349.009		

Note. Type III Sum of Squares
[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated (p < .05).

Post Hoc Tests:

		Mean Difference	SE	t	Pholm
Albanian	Basque	−4.639	4.403	−1.053	1.000
	Breton	−4.694	4.403	−1.066	1.000
	Catalan	1.861	4.403	0.423	1.000
	Czech	4.583	4.403	1.041	1.000
	Danish	−0.528	4.403	−0.120	1.000
	Estonian	−8.361	4.403	−1.899	1.000
	Finnish	−5.167	4.403	−1.173	1.000
	Greek	−14.389	4.403	−3.268	0.277
	Hungarian	−3.278	4.403	−0.744	1.000
	Icelandic	−7.778	4.403	−1.766	1.000
	Irish	−11.194	4.403	−2.542	1.000
	Latvian	−4.417	4.403	−1.003	1.000
	Maltese	−3.639	4.403	−0.826	1.000
	Norwegian	−1.694	4.403	−0.385	1.000
	Polish	2.417	4.403	0.549	1.000
	Portuguese	−1.694	4.403	−0.385	1.000
	Romanian	−1.972	4.403	−0.448	1.000
	Slovene	2.972	4.403	0.675	1.000
	Swedish	−10.222	4.403	−2.321	1.000
	Turkish	2.750	4.403	0.625	1.000
	Ukrainian	0.556	4.403	0.126	1.000
	Welsh	−1.417	4.403	−0.322	1.000
Basque	Breton	−0.056	4.403	−0.013	1.000
	Catalan	6.500	4.403	1.476	1.000
	Czech	9.222	4.403	2.094	1.000
	Danish	4.111	4.403	0.934	1.000
	Estonian	−3.722	4.403	−0.845	1.000
	Finnish	−0.528	4.403	−0.120	1.000
	Greek	−9.750	4.403	−2.214	1.000
	Hungarian	1.361	4.403	0.309	1.000
	Icelandic	−3.139	4.403	−0.713	1.000
	Irish	−6.556	4.403	−1.489	1.000
	Latvian	0.222	4.403	0.050	1.000
	Maltese	1.000	4.403	0.227	1.000
	Norwegian	2.944	4.403	0.669	1.000
	Polish	7.056	4.403	1.602	1.000
	Portuguese	2.944	4.403	0.669	1.000
	Romanian	2.667	4.403	0.606	1.000
	Slovene	7.611	4.403	1.728	1.000
	Swedish	−5.583	4.403	−1.268	1.000
	Turkish	7.389	4.403	1.678	1.000
	Ukrainian	5.194	4.403	1.180	1.000
	Welsh	3.222	4.403	0.732	1.000
Breton	Catalan	6.556	4.403	1.489	1.000
	Czech	9.278	4.403	2.107	1.000
	Danish	4.167	4.403	0.946	1.000
	Estonian	−3.667	4.403	−0.833	1.000
	Finnish	−0.472	4.403	−0.107	1.000
	Greek	−9.694	4.403	−2.202	1.000
	Hungarian	1.417	4.403	0.322	1.000
	Icelandic	−3.083	4.403	−0.700	1.000
	Irish	−6.500	4.403	−1.476	1.000
	Latvian	0.278	4.403	0.063	1.000
	Maltese	1.056	4.403	0.240	1.000
	Norwegian	3.000	4.403	0.681	1.000
	Polish	7.111	4.403	1.615	1.000
	Portuguese	3.000	4.403	0.681	1.000
	Romanian	2.722	4.403	0.618	1.000
	Slovene	7.667	4.403	1.741	1.000
	Swedish	−5.528	4.403	−1.255	1.000
	Turkish	7.444	4.403	1.691	1.000
	Ukrainian	5.250	4.403	1.192	1.000
	Welsh	3.278	4.403	0.744	1.000
Catalan	Czech	2.722	4.403	0.618	1.000
	Danish	−2.389	4.403	−0.543	1.000
	Estonian	−10.222	4.403	−2.321	1.000
	Finnish	−7.028	4.403	−1.596	1.000
	Greek	−16.250	4.403	−3.690	0.060
	Hungarian	−5.139	4.403	−1.167	1.000
	Icelandic	−9.639	4.403	−2.189	1.000
	Irish	−13.056	4.403	−2.965	0.746
	Latvian	−6.278	4.403	−1.426	1.000
	Maltese	−5.500	4.403	−1.249	1.000
	Norwegian	−3.556	4.403	−0.807	1.000
	Polish	0.556	4.403	0.126	1.000
	Portuguese	−3.556	4.403	−0.807	1.000
	Romanian	−3.833	4.403	−0.871	1.000
	Slovene	1.111	4.403	0.252	1.000
	Swedish	−12.083	4.403	−2.744	1.000
	Turkish	0.889	4.403	0.202	1.000
	Ukrainian	−1.306	4.403	−0.296	1.000
	Welsh	−3.278	4.403	−0.744	1.000
Czech	Danish	−5.111	4.403	−1.161	1.000
	Estonian	−12.944	4.403	−2.940	0.799
	Finnish	−9.750	4.403	−2.214	1.000
	Greek	−18.972	4.403	−4.309	0.005**
	Hungarian	−7.861	4.403	−1.785	1.000
	Icelandic	−12.361	4.403	−2.807	1.000
	Irish	−15.778	4.403	−3.583	0.089
	Latvian	−9.000	4.403	−2.044	1.000
	Maltese	−8.222	4.403	−1.867	1.000
	Norwegian	−6.278	4.403	−1.426	1.000
	Polish	−2.167	4.403	−0.492	1.000
	Portuguese	−6.278	4.403	−1.426	1.000
	Romanian	−6.556	4.403	−1.489	1.000
	Slovene	−1.611	4.403	−0.366	1.000
	Swedish	−14.806	4.403	−3.362	0.200
	Turkish	−1.833	4.403	−0.416	1.000
	Ukrainian	−4.028	4.403	−0.915	1.000
	Welsh	−6.000	4.403	−1.363	1.000
Danish	Estonian	−7.833	4.403	−1.779	1.000
	Finnish	−4.639	4.403	−1.053	1.000
	Greek	−13.861	4.403	−3.148	0.413
	Hungarian	−2.750	4.403	−0.625	1.000
	Icelandic	−7.250	4.403	−1.646	1.000
	Irish	−10.667	4.403	−2.422	1.000
	Latvian	−3.889	4.403	−0.883	1.000
	Maltese	−3.111	4.403	−0.707	1.000
	Norwegian	−1.167	4.403	−0.265	1.000
	Polish	2.944	4.403	0.669	1.000
	Portuguese	−1.167	4.403	−0.265	1.000
	Romanian	−1.444	4.403	−0.328	1.000
	Slovene	3.500	4.403	0.795	1.000
	Swedish	−9.694	4.403	−2.202	1.000

		Mean Difference	SE	t	Pholm
	Turkish	3.278	4.403	0.744	1.000
	Ukrainian	1.083	4.403	0.246	1.000
	Welsh	−0.889	4.403	−0.202	1.000
Estonian	Finnish	3.194	4.403	0.725	1.000
	Greek	−6.028	4.403	−1.369	1.000
	Hungarian	5.083	4.403	1.154	1.000
	Icelandic	0.583	4.403	0.132	1.000
	Irish	−2.833	4.403	−0.643	1.000
	Latvian	3.944	4.403	0.896	1.000
	Maltese	4.722	4.403	1.072	1.000
	Norwegian	6.667	4.403	1.514	1.000
	Polish	10.778	4.403	2.448	1.000
	Portuguese	6.667	4.403	1.514	1.000
	Romanian	6.389	4.403	1.451	1.000
	Slovene	11.333	4.403	2.574	1.000
	Swedish	−1.861	4.403	−0.423	1.000
	Turkish	11.111	4.403	2.523	1.000
	Ukrainian	8.917	4.403	2.025	1.000
	Welsh	6.944	4.403	1.577	1.000
Finnish	Greek	−9.222	4.403	−2.094	1.000
	Hungarian	1.889	4.403	0.429	1.000
	Icelandic	−2.611	4.403	−0.593	1.000
	Irish	−6.028	4.403	−1.369	1.000
	Latvian	0.750	4.403	0.170	1.000
	Maltese	1.528	4.403	0.347	1.000
	Norwegian	3.472	4.403	0.789	1.000
	Polish	7.583	4.403	1.722	1.000
	Portuguese	3.472	4.403	0.789	1.000
	Romanian	3.194	4.403	0.725	1.000
	Slovene	8.139	4.403	1.848	1.000
	Swedish	−5.056	4.403	−1.148	1.000
	Turkish	7.917	4.403	1.798	1.000
	Ukrainian	5.722	4.403	1.300	1.000
	Welsh	3.750	4.403	0.852	1.000
Greek	Hungarian	11.111	4.403	2.523	1.000
	Icelandic	6.611	4.403	1.501	1.000
	Irish	3.194	4.403	0.725	1.000
	Latvian	9.972	4.403	2.265	1.000
	Maltese	10.750	4.403	2.441	1.000
	Norwegian	12.694	4.403	2.883	0.952
	Polish	16.806	4.403	3.817	0.037*
	Portuguese	12.694	4.403	2.883	0.952
	Romanian	12.417	4.403	2.820	1.000
	Slovene	17.361	4.403	3.943	0.022*
	Swedish	4.167	4.403	0.946	1.000
	Turkish	17.139	4.403	3.892	0.027*
	Ukrainian	14.944	4.403	3.394	0.179
	Welsh	12.972	4.403	2.946	0.789
Hungarian	Icelandic	−4.500	4.403	−1.022	1.000
	Irish	−7.917	4.403	−1.798	1.000
	Latvian	−1.139	4.403	−0.259	1.000
	Maltese	−0.361	4.403	−0.082	1.000
	Norwegian	1.583	4.403	0.360	1.000
	Polish	5.694	4.403	1.293	1.000
	Portuguese	1.583	4.403	0.360	1.000
	Romanian	1.306	4.403	0.296	1.000

		Mean Difference	SE	t	Pholm
	Slovene	6.250	4.403	1.419	1.000
	Swedish	−6.944	4.403	−1.577	1.000
	Turkish	6.028	4.403	1.369	1.000
	Ukrainian	3.833	4.403	0.871	1.000
	Welsh	1.861	4.403	0.423	1.000
Icelandic	Irish	−3.417	4.403	−0.776	1.000
	Latvian	3.361	4.403	0.763	1.000
	Maltese	4.139	4.403	0.940	1.000
	Norwegian	6.083	4.403	1.382	1.000
	Polish	10.194	4.403	2.315	1.000
	Portuguese	6.083	4.403	1.382	1.000
	Romanian	5.806	4.403	1.318	1.000
	Slovene	10.750	4.403	2.441	1.000
	Swedish	−2.444	4.403	−0.555	1.000
	Turkish	10.528	4.403	2.391	1.000
	Ukrainian	8.333	4.403	1.893	1.000
	Welsh	6.361	4.403	1.445	1.000
Irish	Latvian	6.778	4.403	1.539	1.000
	Maltese	7.556	4.403	1.716	1.000
	Norwegian	9.500	4.403	2.157	1.000
	Polish	13.611	4.403	3.091	0.498
	Portuguese	9.500	4.403	2.157	1.000
	Romanian	9.222	4.403	2.094	1.000
	Slovene	14.167	4.403	3.217	0.329
	Swedish	0.972	4.403	0.221	1.000
	Turkish	13.944	4.403	3.167	0.389
	Ukrainian	11.750	4.403	2.668	1.000
	Welsh	9.778	4.403	2.221	1.000
Latvian	Maltese	0.778	4.403	0.177	1.000
	Norwegian	2.722	4.403	0.618	1.000
	Polish	6.833	4.403	1.552	1.000
	Portuguese	2.722	4.403	0.618	1.000
	Romanian	2.444	4.403	0.555	1.000
	Slovene	7.389	4.403	1.678	1.000
	Swedish	−5.806	4.403	−1.318	1.000
	Turkish	7.167	4.403	1.628	1.000
	Ukrainian	4.972	4.403	1.129	1.000
	Welsh	3.000	4.403	0.681	1.000
Maltese	Norwegian	1.944	4.403	0.442	1.000
	Polish	6.056	4.403	1.375	1.000
	Portuguese	1.944	4.403	0.442	1.000
	Romanian	1.667	4.403	0.379	1.000
	Slovene	6.611	4.403	1.501	1.000
	Swedish	−6.583	4.403	−1.495	1.000
	Turkish	6.389	4.403	1.451	1.000
	Ukrainian	4.194	4.403	0.953	1.000
	Welsh	2.222	4.403	0.505	1.000
Norwegian	Polish	4.111	4.403	0.934	1.000
	Portuguese	3.220×10^{-14}	4.403	7.312×10^{-15}	1.000
	Romanian	−0.278	4.403	−0.063	1.000
	Slovene	4.667	4.403	1.060	1.000
	Swedish	−8.528	4.403	−1.937	1.000
	Turkish	4.444	4.403	1.009	1.000
	Ukrainian	2.250	4.403	0.511	1.000
	Welsh	0.278	4.403	0.063	1.000

		Mean Difference	SE	t	Pholm
Polish	Portuguese	−4.111	4.403	−0.934	1.000
	Romanian	−4.389	4.403	−0.997	1.000
	Slovene	0.556	4.403	0.126	1.000
	Swedish	−12.639	4.403	−2.870	0.982
	Turkish	0.333	4.403	0.076	1.000
	Ukrainian	−1.861	4.403	−0.423	1.000
	Welsh	−3.833	4.403	−0.871	1.000
Portuguese	Romanian	−0.278	4.403	−0.063	1.000
	Slovene	4.667	4.403	1.060	1.000
	Swedish	−8.528	4.403	−1.937	1.000
	Turkish	4.444	4.403	1.009	1.000
	Ukrainian	2.250	4.403	0.511	1.000
	Welsh	0.278	4.403	0.063	1.000
Romanian	Slovene	4.944	4.403	1.123	1.000
	Swedish	−8.250	4.403	−1.874	1.000
	Turkish	4.722	4.403	1.072	1.000
	Ukrainian	2.528	4.403	0.574	1.000
	Welsh	0.556	4.403	0.126	1.000
Slovene	Swedish	−13.194	4.403	−2.996	0.677
	Turkish	−0.222	4.403	−0.050	1.000
	Ukrainian	−2.417	4.403	−0.549	1.000
	Welsh	−4.389	4.403	−0.997	1.000
Swedish	Turkish	12.972	4.403	2.946	0.789
	Ukrainian	10.778	4.403	2.448	1.000
	Welsh	8.806	4.403	2.000	1.000
Turkish	Ukrainian	−2.194	4.403	−0.498	1.000
	Welsh	−4.167	4.403	−0.946	1.000
Ukrainian	Welsh	−1.972	4.403	−0.448	1.000

* p < .05, ** p < .01

Note. P-value adjusted for comparing a family of 253

STATUS

CHINESE

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p
Language	3115.382[a]	22[a]	141.608[a]	0.810[a]	0.716[a]
Residuals	276840.096	1584	174.773		

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated (p < .05).

Post Hoc Tests:

		Mean Difference	SE	t	Pholm
Albanian	Basque	1.342	2.188	0.613	1.000
	Breton	−1.082	2.188	−0.495	1.000
	Catalan	0.904	2.188	0.413	1.000
	Czech	−0.603	2.188	−0.275	1.000
	Danish	−0.863	2.188	−0.394	1.000
	Estonian	2.178	2.188	0.995	1.000
	Finnish	−0.178	2.188	−0.081	1.000
	Greek	−0.438	2.188	−0.200	1.000
	Hungarian	−2.014	2.188	−0.920	1.000
	Icelandic	−0.493	2.188	−0.225	1.000
	Irish	−2.055	2.188	−0.939	1.000
	Latvian	0.178	2.188	0.081	1.000
	Maltese	1.425	2.188	0.651	1.000
	Norwegian	−0.260	2.188	−0.119	1.000
	Polish	−1.466	2.188	−0.670	1.000
	Portuguese	0.356	2.188	0.163	1.000
	Romanian	2.959	2.188	1.352	1.000
	Slovene	−0.274	2.188	−0.125	1.000
	Swedish	0.863	2.188	0.394	1.000
	Turkish	−0.041	2.188	−0.019	1.000
	Ukrainian	−2.575	2.188	−1.177	1.000
	Welsh	1.918	2.188	0.876	1.000
Basque	Breton	−2.425	2.188	−1.108	1.000
	Catalan	−0.438	2.188	−0.200	1.000
	Czech	−1.945	2.188	−0.889	1.000
	Danish	−2.205	2.188	−1.008	1.000
	Estonian	0.836	2.188	0.382	1.000
	Finnish	−1.521	2.188	−0.695	1.000
	Greek	−1.781	2.188	−0.814	1.000
	Hungarian	−3.356	2.188	−1.534	1.000
	Icelandic	−1.836	2.188	−0.839	1.000
	Irish	−3.397	2.188	−1.553	1.000
	Latvian	−1.164	2.188	−0.532	1.000
	Maltese	0.082	2.188	0.038	1.000
	Norwegian	−1.603	2.188	−0.732	1.000
	Polish	−2.808	2.188	−1.283	1.000
	Portuguese	−0.986	2.188	−0.451	1.000
	Romanian	1.616	2.188	0.739	1.000
	Slovene	−1.616	2.188	−0.739	1.000
	Swedish	−0.479	2.188	−0.219	1.000
	Turkish	−1.384	2.188	−0.632	1.000
	Ukrainian	−3.918	2.188	−1.790	1.000
	Welsh	0.575	2.188	0.263	1.000
Breton	Catalan	1.986	2.188	0.908	1.000
	Czech	0.479	2.188	0.219	1.000
	Danish	0.219	2.188	0.100	1.000
	Estonian	3.260	2.188	1.490	1.000
	Finnish	0.904	2.188	0.413	1.000
	Greek	0.644	2.188	0.294	1.000
	Hungarian	−0.932	2.188	−0.426	1.000
	Icelandic	0.589	2.188	0.269	1.000
	Irish	−0.973	2.188	−0.444	1.000
	Latvian	1.260	2.188	0.576	1.000
	Maltese	2.507	2.188	1.146	1.000
	Norwegian	0.822	2.188	0.376	1.000
	Polish	−0.384	2.188	−0.175	1.000
	Portuguese	1.438	2.188	0.657	1.000
	Romanian	4.041	2.188	1.847	1.000
	Slovene	0.808	2.188	0.369	1.000
	Swedish	1.945	2.188	0.889	1.000
	Turkish	1.041	2.188	0.476	1.000
	Ukrainian	−1.493	2.188	−0.682	1.000
	Welsh	3.000	2.188	1.371	1.000
Catalan	Czech	−1.507	2.188	−0.689	1.000
	Danish	−1.767	2.188	−0.808	1.000
	Estonian	1.274	2.188	0.582	1.000
	Finnish	−1.082	2.188	−0.495	1.000
	Greek	−1.342	2.188	−0.613	1.000
	Hungarian	−2.918	2.188	−1.333	1.000
	Icelandic	−1.397	2.188	−0.639	1.000
	Irish	−2.959	2.188	−1.352	1.000
	Latvian	−0.726	2.188	−0.332	1.000
	Maltese	0.521	2.188	0.238	1.000
	Norwegian	−1.164	2.188	−0.532	1.000
	Polish	−2.370	2.188	−1.083	1.000
	Portuguese	−0.548	2.188	−0.250	1.000
	Romanian	2.055	2.188	0.939	1.000
	Slovene	−1.178	2.188	−0.538	1.000
	Swedish	−0.041	2.188	−0.019	1.000
	Turkish	−0.945	2.188	−0.432	1.000
	Ukrainian	−3.479	2.188	−1.590	1.000
	Welsh	1.014	2.188	0.463	1.000
Czech	Danish	−0.260	2.188	−0.119	1.000
	Estonian	2.781	2.188	1.271	1.000
	Finnish	0.425	2.188	0.194	1.000
	Greek	0.164	2.188	0.075	1.000
	Hungarian	−1.411	2.188	−0.645	1.000
	Icelandic	0.110	2.188	0.050	1.000
	Irish	−1.452	2.188	−0.664	1.000
	Latvian	0.781	2.188	0.357	1.000
	Maltese	2.027	2.188	0.927	1.000
	Norwegian	0.342	2.188	0.157	1.000
	Polish	−0.863	2.188	−0.394	1.000
	Portuguese	0.959	2.188	0.438	1.000
	Romanian	3.562	2.188	1.628	1.000
	Slovene	0.329	2.188	0.150	1.000
	Swedish	1.466	2.188	0.670	1.000
	Turkish	0.562	2.188	0.257	1.000
	Ukrainian	−1.973	2.188	−0.901	1.000
	Welsh	2.521	2.188	1.152	1.000
Danish	Estonian	3.041	2.188	1.390	1.000
	Finnish	0.685	2.188	0.313	1.000
	Greek	0.425	2.188	0.194	1.000
	Hungarian	−1.151	2.188	−0.526	1.000
	Icelandic	0.370	2.188	0.169	1.000
	Irish	−1.192	2.188	−0.545	1.000
	Latvian	1.041	2.188	0.476	1.000
	Maltese	2.288	2.188	1.045	1.000
	Norwegian	0.603	2.188	0.275	1.000
	Polish	−0.603	2.188	−0.275	1.000
	Portuguese	1.219	2.188	0.557	1.000
	Romanian	3.822	2.188	1.747	1.000
	Slovene	0.589	2.188	0.269	1.000
	Swedish	1.726	2.188	0.789	1.000
	Turkish	0.822	2.188	0.376	1.000
	Ukrainian	−1.712	2.188	−0.783	1.000

		Mean Difference	SE	t	Pholm
	Welsh	2.781	2.188	1.271	1.000
Estonian	Finnish	−2.356	2.188	−1.077	1.000
	Greek	−2.616	2.188	−1.196	1.000
	Hungarian	−4.192	2.188	−1.916	1.000
	Icelandic	−2.671	2.188	−1.221	1.000
	Irish	−4.233	2.188	−1.934	1.000
	Latvian	−2.000	2.188	−0.914	1.000
	Maltese	−0.753	2.188	−0.344	1.000
	Norwegian	−2.438	2.188	−1.114	1.000
	Polish	−3.644	2.188	−1.665	1.000
	Portuguese	−1.822	2.188	−0.833	1.000
	Romanian	0.781	2.188	0.357	1.000
	Slovene	−2.452	2.188	−1.121	1.000
	Swedish	−1.315	2.188	−0.601	1.000
	Turkish	−2.219	2.188	−1.014	1.000
	Ukrainian	−4.753	2.188	−2.172	1.000
	Welsh	−0.260	2.188	−0.119	1.000
Finnish	Greek	−0.260	2.188	−0.119	1.000
	Hungarian	−1.836	2.188	−0.839	1.000
	Icelandic	−0.315	2.188	−0.144	1.000
	Irish	−1.877	2.188	−0.858	1.000
	Latvian	0.356	2.188	0.163	1.000
	Maltese	1.603	2.188	0.732	1.000
	Norwegian	−0.082	2.188	−0.038	1.000
	Polish	−1.288	2.188	−0.588	1.000
	Portuguese	0.534	2.188	0.244	1.000
	Romanian	3.137	2.188	1.434	1.000
	Slovene	−0.096	2.188	−0.044	1.000
	Swedish	1.041	2.188	0.476	1.000
	Turkish	0.137	2.188	0.063	1.000
	Ukrainian	−2.397	2.188	−1.096	1.000
	Welsh	2.096	2.188	0.958	1.000
Greek	Hungarian	−1.575	2.188	−0.720	1.000
	Icelandic	−0.055	2.188	−0.025	1.000
	Irish	−1.616	2.188	−0.739	1.000
	Latvian	0.616	2.188	0.282	1.000
	Maltese	1.863	2.188	0.851	1.000
	Norwegian	0.178	2.188	0.081	1.000
	Polish	−1.027	2.188	−0.470	1.000
	Portuguese	0.795	2.188	0.363	1.000
	Romanian	3.397	2.188	1.553	1.000
	Slovene	0.164	2.188	0.075	1.000
	Swedish	1.301	2.188	0.595	1.000
	Turkish	0.397	2.188	0.182	1.000
	Ukrainian	−2.137	2.188	−0.977	1.000
	Welsh	2.356	2.188	1.077	1.000
Hungarian	Icelandic	1.521	2.188	0.695	1.000
	Irish	−0.041	2.188	−0.019	1.000
	Latvian	2.192	2.188	1.002	1.000
	Maltese	3.438	2.188	1.571	1.000
	Norwegian	1.753	2.188	0.801	1.000
	Polish	0.548	2.188	0.250	1.000
	Portuguese	2.370	2.188	1.083	1.000
	Romanian	4.973	2.188	2.272	1.000
	Slovene	1.740	2.188	0.795	1.000
	Swedish	2.877	2.188	1.315	1.000
	Turkish	1.973	2.188	0.901	1.000
	Ukrainian	−0.562	2.188	−0.257	1.000
	Welsh	3.932	2.188	1.797	1.000
Icelandic	Irish	−1.562	2.188	−0.714	1.000
	Latvian	0.671	2.188	0.307	1.000
	Maltese	1.918	2.188	0.876	1.000
	Norwegian	0.233	2.188	0.106	1.000
	Polish	−0.973	2.188	−0.444	1.000
	Portuguese	0.849	2.188	0.388	1.000
	Romanian	3.452	2.188	1.578	1.000
	Slovene	0.219	2.188	0.100	1.000
	Swedish	1.356	2.188	0.620	1.000
	Turkish	0.452	2.188	0.207	1.000
	Ukrainian	−2.082	2.188	−0.952	1.000
	Welsh	2.411	2.188	1.102	1.000
Irish	Latvian	2.233	2.188	1.020	1.000
	Maltese	3.479	2.188	1.590	1.000
	Norwegian	1.795	2.188	0.820	1.000
	Polish	0.589	2.188	0.269	1.000
	Portuguese	2.411	2.188	1.102	1.000
	Romanian	5.014	2.188	2.291	1.000
	Slovene	1.781	2.188	0.814	1.000
	Swedish	2.918	2.188	1.333	1.000
	Turkish	2.014	2.188	0.920	1.000
	Ukrainian	−0.521	2.188	−0.238	1.000
	Welsh	3.973	2.188	1.815	1.000
Latvian	Maltese	1.247	2.188	0.570	1.000
	Norwegian	−0.438	2.188	−0.200	1.000
	Polish	−1.644	2.188	−0.751	1.000
	Portuguese	0.178	2.188	0.081	1.000
	Romanian	2.781	2.188	1.271	1.000
	Slovene	−0.452	2.188	−0.207	1.000
	Swedish	0.685	2.188	0.313	1.000
	Turkish	−0.219	2.188	−0.100	1.000
	Ukrainian	−2.753	2.188	−1.258	1.000
	Welsh	1.740	2.188	0.795	1.000
Maltese	Norwegian	−1.685	2.188	−0.770	1.000
	Polish	−2.890	2.188	−1.321	1.000
	Portuguese	−1.068	2.188	−0.488	1.000
	Romanian	1.534	2.188	0.701	1.000
	Slovene	−1.699	2.188	−0.776	1.000
	Swedish	−0.562	2.188	−0.257	1.000
	Turkish	−1.466	2.188	−0.670	1.000
	Ukrainian	−4.000	2.188	−1.828	1.000
	Welsh	0.493	2.188	0.225	1.000
Norwegian	Polish	−1.205	2.188	−0.551	1.000
	Portuguese	0.616	2.188	0.282	1.000
	Romanian	3.219	2.188	1.471	1.000
	Slovene	−0.014	2.188	−0.006	1.000
	Swedish	1.123	2.188	0.513	1.000
	Turkish	0.219	2.188	0.100	1.000
	Ukrainian	−2.315	2.188	−1.058	1.000
	Welsh	2.178	2.188	0.995	1.000
Polish	Portuguese	1.822	2.188	0.833	1.000
	Romanian	4.425	2.188	2.022	1.000
	Slovene	1.192	2.188	0.545	1.000
	Swedish	2.329	2.188	1.064	1.000

		Mean Difference	SE	t	Pholm
	Turkish	1.425	2.188	0.651	1.000
	Ukrainian	−1.110	2.188	−0.507	1.000
	Welsh	3.384	2.188	1.546	1.000
Portuguese	Romanian	2.603	2.188	1.189	1.000
	Slovene	−0.630	2.188	−0.288	1.000
	Swedish	0.507	2.188	0.232	1.000
	Turkish	−0.397	2.188	−0.182	1.000
	Ukrainian	−2.932	2.188	−1.340	1.000
	Welsh	1.562	2.188	0.714	1.000
Romanian	Slovene	−3.233	2.188	−1.477	1.000
	Swedish	−2.096	2.188	−0.958	1.000
	Turkish	−3.000	2.188	−1.371	1.000
	Ukrainian	−5.534	2.188	−2.529	1.000
	Welsh	−1.041	2.188	−0.476	1.000
Slovene	Swedish	1.137	2.188	0.520	1.000
	Turkish	0.233	2.188	0.106	1.000
	Ukrainian	−2.301	2.188	−1.052	1.000
	Welsh	2.192	2.188	1.002	1.000
Swedish	Turkish	−0.904	2.188	−0.413	1.000
	Ukrainian	−3.438	2.188	−1.571	1.000
	Welsh	1.055	2.188	0.482	1.000
Turkish	Ukrainian	−2.534	2.188	−1.158	1.000
	Welsh	1.959	2.188	0.895	1.000
Ukrainian	Welsh	4.493	2.188	2.053	1.000

Note. P-value adjusted for comparing a family of 253

STATUS

GERMAN

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p
Language	7697.720[a]	22[a]	349.896[a]	1.508[a]	0.063[a]
Residuals	178685.671	770	232.059		

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated ($p < .05$).

Post Hoc Tests:

		Mean Difference	SE	t	Pholm
Albanian	Basque	−2.056	3.591	−0.572	1.000
	Breton	−3.778	3.591	−1.052	1.000
	Catalan	−1.639	3.591	−0.456	1.000
	Czech	4.417	3.591	1.230	1.000
	Danish	−2.500	3.591	−0.696	1.000
	Estonian	−3.917	3.591	−1.091	1.000
	Finnish	2.667	3.591	0.743	1.000
	Greek	−6.111	3.591	−1.702	1.000
	Hungarian	0.778	3.591	0.217	1.000
	Icelandic	−2.250	3.591	−0.627	1.000
	Irish	−0.944	3.591	−0.263	1.000
	Latvian	−4.167	3.591	−1.160	1.000
	Maltese	−0.500	3.591	−0.139	1.000
	Norwegian	−3.611	3.591	−1.006	1.000
	Polish	2.833	3.591	0.789	1.000
	Portuguese	−1.056	3.591	−0.294	1.000
	Romanian	−1.556	3.591	−0.433	1.000
	Slovene	2.028	3.591	0.565	1.000
	Swedish	−6.639	3.591	−1.849	1.000
	Turkish	2.500	3.591	0.696	1.000
	Ukrainian	4.472	3.591	1.246	1.000
	Welsh	1.083	3.591	0.302	1.000
Basque	Breton	−1.722	3.591	−0.480	1.000
	Catalan	0.417	3.591	0.116	1.000
	Czech	6.472	3.591	1.803	1.000
	Danish	−0.444	3.591	−0.124	1.000
	Estonian	−1.861	3.591	−0.518	1.000
	Finnish	4.722	3.591	1.315	1.000
	Greek	−4.056	3.591	−1.130	1.000
	Hungarian	2.833	3.591	0.789	1.000
	Icelandic	−0.194	3.591	−0.054	1.000
	Irish	1.111	3.591	0.309	1.000
	Latvian	−2.111	3.591	−0.588	1.000
	Maltese	1.556	3.591	0.433	1.000
	Norwegian	−1.556	3.591	−0.433	1.000
	Polish	4.889	3.591	1.362	1.000
	Portuguese	1.000	3.591	0.279	1.000
	Romanian	0.500	3.591	0.139	1.000
	Slovene	4.083	3.591	1.137	1.000
	Swedish	−4.583	3.591	−1.276	1.000
	Turkish	4.556	3.591	1.269	1.000
	Ukrainian	6.528	3.591	1.818	1.000
	Welsh	3.139	3.591	0.874	1.000
Breton	Catalan	2.139	3.591	0.596	1.000
	Czech	8.194	3.591	2.282	1.000
	Danish	1.278	3.591	0.356	1.000
	Estonian	−0.139	3.591	−0.039	1.000
	Finnish	6.444	3.591	1.795	1.000
	Greek	−2.333	3.591	−0.650	1.000
	Hungarian	4.556	3.591	1.269	1.000
	Icelandic	1.528	3.591	0.425	1.000
	Irish	2.833	3.591	0.789	1.000
	Latvian	−0.389	3.591	−0.108	1.000
	Maltese	3.278	3.591	0.913	1.000
	Norwegian	0.167	3.591	0.046	1.000
	Polish	6.611	3.591	1.841	1.000
	Portuguese	2.722	3.591	0.758	1.000
	Romanian	2.222	3.591	0.619	1.000
	Slovene	5.806	3.591	1.617	1.000
	Swedish	−2.861	3.591	−0.797	1.000
	Turkish	6.278	3.591	1.748	1.000
	Ukrainian	8.250	3.591	2.298	1.000
	Welsh	4.861	3.591	1.354	1.000
Catalan	Czech	6.056	3.591	1.687	1.000
	Danish	−0.861	3.591	−0.240	1.000
	Estonian	−2.278	3.591	−0.634	1.000
	Finnish	4.306	3.591	1.199	1.000
	Greek	−4.472	3.591	−1.246	1.000
	Hungarian	2.417	3.591	0.673	1.000
	Icelandic	−0.611	3.591	−0.170	1.000
	Irish	0.694	3.591	0.193	1.000
	Latvian	−2.528	3.591	−0.704	1.000
	Maltese	1.139	3.591	0.317	1.000
	Norwegian	−1.972	3.591	−0.549	1.000
	Polish	4.472	3.591	1.246	1.000
	Portuguese	0.583	3.591	0.162	1.000
	Romanian	0.083	3.591	0.023	1.000
	Slovene	3.667	3.591	1.021	1.000
	Swedish	−5.000	3.591	−1.393	1.000
	Turkish	4.139	3.591	1.153	1.000
	Ukrainian	6.111	3.591	1.702	1.000
	Welsh	2.722	3.591	0.758	1.000
Czech	Danish	−6.917	3.591	−1.926	1.000
	Estonian	−8.333	3.591	−2.321	1.000
	Finnish	−1.750	3.591	−0.487	1.000
	Greek	−10.528	3.591	−2.932	0.867
	Hungarian	−3.639	3.591	−1.013	1.000
	Icelandic	−6.667	3.591	−1.857	1.000
	Irish	−5.361	3.591	−1.493	1.000
	Latvian	−8.583	3.591	−2.391	1.000
	Maltese	−4.917	3.591	−1.369	1.000
	Norwegian	−8.028	3.591	−2.236	1.000
	Polish	−1.583	3.591	−0.441	1.000
	Portuguese	−5.472	3.591	−1.524	1.000
	Romanian	−5.972	3.591	−1.663	1.000
	Slovene	−2.389	3.591	−0.665	1.000
	Swedish	−11.056	3.591	−3.079	0.542
	Turkish	−1.917	3.591	−0.534	1.000
	Ukrainian	0.056	3.591	0.015	1.000
	Welsh	−3.333	3.591	−0.928	1.000
Danish	Estonian	−1.417	3.591	−0.395	1.000
	Finnish	5.167	3.591	1.439	1.000
	Greek	−3.611	3.591	−1.006	1.000
	Hungarian	3.278	3.591	0.913	1.000
	Icelandic	0.250	3.591	0.070	1.000
	Irish	1.556	3.591	0.433	1.000
	Latvian	−1.667	3.591	−0.464	1.000
	Maltese	2.000	3.591	0.557	1.000
	Norwegian	−1.111	3.591	−0.309	1.000
	Polish	5.333	3.591	1.485	1.000
	Portuguese	1.444	3.591	0.402	1.000
	Romanian	0.944	3.591	0.263	1.000
	Slovene	4.528	3.591	1.261	1.000
	Swedish	−4.139	3.591	−1.153	1.000
	Turkish	5.000	3.591	1.393	1.000
	Ukrainian	6.972	3.591	1.942	1.000

		Mean Difference	SE	t	Pholm
	Welsh	3.583	3.591	0.998	1.000
Estonian	Finnish	6.583	3.591	1.834	1.000
	Greek	−2.194	3.591	−0.611	1.000
	Hungarian	4.694	3.591	1.307	1.000
	Icelandic	1.667	3.591	0.464	1.000
	Irish	2.972	3.591	0.828	1.000
	Latvian	−0.250	3.591	−0.070	1.000
	Maltese	3.417	3.591	0.952	1.000
	Norwegian	0.306	3.591	0.085	1.000
	Polish	6.750	3.591	1.880	1.000
	Portuguese	2.861	3.591	0.797	1.000
	Romanian	2.361	3.591	0.658	1.000
	Slovene	5.944	3.591	1.656	1.000
	Swedish	−2.722	3.591	−0.758	1.000
	Turkish	6.417	3.591	1.787	1.000
	Ukrainian	8.389	3.591	2.336	1.000
	Welsh	5.000	3.591	1.393	1.000
Finnish	Greek	−8.778	3.591	−2.445	1.000
	Hungarian	−1.889	3.591	−0.526	1.000
	Icelandic	−4.917	3.591	−1.369	1.000
	Irish	−3.611	3.591	−1.006	1.000
	Latvian	−6.833	3.591	−1.903	1.000
	Maltese	−3.167	3.591	−0.882	1.000
	Norwegian	−6.278	3.591	−1.748	1.000
	Polish	0.167	3.591	0.046	1.000
	Portuguese	−3.722	3.591	−1.037	1.000
	Romanian	−4.222	3.591	−1.176	1.000
	Slovene	−0.639	3.591	−0.178	1.000
	Swedish	−9.306	3.591	−2.592	1.000
	Turkish	−0.167	3.591	−0.046	1.000
	Ukrainian	1.806	3.591	0.503	1.000
	Welsh	−1.583	3.591	−0.441	1.000
Greek	Hungarian	6.889	3.591	1.919	1.000
	Icelandic	3.861	3.591	1.075	1.000
	Irish	5.167	3.591	1.439	1.000
	Latvian	1.944	3.591	0.542	1.000
	Maltese	5.611	3.591	1.563	1.000
	Norwegian	2.500	3.591	0.696	1.000
	Polish	8.944	3.591	2.491	1.000
	Portuguese	5.056	3.591	1.408	1.000
	Romanian	4.556	3.591	1.269	1.000
	Slovene	8.139	3.591	2.267	1.000
	Swedish	−0.528	3.591	−0.147	1.000
	Turkish	8.611	3.591	2.398	1.000
	Ukrainian	10.583	3.591	2.948	0.828
	Welsh	7.194	3.591	2.004	1.000
Hungarian	Icelandic	−3.028	3.591	−0.843	1.000
	Irish	−1.722	3.591	−0.480	1.000
	Latvian	−4.944	3.591	−1.377	1.000
	Maltese	−1.278	3.591	−0.356	1.000
	Norwegian	−4.389	3.591	−1.222	1.000
	Polish	2.056	3.591	0.572	1.000
	Portuguese	−1.833	3.591	−0.511	1.000
	Romanian	−2.333	3.591	−0.650	1.000
	Slovene	1.250	3.591	0.348	1.000
	Swedish	−7.417	3.591	−2.066	1.000
	Turkish	1.722	3.591	0.480	1.000

		Mean Difference	SE	t	Pholm
	Ukrainian	3.694	3.591	1.029	1.000
	Welsh	0.306	3.591	0.085	1.000
Icelandic	Irish	1.306	3.591	0.364	1.000
	Latvian	−1.917	3.591	−0.534	1.000
	Maltese	1.750	3.591	0.487	1.000
	Norwegian	−1.361	3.591	−0.379	1.000
	Polish	5.083	3.591	1.416	1.000
	Portuguese	1.194	3.591	0.333	1.000
	Romanian	0.694	3.591	0.193	1.000
	Slovene	4.278	3.591	1.191	1.000
	Swedish	−4.389	3.591	−1.222	1.000
	Turkish	4.750	3.591	1.323	1.000
	Ukrainian	6.722	3.591	1.872	1.000
	Welsh	3.333	3.591	0.928	1.000
Irish	Latvian	−3.222	3.591	−0.897	1.000
	Maltese	0.444	3.591	0.124	1.000
	Norwegian	−2.667	3.591	−0.743	1.000
	Polish	3.778	3.591	1.052	1.000
	Portuguese	−0.111	3.591	−0.031	1.000
	Romanian	−0.611	3.591	−0.170	1.000
	Slovene	2.972	3.591	0.828	1.000
	Swedish	−5.694	3.591	−1.586	1.000
	Turkish	3.444	3.591	0.959	1.000
	Ukrainian	5.417	3.591	1.509	1.000
	Welsh	2.028	3.591	0.565	1.000
Latvian	Maltese	3.667	3.591	1.021	1.000
	Norwegian	0.556	3.591	0.155	1.000
	Polish	7.000	3.591	1.950	1.000
	Portuguese	3.111	3.591	0.866	1.000
	Romanian	2.611	3.591	0.727	1.000
	Slovene	6.194	3.591	1.725	1.000
	Swedish	−2.472	3.591	−0.689	1.000
	Turkish	6.667	3.591	1.857	1.000
	Ukrainian	8.639	3.591	2.406	1.000
	Welsh	5.250	3.591	1.462	1.000
Maltese	Norwegian	−3.111	3.591	−0.866	1.000
	Polish	3.333	3.591	0.928	1.000
	Portuguese	−0.556	3.591	−0.155	1.000
	Romanian	−1.056	3.591	−0.294	1.000
	Slovene	2.528	3.591	0.704	1.000
	Swedish	−6.139	3.591	−1.710	1.000
	Turkish	3.000	3.591	0.836	1.000
	Ukrainian	4.972	3.591	1.385	1.000
	Welsh	1.583	3.591	0.441	1.000
Norwegian	Polish	6.444	3.591	1.795	1.000
	Portuguese	2.556	3.591	0.712	1.000
	Romanian	2.056	3.591	0.572	1.000
	Slovene	5.639	3.591	1.570	1.000
	Swedish	−3.028	3.591	−0.843	1.000
	Turkish	6.111	3.591	1.702	1.000
	Ukrainian	8.083	3.591	2.251	1.000
	Welsh	4.694	3.591	1.307	1.000
Polish	Portuguese	−3.889	3.591	−1.083	1.000
	Romanian	−4.389	3.591	−1.222	1.000
	Slovene	−0.806	3.591	−0.224	1.000
	Swedish	−9.472	3.591	−2.638	1.000

		Mean Difference	SE	t	p_{holm}
	Turkish	−0.333	3.591	−0.093	1.000
	Ukrainian	1.639	3.591	0.456	1.000
	Welsh	−1.750	3.591	−0.487	1.000
Portuguese	Romanian	−0.500	3.591	−0.139	1.000
	Slovene	3.083	3.591	0.859	1.000
	Swedish	−5.583	3.591	−1.555	1.000
	Turkish	3.556	3.591	0.990	1.000
	Ukrainian	5.528	3.591	1.540	1.000
	Welsh	2.139	3.591	0.596	1.000
Romanian	Slovene	3.583	3.591	0.998	1.000
	Swedish	−5.083	3.591	−1.416	1.000
	Turkish	4.056	3.591	1.130	1.000
	Ukrainian	6.028	3.591	1.679	1.000
	Welsh	2.639	3.591	0.735	1.000
Slovene	Swedish	−8.667	3.591	−2.414	1.000
	Turkish	0.472	3.591	0.132	1.000
	Ukrainian	2.444	3.591	0.681	1.000
	Welsh	−0.944	3.591	−0.263	1.000
Swedish	Turkish	9.139	3.591	2.545	1.000
	Ukrainian	11.111	3.591	3.095	0.517
	Welsh	7.722	3.591	2.151	1.000
Turkish	Ukrainian	1.972	3.591	0.549	1.000
	Welsh	−1.417	3.591	−0.395	1.000
Ukrainian	Welsh	−3.389	3.591	−0.944	1.000

Note. P-value adjusted for comparing a family of 253

ORDER

CHINESE

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p
Language	8009.834[a]	22[a]	364.083[a]	1.833[a]	0.011[a]
Residuals	314641.818	1584	198.638		

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated ($p < .05$).

Post Hoc Tests:

		Mean Difference	SE	t	p_{holm}
Albanian	Basque	−0.986	2.333	−0.423	1.000
	Breton	0.658	2.333	0.282	1.000
	Catalan	1.575	2.333	0.675	1.000
	Czech	0.288	2.333	0.123	1.000
	Danish	−1.521	2.333	−0.652	1.000
	Estonian	3.123	2.333	1.339	1.000
	Finnish	0.452	2.333	0.194	1.000
	Greek	1.918	2.333	0.822	1.000
	Hungarian	−1.425	2.333	−0.611	1.000
	Icelandic	−0.740	2.333	−0.317	1.000
	Irish	−1.151	2.333	−0.493	1.000
	Latvian	−1.849	2.333	−0.793	1.000
	Maltese	4.356	2.333	1.867	1.000
	Norwegian	3.863	2.333	1.656	1.000
	Polish	−1.877	2.333	−0.804	1.000
	Portuguese	1.795	2.333	0.769	1.000
	Romanian	6.205	2.333	2.660	1.000
	Slovene	2.575	2.333	1.104	1.000
	Swedish	2.014	2.333	0.863	1.000
	Turkish	−0.671	2.333	−0.288	1.000
	Ukrainian	1.986	2.333	0.851	1.000
	Welsh	3.740	2.333	1.603	1.000
Basque	Breton	1.644	2.333	0.705	1.000
	Catalan	2.562	2.333	1.098	1.000
	Czech	1.274	2.333	0.546	1.000
	Danish	−0.534	2.333	−0.229	1.000
	Estonian	4.110	2.333	1.762	1.000
	Finnish	1.438	2.333	0.617	1.000
	Greek	2.904	2.333	1.245	1.000
	Hungarian	−0.438	2.333	−0.188	1.000
	Icelandic	0.247	2.333	0.106	1.000
	Irish	−0.164	2.333	−0.070	1.000
	Latvian	−0.863	2.333	−0.370	1.000
	Maltese	5.342	2.333	2.290	1.000
	Norwegian	4.849	2.333	2.079	1.000
	Polish	−0.890	2.333	−0.382	1.000
	Portuguese	2.781	2.333	1.192	1.000
	Romanian	7.192	2.333	3.083	0.517
	Slovene	3.562	2.333	1.527	1.000
	Swedish	3.000	2.333	1.286	1.000
	Turkish	0.315	2.333	0.135	1.000
	Ukrainian	2.973	2.333	1.274	1.000
	Welsh	4.726	2.333	2.026	1.000
Breton	Catalan	0.918	2.333	0.393	1.000
	Czech	−0.370	2.333	−0.159	1.000
	Danish	−2.178	2.333	−0.934	1.000
	Estonian	2.466	2.333	1.057	1.000
	Finnish	−0.205	2.333	−0.088	1.000
	Greek	1.260	2.333	0.540	1.000
	Hungarian	−2.082	2.333	−0.893	1.000
	Icelandic	−1.397	2.333	−0.599	1.000
	Irish	−1.808	2.333	−0.775	1.000
	Latvian	−2.507	2.333	−1.075	1.000
	Maltese	3.699	2.333	1.585	1.000
	Norwegian	3.205	2.333	1.374	1.000
	Polish	−2.534	2.333	−1.086	1.000
	Portuguese	1.137	2.333	0.487	1.000
	Romanian	5.548	2.333	2.378	1.000

		Mean Difference	SE	t	p_{holm}
	Slovene	1.918	2.333	0.822	1.000
	Swedish	1.356	2.333	0.581	1.000
	Turkish	−1.329	2.333	−0.570	1.000
	Ukrainian	1.329	2.333	0.570	1.000
	Welsh	3.082	2.333	1.321	1.000
Catalan	Czech	−1.288	2.333	−0.552	1.000
	Danish	−3.096	2.333	−1.327	1.000
	Estonian	1.548	2.333	0.664	1.000
	Finnish	−1.123	2.333	−0.482	1.000
	Greek	0.342	2.333	0.147	1.000
	Hungarian	−3.000	2.333	−1.286	1.000
	Icelandic	−2.315	2.333	−0.992	1.000
	Irish	−2.726	2.333	−1.169	1.000
	Latvian	−3.425	2.333	−1.468	1.000
	Maltese	2.781	2.333	1.192	1.000
	Norwegian	2.288	2.333	0.981	1.000
	Polish	−3.452	2.333	−1.480	1.000
	Portuguese	0.219	2.333	0.094	1.000
	Romanian	4.630	2.333	1.985	1.000
	Slovene	1.000	2.333	0.429	1.000
	Swedish	0.438	2.333	0.188	1.000
	Turkish	−2.247	2.333	−0.963	1.000
	Ukrainian	0.411	2.333	0.176	1.000
	Welsh	2.164	2.333	0.928	1.000
Czech	Danish	−1.808	2.333	−0.775	1.000
	Estonian	2.836	2.333	1.216	1.000
	Finnish	0.164	2.333	0.070	1.000
	Greek	1.630	2.333	0.699	1.000
	Hungarian	−1.712	2.333	−0.734	1.000
	Icelandic	−1.027	2.333	−0.440	1.000
	Irish	−1.438	2.333	−0.617	1.000
	Latvian	−2.137	2.333	−0.916	1.000
	Maltese	4.068	2.333	1.744	1.000
	Norwegian	3.575	2.333	1.533	1.000
	Polish	−2.164	2.333	−0.928	1.000
	Portuguese	1.507	2.333	0.646	1.000
	Romanian	5.918	2.333	2.537	1.000
	Slovene	2.288	2.333	0.981	1.000
	Swedish	1.726	2.333	0.740	1.000
	Turkish	−0.959	2.333	−0.411	1.000
	Ukrainian	1.699	2.333	0.728	1.000
	Welsh	3.452	2.333	1.480	1.000
Danish	Estonian	4.644	2.333	1.991	1.000
	Finnish	1.973	2.333	0.846	1.000
	Greek	3.438	2.333	1.474	1.000
	Hungarian	0.096	2.333	0.041	1.000
	Icelandic	0.781	2.333	0.335	1.000
	Irish	0.370	2.333	0.159	1.000
	Latvian	−0.329	2.333	−0.141	1.000
	Maltese	5.877	2.333	2.519	1.000
	Norwegian	5.384	2.333	2.308	1.000
	Polish	−0.356	2.333	−0.153	1.000
	Portuguese	3.315	2.333	1.421	1.000
	Romanian	7.726	2.333	3.312	0.238
	Slovene	4.096	2.333	1.756	1.000
	Swedish	3.534	2.333	1.515	1.000
	Turkish	0.849	2.333	0.364	1.000
	Ukrainian	3.507	2.333	1.503	1.000

		Mean Difference	SE	t	P_{holm}
	Welsh	5.260	2.333	2.255	1.000
Estonian	Finnish	−2.671	2.333	−1.145	1.000
	Greek	−1.205	2.333	−0.517	1.000
	Hungarian	−4.548	2.333	−1.950	1.000
	Icelandic	−3.863	2.333	−1.656	1.000
	Irish	−4.274	2.333	−1.832	1.000
	Latvian	−4.973	2.333	−2.132	1.000
	Maltese	1.233	2.333	0.528	1.000
	Norwegian	0.740	2.333	0.317	1.000
	Polish	−5.000	2.333	−2.143	1.000
	Portuguese	−1.329	2.333	−0.570	1.000
	Romanian	3.082	2.333	1.321	1.000
	Slovene	−0.548	2.333	−0.235	1.000
	Swedish	−1.110	2.333	−0.476	1.000
	Turkish	−3.795	2.333	−1.627	1.000
	Ukrainian	−1.137	2.333	−0.487	1.000
	Welsh	0.616	2.333	0.264	1.000
Finnish	Greek	1.466	2.333	0.628	1.000
	Hungarian	−1.877	2.333	−0.804	1.000
	Icelandic	−1.192	2.333	−0.511	1.000
	Irish	−1.603	2.333	−0.687	1.000
	Latvian	−2.301	2.333	−0.987	1.000
	Maltese	3.904	2.333	1.674	1.000
	Norwegian	3.411	2.333	1.462	1.000
	Polish	−2.329	2.333	−0.998	1.000
	Portuguese	1.342	2.333	0.575	1.000
	Romanian	5.753	2.333	2.466	1.000
	Slovene	2.123	2.333	0.910	1.000
	Swedish	1.562	2.333	0.669	1.000
	Turkish	−1.123	2.333	−0.482	1.000
	Ukrainian	1.534	2.333	0.658	1.000
	Welsh	3.288	2.333	1.409	1.000
Greek	Hungarian	−3.342	2.333	−1.433	1.000
	Icelandic	−2.658	2.333	−1.139	1.000
	Irish	−3.068	2.333	−1.315	1.000
	Latvian	−3.767	2.333	−1.615	1.000
	Maltese	2.438	2.333	1.045	1.000
	Norwegian	1.945	2.333	0.834	1.000
	Polish	−3.795	2.333	−1.627	1.000
	Portuguese	−0.123	2.333	−0.053	1.000
	Romanian	4.288	2.333	1.838	1.000
	Slovene	0.658	2.333	0.282	1.000
	Swedish	0.096	2.333	0.041	1.000
	Turkish	−2.589	2.333	−1.110	1.000
	Ukrainian	0.068	2.333	0.029	1.000
	Welsh	1.822	2.333	0.781	1.000
Hungarian	Icelandic	0.685	2.333	0.294	1.000
	Irish	0.274	2.333	0.117	1.000
	Latvian	−0.425	2.333	−0.182	1.000
	Maltese	5.781	2.333	2.478	1.000
	Norwegian	5.288	2.333	2.267	1.000
	Polish	−0.452	2.333	−0.194	1.000
	Portuguese	3.219	2.333	1.380	1.000
	Romanian	7.630	2.333	3.271	0.274
	Slovene	4.000	2.333	1.715	1.000
	Swedish	3.438	2.333	1.474	1.000
	Turkish	0.753	2.333	0.323	1.000

		Mean Difference	SE	t	P_{holm}
	Ukrainian	3.411	2.333	1.462	1.000
	Welsh	5.164	2.333	2.214	1.000
Icelandic	Irish	−0.411	2.333	−0.176	1.000
	Latvian	−1.110	2.333	−0.476	1.000
	Maltese	5.096	2.333	2.184	1.000
	Norwegian	4.603	2.333	1.973	1.000
	Polish	−1.137	2.333	−0.487	1.000
	Portuguese	2.534	2.333	1.086	1.000
	Romanian	6.945	2.333	2.977	0.730
	Slovene	3.315	2.333	1.421	1.000
	Swedish	2.753	2.333	1.180	1.000
	Turkish	0.068	2.333	0.029	1.000
	Ukrainian	2.726	2.333	1.169	1.000
	Welsh	4.479	2.333	1.920	1.000
Irish	Latvian	−0.699	2.333	−0.299	1.000
	Maltese	5.507	2.333	2.361	1.000
	Norwegian	5.014	2.333	2.149	1.000
	Polish	−0.726	2.333	−0.311	1.000
	Portuguese	2.945	2.333	1.263	1.000
	Romanian	7.356	2.333	3.153	0.409
	Slovene	3.726	2.333	1.597	1.000
	Swedish	3.164	2.333	1.356	1.000
	Turkish	0.479	2.333	0.206	1.000
	Ukrainian	3.137	2.333	1.345	1.000
	Welsh	4.890	2.333	2.096	1.000
Latvian	Maltese	6.205	2.333	2.660	1.000
	Norwegian	5.712	2.333	2.449	1.000
	Polish	−0.027	2.333	−0.012	1.000
	Portuguese	3.644	2.333	1.562	1.000
	Romanian	8.055	2.333	3.453	0.143
	Slovene	4.425	2.333	1.897	1.000
	Swedish	3.863	2.333	1.656	1.000
	Turkish	1.178	2.333	0.505	1.000
	Ukrainian	3.836	2.333	1.644	1.000
	Welsh	5.589	2.333	2.396	1.000
Maltese	Norwegian	−0.493	2.333	−0.211	1.000
	Polish	−6.233	2.333	−2.672	1.000
	Portuguese	−2.562	2.333	−1.098	1.000
	Romanian	1.849	2.333	0.793	1.000
	Slovene	−1.781	2.333	−0.763	1.000
	Swedish	−2.342	2.333	−1.004	1.000
	Turkish	−5.027	2.333	−2.155	1.000
	Ukrainian	−2.370	2.333	−1.016	1.000
	Welsh	−0.616	2.333	−0.264	1.000
Norwegian	Polish	−5.740	2.333	−2.460	1.000
	Portuguese	−2.068	2.333	−0.887	1.000
	Romanian	2.342	2.333	1.004	1.000
	Slovene	−1.288	2.333	−0.552	1.000
	Swedish	−1.849	2.333	−0.793	1.000
	Turkish	−4.534	2.333	−1.944	1.000
	Ukrainian	−1.877	2.333	−0.804	1.000
	Welsh	−0.123	2.333	−0.053	1.000
Polish	Portuguese	3.671	2.333	1.574	1.000
	Romanian	8.082	2.333	3.465	0.138
	Slovene	4.452	2.333	1.908	1.000
	Swedish	3.890	2.333	1.668	1.000

		Mean Difference	SE	t	P_{holm}
	Turkish	1.205	2.333	0.517	1.000
	Ukrainian	3.863	2.333	1.656	1.000
	Welsh	5.616	2.333	2.408	1.000
Portuguese	Romanian	4.411	2.333	1.891	1.000
	Slovene	0.781	2.333	0.335	1.000
	Swedish	0.219	2.333	0.094	1.000
	Turkish	−2.466	2.333	−1.057	1.000
	Ukrainian	0.192	2.333	0.082	1.000
	Welsh	1.945	2.333	0.834	1.000
Romanian	Slovene	−3.630	2.333	−1.556	1.000
	Swedish	−4.192	2.333	−1.797	1.000
	Turkish	−6.877	2.333	−2.948	0.799
	Ukrainian	−4.219	2.333	−1.809	1.000
	Welsh	−2.466	2.333	−1.057	1.000
Slovene	Swedish	−0.562	2.333	−0.241	1.000
	Turkish	−3.247	2.333	−1.392	1.000
	Ukrainian	−0.589	2.333	−0.253	1.000
	Welsh	1.164	2.333	0.499	1.000
Swedish	Turkish	−2.685	2.333	−1.151	1.000
	Ukrainian	−0.027	2.333	−0.012	1.000
	Welsh	1.726	2.333	0.740	1.000
Turkish	Ukrainian	2.658	2.333	1.139	1.000
	Welsh	4.411	2.333	1.891	1.000
Ukrainian	Welsh	1.753	2.333	0.752	1.000

Note. P-value adjusted for comparing a family of 253

ORDER

GERMAN

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p
Language	7191.331[a]	22[a]	326.879[a]	1.301[a]	0.161[a]
Residuals	193447.278	770	251.230		

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated ($p < .05$).

Post Hoc Tests:

		Mean Difference	SE	t	Pholm
Albanian	Basque	−2.222	3.736	−0.595	1.000
	Breton	−0.917	3.736	−0.245	1.000
	Catalan	−3.444	3.736	−0.922	1.000
	Czech	0.750	3.736	0.201	1.000
	Danish	−3.972	3.736	−1.063	1.000
	Estonian	−3.417	3.736	−0.915	1.000
	Finnish	−3.750	3.736	−1.004	1.000
	Greek	−6.083	3.736	−1.628	1.000
	Hungarian	−7.000	3.736	−1.874	1.000
	Icelandic	−7.444	3.736	−1.993	1.000
	Irish	−2.500	3.736	−0.669	1.000
	Latvian	−5.611	3.736	−1.502	1.000
	Maltese	−0.639	3.736	−0.171	1.000
	Norwegian	−4.389	3.736	−1.175	1.000
	Polish	2.500	3.736	0.669	1.000
	Portuguese	0.639	3.736	0.171	1.000
	Romanian	−0.278	3.736	−0.074	1.000
	Slovene	−5.583	3.736	−1.494	1.000
	Swedish	−4.000	3.736	−1.071	1.000
	Turkish	2.417	3.736	0.647	1.000
	Ukrainian	0.333	3.736	0.089	1.000
	Welsh	1.722	3.736	0.461	1.000
Basque	Breton	1.306	3.736	0.349	1.000
	Catalan	−1.222	3.736	−0.327	1.000
	Czech	2.972	3.736	0.796	1.000
	Danish	−1.750	3.736	−0.468	1.000
	Estonian	−1.194	3.736	−0.320	1.000
	Finnish	−1.528	3.736	−0.409	1.000
	Greek	−3.861	3.736	−1.034	1.000
	Hungarian	−4.778	3.736	−1.279	1.000
	Icelandic	−5.222	3.736	−1.398	1.000
	Irish	−0.278	3.736	−0.074	1.000
	Latvian	−3.389	3.736	−0.907	1.000
	Maltese	1.583	3.736	0.424	1.000
	Norwegian	−2.167	3.736	−0.580	1.000
	Polish	4.722	3.736	1.264	1.000
	Portuguese	2.861	3.736	0.766	1.000
	Romanian	1.944	3.736	0.520	1.000
	Slovene	−3.361	3.736	−0.900	1.000
	Swedish	−1.778	3.736	−0.476	1.000
	Turkish	4.639	3.736	1.242	1.000
	Ukrainian	2.556	3.736	0.684	1.000
	Welsh	3.944	3.736	1.056	1.000
Breton	Catalan	−2.528	3.736	−0.677	1.000
	Czech	1.667	3.736	0.446	1.000
	Danish	−3.056	3.736	−0.818	1.000
	Estonian	−2.500	3.736	−0.669	1.000
	Finnish	−2.833	3.736	−0.758	1.000
	Greek	−5.167	3.736	−1.383	1.000
	Hungarian	−6.083	3.736	−1.628	1.000
	Icelandic	−6.528	3.736	−1.747	1.000
	Irish	−1.583	3.736	−0.424	1.000
	Latvian	−4.694	3.736	−1.257	1.000
	Maltese	0.278	3.736	0.074	1.000
	Norwegian	−3.472	3.736	−0.929	1.000
	Polish	3.417	3.736	0.915	1.000
	Portuguese	1.556	3.736	0.416	1.000
	Romanian	0.639	3.736	0.171	1.000

		Mean Difference	SE	t	Pholm
	Slovene	−4.667	3.736	−1.249	1.000
	Swedish	−3.083	3.736	−0.825	1.000
	Turkish	3.333	3.736	0.892	1.000
	Ukrainian	1.250	3.736	0.335	1.000
	Welsh	2.639	3.736	0.706	1.000
Catalan	Czech	4.194	3.736	1.123	1.000
	Danish	−0.528	3.736	−0.141	1.000
	Estonian	0.028	3.736	0.007	1.000
	Finnish	−0.306	3.736	−0.082	1.000
	Greek	−2.639	3.736	−0.706	1.000
	Hungarian	−3.556	3.736	−0.952	1.000
	Icelandic	−4.000	3.736	−1.071	1.000
	Irish	0.944	3.736	0.253	1.000
	Latvian	−2.167	3.736	−0.580	1.000
	Maltese	2.806	3.736	0.751	1.000
	Norwegian	−0.944	3.736	−0.253	1.000
	Polish	5.944	3.736	1.591	1.000
	Portuguese	4.083	3.736	1.093	1.000
	Romanian	3.167	3.736	0.848	1.000
	Slovene	−2.139	3.736	−0.573	1.000
	Swedish	−0.556	3.736	−0.149	1.000
	Turkish	5.861	3.736	1.569	1.000
	Ukrainian	3.778	3.736	1.011	1.000
	Welsh	5.167	3.736	1.383	1.000
Czech	Danish	−4.722	3.736	−1.264	1.000
	Estonian	−4.167	3.736	−1.115	1.000
	Finnish	−4.500	3.736	−1.205	1.000
	Greek	−6.833	3.736	−1.829	1.000
	Hungarian	−7.750	3.736	−2.074	1.000
	Icelandic	−8.194	3.736	−2.193	1.000
	Irish	−3.250	3.736	−0.870	1.000
	Latvian	−6.361	3.736	−1.703	1.000
	Maltese	−1.389	3.736	−0.372	1.000
	Norwegian	−5.139	3.736	−1.376	1.000
	Polish	1.750	3.736	0.468	1.000
	Portuguese	−0.111	3.736	−0.030	1.000
	Romanian	−1.028	3.736	−0.275	1.000
	Slovene	−6.333	3.736	−1.695	1.000
	Swedish	−4.750	3.736	−1.271	1.000
	Turkish	1.667	3.736	0.446	1.000
	Ukrainian	−0.417	3.736	−0.112	1.000
	Welsh	0.972	3.736	0.260	1.000
Danish	Estonian	0.556	3.736	0.149	1.000
	Finnish	0.222	3.736	0.059	1.000
	Greek	−2.111	3.736	−0.565	1.000
	Hungarian	−3.028	3.736	−0.810	1.000
	Icelandic	−3.472	3.736	−0.929	1.000
	Irish	1.472	3.736	0.394	1.000
	Latvian	−1.639	3.736	−0.439	1.000
	Maltese	3.333	3.736	0.892	1.000
	Norwegian	−0.417	3.736	−0.112	1.000
	Polish	6.472	3.736	1.732	1.000
	Portuguese	4.611	3.736	1.234	1.000
	Romanian	3.694	3.736	0.989	1.000
	Slovene	−1.611	3.736	−0.431	1.000
	Swedish	−0.028	3.736	−0.007	1.000
	Turkish	6.389	3.736	1.710	1.000
	Ukrainian	4.306	3.736	1.152	1.000

		Mean Difference	SE	t	Pholm
	Welsh	5.694	3.736	1.524	1.000
Estonian	Finnish	−0.333	3.736	−0.089	1.000
	Greek	−2.667	3.736	−0.714	1.000
	Hungarian	−3.583	3.736	−0.959	1.000
	Icelandic	−4.028	3.736	−1.078	1.000
	Irish	0.917	3.736	0.245	1.000
	Latvian	−2.194	3.736	−0.587	1.000
	Maltese	2.778	3.736	0.744	1.000
	Norwegian	−0.972	3.736	−0.260	1.000
	Polish	5.917	3.736	1.584	1.000
	Portuguese	4.056	3.736	1.086	1.000
	Romanian	3.139	3.736	0.840	1.000
	Slovene	−2.167	3.736	−0.580	1.000
	Swedish	−0.583	3.736	−0.156	1.000
	Turkish	5.833	3.736	1.561	1.000
	Ukrainian	3.750	3.736	1.004	1.000
	Welsh	5.139	3.736	1.376	1.000
Finnish	Greek	−2.333	3.736	−0.625	1.000
	Hungarian	−3.250	3.736	−0.870	1.000
	Icelandic	−3.694	3.736	−0.989	1.000
	Irish	1.250	3.736	0.335	1.000
	Latvian	−1.861	3.736	−0.498	1.000
	Maltese	3.111	3.736	0.833	1.000
	Norwegian	−0.639	3.736	−0.171	1.000
	Polish	6.250	3.736	1.673	1.000
	Portuguese	4.389	3.736	1.175	1.000
	Romanian	3.472	3.736	0.929	1.000
	Slovene	−1.833	3.736	−0.491	1.000
	Swedish	−0.250	3.736	−0.067	1.000
	Turkish	6.167	3.736	1.651	1.000
	Ukrainian	4.083	3.736	1.093	1.000
	Welsh	5.472	3.736	1.465	1.000
Greek	Hungarian	−0.917	3.736	−0.245	1.000
	Icelandic	−1.361	3.736	−0.364	1.000
	Irish	3.583	3.736	0.959	1.000
	Latvian	0.472	3.736	0.126	1.000
	Maltese	5.444	3.736	1.457	1.000
	Norwegian	1.694	3.736	0.454	1.000
	Polish	8.583	3.736	2.298	1.000
	Portuguese	6.722	3.736	1.799	1.000
	Romanian	5.806	3.736	1.554	1.000
	Slovene	0.500	3.736	0.134	1.000
	Swedish	2.083	3.736	0.558	1.000
	Turkish	8.500	3.736	2.275	1.000
	Ukrainian	6.417	3.736	1.718	1.000
	Welsh	7.806	3.736	2.089	1.000
Hungarian	Icelandic	−0.444	3.736	−0.119	1.000
	Irish	4.500	3.736	1.205	1.000
	Latvian	1.389	3.736	0.372	1.000
	Maltese	6.361	3.736	1.703	1.000
	Norwegian	2.611	3.736	0.699	1.000
	Polish	9.500	3.736	2.543	1.000
	Portuguese	7.639	3.736	2.045	1.000
	Romanian	6.722	3.736	1.799	1.000
	Slovene	1.417	3.736	0.379	1.000
	Swedish	3.000	3.736	0.803	1.000
	Turkish	9.417	3.736	2.521	1.000

		Mean Difference	SE	t	Pholm
	Ukrainian	7.333	3.736	1.963	1.000
	Welsh	8.722	3.736	2.335	1.000
Icelandic	Irish	4.944	3.736	1.323	1.000
	Latvian	1.833	3.736	0.491	1.000
	Maltese	6.806	3.736	1.822	1.000
	Norwegian	3.056	3.736	0.818	1.000
	Polish	9.944	3.736	2.662	1.000
	Portuguese	8.083	3.736	2.164	1.000
	Romanian	7.167	3.736	1.918	1.000
	Slovene	1.861	3.736	0.498	1.000
	Swedish	3.444	3.736	0.922	1.000
	Turkish	9.861	3.736	2.640	1.000
	Ukrainian	7.778	3.736	2.082	1.000
	Welsh	9.167	3.736	2.454	1.000
Irish	Latvian	−3.111	3.736	−0.833	1.000
	Maltese	1.861	3.736	0.498	1.000
	Norwegian	−1.889	3.736	−0.506	1.000
	Polish	5.000	3.736	1.338	1.000
	Portuguese	3.139	3.736	0.840	1.000
	Romanian	2.222	3.736	0.595	1.000
	Slovene	−3.083	3.736	−0.825	1.000
	Swedish	−1.500	3.736	−0.402	1.000
	Turkish	4.917	3.736	1.316	1.000
	Ukrainian	2.833	3.736	0.758	1.000
	Welsh	4.222	3.736	1.130	1.000
Latvian	Maltese	4.972	3.736	1.331	1.000
	Norwegian	1.222	3.736	0.327	1.000
	Polish	8.111	3.736	2.171	1.000
	Portuguese	6.250	3.736	1.673	1.000
	Romanian	5.333	3.736	1.428	1.000
	Slovene	0.028	3.736	0.007	1.000
	Swedish	1.611	3.736	0.431	1.000
	Turkish	8.028	3.736	2.149	1.000
	Ukrainian	5.944	3.736	1.591	1.000
	Welsh	7.333	3.736	1.963	1.000
Maltese	Norwegian	−3.750	3.736	−1.004	1.000
	Polish	3.139	3.736	0.840	1.000
	Portuguese	1.278	3.736	0.342	1.000
	Romanian	0.361	3.736	0.097	1.000
	Slovene	−4.944	3.736	−1.323	1.000
	Swedish	−3.361	3.736	−0.900	1.000
	Turkish	3.056	3.736	0.818	1.000
	Ukrainian	0.972	3.736	0.260	1.000
	Welsh	2.361	3.736	0.632	1.000
Norwegian	Polish	6.889	3.736	1.844	1.000
	Portuguese	5.028	3.736	1.346	1.000
	Romanian	4.111	3.736	1.100	1.000
	Slovene	−1.194	3.736	−0.320	1.000
	Swedish	0.389	3.736	0.104	1.000
	Turkish	6.806	3.736	1.822	1.000
	Ukrainian	4.722	3.736	1.264	1.000
	Welsh	6.111	3.736	1.636	1.000
Polish	Portuguese	−1.861	3.736	−0.498	1.000
	Romanian	−2.778	3.736	−0.744	1.000
	Slovene	−8.083	3.736	−2.164	1.000
	Swedish	−6.500	3.736	−1.740	1.000

		Mean Difference	SE	t	Pholm
	Turkish	−0.083	3.736	−0.022	1.000
	Ukrainian	−2.167	3.736	−0.580	1.000
	Welsh	−0.778	3.736	−0.208	1.000
Portuguese	Romanian	−0.917	3.736	−0.245	1.000
	Slovene	−6.222	3.736	−1.666	1.000
	Swedish	−4.639	3.736	−1.242	1.000
	Turkish	1.778	3.736	0.476	1.000
	Ukrainian	−0.306	3.736	−0.082	1.000
	Welsh	1.083	3.736	0.290	1.000
Romanian	Slovene	−5.306	3.736	−1.420	1.000
	Swedish	−3.722	3.736	−0.996	1.000
	Turkish	2.694	3.736	0.721	1.000
	Ukrainian	0.611	3.736	0.164	1.000
	Welsh	2.000	3.736	0.535	1.000
Slovene	Swedish	1.583	3.736	0.424	1.000
	Turkish	8.000	3.736	2.141	1.000
	Ukrainian	5.917	3.736	1.584	1.000
	Welsh	7.306	3.736	1.955	1.000
Swedish	Turkish	6.417	3.736	1.718	1.000
	Ukrainian	4.333	3.736	1.160	1.000
	Welsh	5.722	3.736	1.532	1.000
Turkish	Ukrainian	−2.083	3.736	−0.558	1.000
	Welsh	−0.694	3.736	−0.186	1.000
Ukrainian	Welsh	1.389	3.736	0.372	1.000

Note. P-value adjusted for comparing a family of 253

VOICE

CHINESE

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p
Language	15913.722[a]	22[a]	723.351[a]	2.877[a]	< .001[a]
Residuals	398268.712	1584	251.432		

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated (p < .05).

Post Hoc Test:

		Mean Difference	SE	t	p_{holm}
Albanian	Basque	2.096	2.625	0.799	1.000
	Breton	4.575	2.625	1.743	1.000
	Catalan	2.890	2.625	1.101	1.000
	Czech	2.699	2.625	1.028	1.000
	Danish	5.740	2.625	2.187	1.000
	Estonian	4.959	2.625	1.889	1.000
	Finnish	1.110	2.625	0.423	1.000
	Greek	0.959	2.625	0.365	1.000
	Hungarian	2.370	2.625	0.903	1.000
	Icelandic	3.329	2.625	1.268	1.000
	Irish	−3.507	2.625	−1.336	1.000
	Latvian	−0.301	2.625	−0.115	1.000
	Maltese	5.219	2.625	1.989	1.000
	Norwegian	9.164	2.625	3.492	0.119
	Polish	−1.096	2.625	−0.418	1.000
	Portuguese	3.068	2.625	1.169	1.000
	Romanian	4.890	2.625	1.863	1.000
	Slovene	3.945	2.625	1.503	1.000
	Swedish	6.082	2.625	2.317	1.000
	Turkish	4.699	2.625	1.790	1.000
	Ukrainian	2.575	2.625	0.981	1.000
	Welsh	10.630	2.625	4.050	0.013*
Basque	Breton	2.479	2.625	0.945	1.000
	Catalan	0.795	2.625	0.303	1.000
	Czech	0.603	2.625	0.230	1.000
	Danish	3.644	2.625	1.388	1.000
	Estonian	2.863	2.625	1.091	1.000
	Finnish	−0.986	2.625	−0.376	1.000
	Greek	−1.137	2.625	−0.433	1.000
	Hungarian	0.274	2.625	0.104	1.000
	Icelandic	1.233	2.625	0.470	1.000
	Irish	−5.603	2.625	−2.135	1.000
	Latvian	−2.397	2.625	−0.913	1.000
	Maltese	3.123	2.625	1.190	1.000
	Norwegian	7.068	2.625	2.693	1.000
	Polish	−3.192	2.625	−1.216	1.000
	Portuguese	0.973	2.625	0.371	1.000
	Romanian	2.795	2.625	1.065	1.000
	Slovene	1.849	2.625	0.705	1.000
	Swedish	3.986	2.625	1.519	1.000
	Turkish	2.603	2.625	0.992	1.000
	Ukrainian	0.479	2.625	0.183	1.000
	Welsh	8.534	2.625	3.252	0.281
Breton	Catalan	−1.685	2.625	−0.642	1.000
	Czech	−1.877	2.625	−0.715	1.000
	Danish	1.164	2.625	0.444	1.000
	Estonian	0.384	2.625	0.146	1.000
	Finnish	−3.466	2.625	−1.320	1.000
	Greek	−3.616	2.625	−1.378	1.000
	Hungarian	−2.205	2.625	−0.840	1.000
	Icelandic	−1.247	2.625	−0.475	1.000
	Irish	−8.082	2.625	−3.079	0.494
	Latvian	−4.877	2.625	−1.858	1.000
	Maltese	0.644	2.625	0.245	1.000
	Norwegian	4.589	2.625	1.748	1.000
	Polish	−5.671	2.625	−2.161	1.000
	Portuguese	−1.507	2.625	−0.574	1.000
	Romanian	0.315	2.625	0.120	1.000
	Slovene	−0.630	2.625	−0.240	1.000
	Swedish	1.507	2.625	0.574	1.000
	Turkish	0.123	2.625	0.047	1.000
	Ukrainian	−2.000	2.625	−0.762	1.000
	Welsh	6.055	2.625	2.307	1.000
Catalan	Czech	−0.192	2.625	−0.073	1.000
	Danish	2.849	2.625	1.086	1.000
	Estonian	2.068	2.625	0.788	1.000
	Finnish	−1.781	2.625	−0.679	1.000
	Greek	−1.932	2.625	−0.736	1.000
	Hungarian	−0.521	2.625	−0.198	1.000
	Icelandic	0.438	2.625	0.167	1.000
	Irish	−6.397	2.625	−2.437	1.000
	Latvian	−3.192	2.625	−1.216	1.000
	Maltese	2.329	2.625	0.887	1.000
	Norwegian	6.274	2.625	2.390	1.000
	Polish	−3.986	2.625	−1.519	1.000
	Portuguese	0.178	2.625	0.068	1.000
	Romanian	2.000	2.625	0.762	1.000
	Slovene	1.055	2.625	0.402	1.000
	Swedish	3.192	2.625	1.216	1.000
	Turkish	1.808	2.625	0.689	1.000
	Ukrainian	−0.315	2.625	−0.120	1.000
	Welsh	7.740	2.625	2.949	0.744
Czech	Danish	3.041	2.625	1.159	1.000
	Estonian	2.260	2.625	0.861	1.000
	Finnish	−1.589	2.625	−0.605	1.000
	Greek	−1.740	2.625	−0.663	1.000
	Hungarian	−0.329	2.625	−0.125	1.000
	Icelandic	0.630	2.625	0.240	1.000
	Irish	−6.205	2.625	−2.364	1.000
	Latvian	−3.000	2.625	−1.143	1.000
	Maltese	2.521	2.625	0.960	1.000
	Norwegian	6.466	2.625	2.464	1.000
	Polish	−3.795	2.625	−1.446	1.000
	Portuguese	0.370	2.625	0.141	1.000
	Romanian	2.192	2.625	0.835	1.000
	Slovene	1.247	2.625	0.475	1.000
	Swedish	3.384	2.625	1.289	1.000
	Turkish	2.000	2.625	0.762	1.000
	Ukrainian	−0.123	2.625	−0.047	1.000
	Welsh	7.932	2.625	3.022	0.589
Danish	Estonian	−0.781	2.625	−0.298	1.000
	Finnish	−4.630	2.625	−1.764	1.000
	Greek	−4.781	2.625	−1.822	1.000
	Hungarian	−3.370	2.625	−1.284	1.000
	Icelandic	−2.411	2.625	−0.919	1.000
	Irish	−9.247	2.625	−3.523	0.107
	Latvian	−6.041	2.625	−2.302	1.000
	Maltese	−0.521	2.625	−0.198	1.000
	Norwegian	3.425	2.625	1.305	1.000
	Polish	−6.836	2.625	−2.604	1.000
	Portuguese	−2.671	2.625	−1.018	1.000
	Romanian	−0.849	2.625	−0.324	1.000
	Slovene	−1.795	2.625	−0.684	1.000
	Swedish	0.342	2.625	0.130	1.000

* p < .05, ** p < .01, *** p < .001

Note. P-value adjusted for comparing a family of 253

		Mean Difference	SE	t	p_{holm}
	Turkish	−1.041	2.625	−0.397	1.000
	Ukrainian	−3.164	2.625	−1.206	1.000
	Welsh	4.890	2.625	1.863	1.000
Estonian	Finnish	−3.849	2.625	−1.467	1.000
	Greek	−4.000	2.625	−1.524	1.000
	Hungarian	−2.589	2.625	−0.986	1.000
	Icelandic	−1.630	2.625	−0.621	1.000
	Irish	−8.466	2.625	−3.226	0.307
	Latvian	−5.260	2.625	−2.004	1.000
	Maltese	0.260	2.625	0.099	1.000
	Norwegian	4.205	2.625	1.602	1.000
	Polish	−6.055	2.625	−2.307	1.000
	Portuguese	−1.890	2.625	−0.720	1.000
	Romanian	−0.068	2.625	−0.026	1.000
	Slovene	−1.014	2.625	−0.386	1.000
	Swedish	1.123	2.625	0.428	1.000
	Turkish	−0.260	2.625	−0.099	1.000
	Ukrainian	−2.384	2.625	−0.908	1.000
	Welsh	5.671	2.625	2.161	1.000
Finnish	Greek	−0.151	2.625	−0.057	1.000
	Hungarian	1.260	2.625	0.480	1.000
	Icelandic	2.219	2.625	0.846	1.000
	Irish	−4.616	2.625	−1.759	1.000
	Latvian	−1.411	2.625	−0.538	1.000
	Maltese	4.110	2.625	1.566	1.000
	Norwegian	8.055	2.625	3.069	0.509
	Polish	−2.205	2.625	−0.840	1.000
	Portuguese	1.959	2.625	0.746	1.000
	Romanian	3.781	2.625	1.441	1.000
	Slovene	2.836	2.625	1.080	1.000
	Swedish	4.973	2.625	1.895	1.000
	Turkish	3.589	2.625	1.367	1.000
	Ukrainian	1.466	2.625	0.558	1.000
	Welsh	9.521	2.625	3.627	0.072
Greek	Hungarian	1.411	2.625	0.538	1.000
	Icelandic	2.370	2.625	0.903	1.000
	Irish	−4.466	2.625	−1.701	1.000
	Latvian	−1.260	2.625	−0.480	1.000
	Maltese	4.260	2.625	1.623	1.000
	Norwegian	8.205	2.625	3.126	0.425
	Polish	−2.055	2.625	−0.783	1.000
	Portuguese	2.110	2.625	0.804	1.000
	Romanian	3.932	2.625	1.498	1.000
	Slovene	2.986	2.625	1.138	1.000
	Swedish	5.123	2.625	1.952	1.000
	Turkish	3.740	2.625	1.425	1.000
	Ukrainian	1.616	2.625	0.616	1.000
	Welsh	9.671	2.625	3.685	0.058
Hungarian	Icelandic	0.959	2.625	0.365	1.000
	Irish	−5.877	2.625	−2.239	1.000
	Latvian	−2.671	2.625	−1.018	1.000
	Maltese	2.849	2.625	1.086	1.000
	Norwegian	6.795	2.625	2.589	1.000
	Polish	−3.466	2.625	−1.320	1.000
	Portuguese	0.699	2.625	0.266	1.000
	Romanian	2.521	2.625	0.960	1.000

		Mean Difference	SE	t	p_{holm}
	Slovene	1.575	2.625	0.600	1.000
	Swedish	3.712	2.625	1.414	1.000
	Turkish	2.329	2.625	0.887	1.000
	Ukrainian	0.205	2.625	0.078	1.000
	Welsh	8.260	2.625	3.147	0.398
Icelandic	Irish	−6.836	2.625	−2.604	1.000
	Latvian	−3.630	2.625	−1.383	1.000
	Maltese	1.890	2.625	0.720	1.000
	Norwegian	5.836	2.625	2.223	1.000
	Polish	−4.425	2.625	−1.686	1.000
	Portuguese	−0.260	2.625	−0.099	1.000
	Romanian	1.562	2.625	0.595	1.000
	Slovene	0.616	2.625	0.235	1.000
	Swedish	2.753	2.625	1.049	1.000
	Turkish	1.370	2.625	0.522	1.000
	Ukrainian	−0.753	2.625	−0.287	1.000
	Welsh	7.301	2.625	2.782	1.000
Irish	Latvian	3.205	2.625	1.221	1.000
	Maltese	8.726	2.625	3.325	0.218
	Norwegian	12.671	2.625	4.828	< .001***
	Polish	2.411	2.625	0.919	1.000
	Portuguese	6.575	2.625	2.505	1.000
	Romanian	8.397	2.625	3.199	0.334
	Slovene	7.452	2.625	2.839	1.000
	Swedish	9.589	2.625	3.654	0.066
	Turkish	8.205	2.625	3.126	0.425
	Ukrainian	6.082	2.625	2.317	1.000
	Welsh	14.137	2.625	5.386	< .001***
Latvian	Maltese	5.521	2.625	2.103	1.000
	Norwegian	9.466	2.625	3.607	0.078
	Polish	−0.795	2.625	−0.303	1.000
	Portuguese	3.370	2.625	1.284	1.000
	Romanian	5.192	2.625	1.978	1.000
	Slovene	4.247	2.625	1.618	1.000
	Swedish	6.384	2.625	2.432	1.000
	Turkish	5.000	2.625	1.905	1.000
	Ukrainian	2.877	2.625	1.096	1.000
	Welsh	10.932	2.625	4.165	0.008**
Maltese	Norwegian	3.945	2.625	1.503	1.000
	Polish	−6.315	2.625	−2.406	1.000
	Portuguese	−2.151	2.625	−0.819	1.000
	Romanian	−0.329	2.625	−0.125	1.000
	Slovene	−1.274	2.625	−0.485	1.000
	Swedish	0.863	2.625	0.329	1.000
	Turkish	−0.521	2.625	−0.198	1.000
	Ukrainian	−2.644	2.625	−1.007	1.000
	Welsh	5.411	2.625	2.062	1.000
Norwegian	Polish	−10.260	2.625	−3.909	0.024*
	Portuguese	−6.096	2.625	−2.323	1.000
	Romanian	−4.274	2.625	−1.628	1.000
	Slovene	−5.219	2.625	−1.989	1.000
	Swedish	−3.082	2.625	−1.174	1.000
	Turkish	−4.466	2.625	−1.701	1.000
	Ukrainian	−6.589	2.625	−2.510	1.000
	Welsh	1.466	2.625	0.558	1.000

		Mean Difference	SE	t	p_{holm}
Polish	Portuguese	4.164	2.625	1.587	1.000
	Romanian	5.986	2.625	2.281	1.000
	Slovene	5.041	2.625	1.921	1.000
	Swedish	7.178	2.625	2.735	1.000
	Turkish	5.795	2.625	2.208	1.000
	Ukrainian	3.671	2.625	1.399	1.000
	Welsh	11.726	2.625	4.468	0.002**
Portuguese	Romanian	1.822	2.625	0.694	1.000
	Slovene	0.877	2.625	0.334	1.000
	Swedish	3.014	2.625	1.148	1.000
	Turkish	1.630	2.625	0.621	1.000
	Ukrainian	−0.493	2.625	−0.188	1.000
	Welsh	7.562	2.625	2.881	0.920
Romanian	Slovene	−0.945	2.625	−0.360	1.000
	Swedish	1.192	2.625	0.454	1.000
	Turkish	−0.192	2.625	−0.073	1.000
	Ukrainian	−2.315	2.625	−0.882	1.000
	Welsh	5.740	2.625	2.187	1.000
Slovene	Swedish	2.137	2.625	0.814	1.000
	Turkish	0.753	2.625	0.287	1.000
	Ukrainian	−1.370	2.625	−0.522	1.000
	Welsh	6.685	2.625	2.547	1.000
Swedish	Turkish	−1.384	2.625	−0.527	1.000
	Ukrainian	−3.507	2.625	−1.336	1.000
	Welsh	4.548	2.625	1.733	1.000
Turkish	Ukrainian	−2.123	2.625	−0.809	1.000
	Welsh	5.932	2.625	2.260	1.000
Ukrainian	Welsh	8.055	2.625	3.069	0.509

* p < .05, ** p < .01, *** p < .001
Note. P-value adjusted for comparing a family of 253

VOICE

GERMAN

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p
Language	18226.693	22	828.486	2.539	< .001
Residuals	251212.785	770	326.250		

Note. Type III Sum of Squares

Post Hoc Tests:

		Mean Difference	SE	t	p_{holm}
Albanian	Basque	5.444	4.257	1.279	1.000
	Breton	3.000	4.257	0.705	1.000
	Catalan	7.278	4.257	1.709	1.000
	Czech	6.333	4.257	1.488	1.000
	Danish	5.639	4.257	1.325	1.000
	Estonian	2.750	4.257	0.646	1.000
	Finnish	3.306	4.257	0.776	1.000
	Greek	−5.333	4.257	−1.253	1.000
	Hungarian	3.528	4.257	0.829	1.000
	Icelandic	3.056	4.257	0.718	1.000
	Irish	−1.833	4.257	−0.431	1.000
	Latvian	−0.083	4.257	−0.020	1.000
	Maltese	1.500	4.257	0.352	1.000
	Norwegian	4.250	4.257	0.998	1.000
	Polish	6.306	4.257	1.481	1.000
	Portuguese	11.444	4.257	2.688	1.000
	Romanian	4.750	4.257	1.116	1.000
	Slovene	7.806	4.257	1.833	1.000
	Swedish	−1.000	4.257	−0.235	1.000
	Turkish	4.389	4.257	1.031	1.000
	Ukrainian	9.167	4.257	2.153	1.000
	Welsh	18.000	4.257	4.228	0.007**
Basque	Breton	−2.444	4.257	−0.574	1.000
	Catalan	1.833	4.257	0.431	1.000
	Czech	0.889	4.257	0.209	1.000
	Danish	0.194	4.257	0.046	1.000
	Estonian	−2.694	4.257	−0.633	1.000
	Finnish	−2.139	4.257	−0.502	1.000
	Greek	−10.778	4.257	−2.532	1.000
	Hungarian	−1.917	4.257	−0.450	1.000
	Icelandic	−2.389	4.257	−0.561	1.000
	Irish	−7.278	4.257	−1.709	1.000
	Latvian	−5.528	4.257	−1.298	1.000
	Maltese	−3.944	4.257	−0.927	1.000
	Norwegian	−1.194	4.257	−0.281	1.000
	Polish	0.861	4.257	0.202	1.000
	Portuguese	6.000	4.257	1.409	1.000
	Romanian	−0.694	4.257	−0.163	1.000
	Slovene	2.361	4.257	0.555	1.000
	Swedish	−6.444	4.257	−1.514	1.000
	Turkish	−1.056	4.257	−0.248	1.000
	Ukrainian	3.722	4.257	0.874	1.000
	Welsh	12.556	4.257	2.949	0.768
Breton	Catalan	4.278	4.257	1.005	1.000
	Czech	3.333	4.257	0.783	1.000
	Danish	2.639	4.257	0.620	1.000
	Estonian	−0.250	4.257	−0.059	1.000
	Finnish	0.306	4.257	0.072	1.000
	Greek	−8.333	4.257	−1.957	1.000
	Hungarian	0.528	4.257	0.124	1.000
	Icelandic	0.056	4.257	0.013	1.000
	Irish	−4.833	4.257	−1.135	1.000
	Latvian	−3.083	4.257	−0.724	1.000
	Maltese	−1.500	4.257	−0.352	1.000
	Norwegian	1.250	4.257	0.294	1.000
	Polish	3.306	4.257	0.776	1.000
	Portuguese	8.444	4.257	1.983	1.000
	Romanian	1.750	4.257	0.411	1.000
	Slovene	4.806	4.257	1.129	1.000
	Swedish	−4.000	4.257	−0.940	1.000
	Turkish	1.389	4.257	0.326	1.000
	Ukrainian	6.167	4.257	1.448	1.000
	Welsh	15.000	4.257	3.523	0.111
Catalan	Czech	−0.944	4.257	−0.222	1.000
	Danish	−1.639	4.257	−0.385	1.000
	Estonian	−4.528	4.257	−1.064	1.000
	Finnish	−3.972	4.257	−0.933	1.000
	Greek	−12.611	4.257	−2.962	0.740
	Hungarian	−3.750	4.257	−0.881	1.000
	Icelandic	−4.222	4.257	−0.992	1.000
	Irish	−9.111	4.257	−2.140	1.000
	Latvian	−7.361	4.257	−1.729	1.000
	Maltese	−5.778	4.257	−1.357	1.000
	Norwegian	−3.028	4.257	−0.711	1.000
	Polish	−0.972	4.257	−0.228	1.000
	Portuguese	4.167	4.257	0.979	1.000
	Romanian	−2.528	4.257	−0.594	1.000
	Slovene	0.528	4.257	0.124	1.000
	Swedish	−8.278	4.257	−1.944	1.000
	Turkish	−2.889	4.257	−0.679	1.000
	Ukrainian	1.889	4.257	0.444	1.000
	Welsh	10.722	4.257	2.519	1.000
Czech	Danish	−0.694	4.257	−0.163	1.000
	Estonian	−3.583	4.257	−0.842	1.000
	Finnish	−3.028	4.257	−0.711	1.000
	Greek	−11.667	4.257	−2.740	1.000
	Hungarian	−2.806	4.257	−0.659	1.000
	Icelandic	−3.278	4.257	−0.770	1.000
	Irish	−8.167	4.257	−1.918	1.000
	Latvian	−6.417	4.257	−1.507	1.000
	Maltese	−4.833	4.257	−1.135	1.000
	Norwegian	−2.083	4.257	−0.489	1.000
	Polish	−0.028	4.257	−0.007	1.000
	Portuguese	5.111	4.257	1.201	1.000
	Romanian	−1.583	4.257	−0.372	1.000
	Slovene	1.472	4.257	0.346	1.000
	Swedish	−7.333	4.257	−1.723	1.000
	Turkish	−1.944	4.257	−0.457	1.000
	Ukrainian	2.833	4.257	0.666	1.000
	Welsh	11.667	4.257	2.740	1.000
Danish	Estonian	−2.889	4.257	−0.679	1.000
	Finnish	−2.333	4.257	−0.548	1.000
	Greek	−10.972	4.257	−2.577	1.000
	Hungarian	−2.111	4.257	−0.496	1.000
	Icelandic	−2.583	4.257	−0.607	1.000
	Irish	−7.472	4.257	−1.755	1.000
	Latvian	−5.722	4.257	−1.344	1.000
	Maltese	−4.139	4.257	−0.972	1.000
	Norwegian	−1.389	4.257	−0.326	1.000
	Polish	0.667	4.257	0.157	1.000
	Portuguese	5.806	4.257	1.364	1.000
	Romanian	−0.889	4.257	−0.209	1.000
	Slovene	2.167	4.257	0.509	1.000
	Swedish	−6.639	4.257	−1.559	1.000

* p < .05, ** p < .01, *** p < .001

Note. P-value adjusted for comparing a family of 253

		Mean Difference	SE	t	p_{holm}
	Turkish	−1.250	4.257	−0.294	1.000
	Ukrainian	3.528	4.257	0.829	1.000
	Welsh	12.361	4.257	2.903	0.881
Estonian	Finnish	0.556	4.257	0.130	1.000
	Greek	−8.083	4.257	−1.899	1.000
	Hungarian	0.778	4.257	0.183	1.000
	Icelandic	0.306	4.257	0.072	1.000
	Irish	−4.583	4.257	−1.077	1.000
	Latvian	−2.833	4.257	−0.666	1.000
	Maltese	−1.250	4.257	−0.294	1.000
	Norwegian	1.500	4.257	0.352	1.000
	Polish	3.556	4.257	0.835	1.000
	Portuguese	8.694	4.257	2.042	1.000
	Romanian	2.000	4.257	0.470	1.000
	Slovene	5.056	4.257	1.187	1.000
	Swedish	−3.750	4.257	−0.881	1.000
	Turkish	1.639	4.257	0.385	1.000
	Ukrainian	6.417	4.257	1.507	1.000
	Welsh	15.250	4.257	3.582	0.089
Finnish	Greek	−8.639	4.257	−2.029	1.000
	Hungarian	0.222	4.257	0.052	1.000
	Icelandic	−0.250	4.257	−0.059	1.000
	Irish	−5.139	4.257	−1.207	1.000
	Latvian	−3.389	4.257	−0.796	1.000
	Maltese	−1.806	4.257	−0.424	1.000
	Norwegian	0.944	4.257	0.222	1.000
	Polish	3.000	4.257	0.705	1.000
	Portuguese	8.139	4.257	1.912	1.000
	Romanian	1.444	4.257	0.339	1.000
	Slovene	4.500	4.257	1.057	1.000
	Swedish	−4.306	4.257	−1.011	1.000
	Turkish	1.083	4.257	0.254	1.000
	Ukrainian	5.861	4.257	1.377	1.000
	Welsh	14.694	4.257	3.452	0.143
Greek	Hungarian	8.861	4.257	2.081	1.000
	Icelandic	8.389	4.257	1.970	1.000
	Irish	3.500	4.257	0.822	1.000
	Latvian	5.250	4.257	1.233	1.000
	Maltese	6.833	4.257	1.605	1.000
	Norwegian	9.583	4.257	2.251	1.000
	Polish	11.639	4.257	2.734	1.000
	Portuguese	16.778	4.257	3.941	0.022*
	Romanian	10.083	4.257	2.368	1.000
	Slovene	13.139	4.257	3.086	0.496
	Swedish	4.333	4.257	1.018	1.000
	Turkish	9.722	4.257	2.284	1.000
	Ukrainian	14.500	4.257	3.406	0.168
	Welsh	23.333	4.257	5.481	< .001***
Hungarian	Icelandic	−0.472	4.257	−0.111	1.000
	Irish	−5.361	4.257	−1.259	1.000
	Latvian	−3.611	4.257	−0.848	1.000
	Maltese	−2.028	4.257	−0.476	1.000
	Norwegian	0.722	4.257	0.170	1.000
	Polish	2.778	4.257	0.652	1.000
	Portuguese	7.917	4.257	1.860	1.000
	Romanian	1.222	4.257	0.287	1.000

		Mean Difference	SE	t	p_{holm}
	Slovene	4.278	4.257	1.005	1.000
	Swedish	−4.528	4.257	−1.064	1.000
	Turkish	0.861	4.257	0.202	1.000
	Ukrainian	5.639	4.257	1.325	1.000
	Welsh	14.472	4.257	3.399	0.171
Icelandic	Irish	−4.889	4.257	−1.148	1.000
	Latvian	−3.139	4.257	−0.737	1.000
	Maltese	−1.556	4.257	−0.365	1.000
	Norwegian	1.194	4.257	0.281	1.000
	Polish	3.250	4.257	0.763	1.000
	Portuguese	8.389	4.257	1.970	1.000
	Romanian	1.694	4.257	0.398	1.000
	Slovene	4.750	4.257	1.116	1.000
	Swedish	−4.056	4.257	−0.953	1.000
	Turkish	1.333	4.257	0.313	1.000
	Ukrainian	6.111	4.257	1.435	1.000
	Welsh	14.944	4.257	3.510	0.116
Irish	Latvian	1.750	4.257	0.411	1.000
	Maltese	3.333	4.257	0.783	1.000
	Norwegian	6.083	4.257	1.429	1.000
	Polish	8.139	4.257	1.912	1.000
	Portuguese	13.278	4.257	3.119	0.448
	Romanian	6.583	4.257	1.546	1.000
	Slovene	9.639	4.257	2.264	1.000
	Swedish	0.833	4.257	0.196	1.000
	Turkish	6.222	4.257	1.462	1.000
	Ukrainian	11.000	4.257	2.584	1.000
	Welsh	19.833	4.257	4.659	< .001***
Latvian	Maltese	1.583	4.257	0.372	1.000
	Norwegian	4.333	4.257	1.018	1.000
	Polish	6.389	4.257	1.501	1.000
	Portuguese	11.528	4.257	2.708	1.000
	Romanian	4.833	4.257	1.135	1.000
	Slovene	7.889	4.257	1.853	1.000
	Swedish	−0.917	4.257	−0.215	1.000
	Turkish	4.472	4.257	1.050	1.000
	Ukrainian	9.250	4.257	2.173	1.000
	Welsh	18.083	4.257	4.248	0.006**
Maltese	Norwegian	2.750	4.257	0.646	1.000
	Polish	4.806	4.257	1.129	1.000
	Portuguese	9.944	4.257	2.336	1.000
	Romanian	3.250	4.257	0.763	1.000
	Slovene	6.306	4.257	1.481	1.000
	Swedish	−2.500	4.257	−0.587	1.000
	Turkish	2.889	4.257	0.679	1.000
	Ukrainian	7.667	4.257	1.801	1.000
	Welsh	16.500	4.257	3.876	0.029*
Norwegian	Polish	2.056	4.257	0.483	1.000
	Portuguese	7.194	4.257	1.690	1.000
	Romanian	0.500	4.257	0.117	1.000
	Slovene	3.556	4.257	0.835	1.000
	Swedish	−5.250	4.257	−1.233	1.000
	Turkish	0.139	4.257	0.033	1.000
	Ukrainian	4.917	4.257	1.155	1.000
	Welsh	13.750	4.257	3.230	0.310

		Mean Difference	SE	t	Pholm
Polish	Portuguese	5.139	4.257	1.207	1.000
	Romanian	−1.556	4.257	−0.365	1.000
	Slovene	1.500	4.257	0.352	1.000
	Swedish	−7.306	4.257	−1.716	1.000
	Turkish	−1.917	4.257	−0.450	1.000
	Ukrainian	2.861	4.257	0.672	1.000
	Welsh	11.694	4.257	2.747	1.000
Portuguese	Romanian	−6.694	4.257	−1.572	1.000
	Slovene	−3.639	4.257	−0.855	1.000
	Swedish	−12.444	4.257	−2.923	0.831
	Turkish	−7.056	4.257	−1.657	1.000
	Ukrainian	−2.278	4.257	−0.535	1.000
	Welsh	6.556	4.257	1.540	1.000
Romanian	Slovene	3.056	4.257	0.718	1.000
	Swedish	−5.750	4.257	−1.351	1.000
	Turkish	−0.361	4.257	−0.085	1.000
	Ukrainian	4.417	4.257	1.037	1.000
	Welsh	13.250	4.257	3.112	0.456
Slovene	Swedish	−8.806	4.257	−2.068	1.000
	Turkish	−3.417	4.257	−0.803	1.000
	Ukrainian	1.361	4.257	0.320	1.000
	Welsh	10.194	4.257	2.395	1.000
Swedish	Turkish	5.389	4.257	1.266	1.000
	Ukrainian	10.167	4.257	2.388	1.000
	Welsh	19.000	4.257	4.463	0.002**
Turkish	Ukrainian	4.778	4.257	1.122	1.000
	Welsh	13.611	4.257	3.197	0.345
Ukrainian	Welsh	8.833	4.257	2.075	1.000

* p < .05, ** p < .01, *** p < .001
Note. P-value adjusted for comparing a family of 253

FAMILIARITY

CHINESE

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p
Language	13863.529[a]	22[a]	630.160[a]	2.057[a]	0.003[a]
Residuals	485367.862	1584	306.419		

Note. Type III Sum of Squares
[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated (p < .05).

Post Hoc Tests:

		Mean Difference	SE	t	Pholm
Albanian	Basque	−1.616	2.897	−0.558	1.000
	Breton	−0.014	2.897	−0.005	1.000
	Catalan	2.233	2.897	0.771	1.000
	Czech	3.699	2.897	1.277	1.000
	Danish	−2.534	2.897	−0.875	1.000
	Estonian	0.301	2.897	0.104	1.000
	Finnish	−4.904	2.897	−1.693	1.000
	Greek	−3.370	2.897	−1.163	1.000
	Hungarian	0.822	2.897	0.284	1.000
	Icelandic	−3.041	2.897	−1.050	1.000
	Irish	−2.068	2.897	−0.714	1.000
	Latvian	3.699	2.897	1.277	1.000
	Maltese	1.027	2.897	0.355	1.000
	Norwegian	−0.068	2.897	−0.024	1.000
	Polish	−3.123	2.897	−1.078	1.000
	Portuguese	2.014	2.897	0.695	1.000
	Romanian	4.945	2.897	1.707	1.000
	Slovene	4.740	2.897	1.636	1.000
	Swedish	−1.055	2.897	−0.364	1.000
	Turkish	6.000	2.897	2.071	1.000
	Ukrainian	−0.274	2.897	−0.095	1.000
	Welsh	1.904	2.897	0.657	1.000
Basque	Breton	1.603	2.897	0.553	1.000
	Catalan	3.849	2.897	1.329	1.000
	Czech	5.315	2.897	1.834	1.000
	Danish	−0.918	2.897	−0.317	1.000
	Estonian	1.918	2.897	0.662	1.000
	Finnish	−3.288	2.897	−1.135	1.000
	Greek	−1.753	2.897	−0.605	1.000
	Hungarian	2.438	2.897	0.842	1.000
	Icelandic	−1.425	2.897	−0.492	1.000
	Irish	−0.452	2.897	−0.156	1.000
	Latvian	5.315	2.897	1.834	1.000
	Maltese	2.644	2.897	0.912	1.000
	Norwegian	1.548	2.897	0.534	1.000
	Polish	−1.507	2.897	−0.520	1.000
	Portuguese	3.630	2.897	1.253	1.000
	Romanian	6.562	2.897	2.265	1.000
	Slovene	6.356	2.897	2.194	1.000
	Swedish	0.562	2.897	0.194	1.000
	Turkish	7.616	2.897	2.629	1.000
	Ukrainian	1.342	2.897	0.463	1.000
	Welsh	3.521	2.897	1.215	1.000
Breton	Catalan	2.247	2.897	0.775	1.000
	Czech	3.712	2.897	1.281	1.000
	Danish	−2.521	2.897	−0.870	1.000
	Estonian	0.315	2.897	0.109	1.000
	Finnish	−4.890	2.897	−1.688	1.000
	Greek	−3.356	2.897	−1.158	1.000
	Hungarian	0.836	2.897	0.288	1.000
	Icelandic	−3.027	2.897	−1.045	1.000
	Irish	−2.055	2.897	−0.709	1.000
	Latvian	3.712	2.897	1.281	1.000
	Maltese	1.041	2.897	0.359	1.000
	Norwegian	−0.055	2.897	−0.019	1.000
	Polish	−3.110	2.897	−1.073	1.000
	Portuguese	2.027	2.897	0.700	1.000
	Romanian	4.959	2.897	1.711	1.000
	Slovene	4.753	2.897	1.641	1.000
	Swedish	−1.041	2.897	−0.359	1.000
	Turkish	6.014	2.897	2.076	1.000
	Ukrainian	−0.260	2.897	−0.090	1.000
	Welsh	1.918	2.897	0.662	1.000
Catalan	Czech	1.466	2.897	0.506	1.000
	Danish	−4.767	2.897	−1.645	1.000
	Estonian	−1.932	2.897	−0.667	1.000
	Finnish	−7.137	2.897	−2.463	1.000
	Greek	−5.603	2.897	−1.934	1.000
	Hungarian	−1.411	2.897	−0.487	1.000
	Icelandic	−5.274	2.897	−1.820	1.000
	Irish	−4.301	2.897	−1.485	1.000
	Latvian	1.466	2.897	0.506	1.000
	Maltese	−1.205	2.897	−0.416	1.000
	Norwegian	−2.301	2.897	−0.794	1.000
	Polish	−5.356	2.897	−1.849	1.000
	Portuguese	−0.219	2.897	−0.076	1.000
	Romanian	2.712	2.897	0.936	1.000
	Slovene	2.507	2.897	0.865	1.000
	Swedish	−3.288	2.897	−1.135	1.000
	Turkish	3.767	2.897	1.300	1.000
	Ukrainian	−2.507	2.897	−0.865	1.000
	Welsh	−0.329	2.897	−0.113	1.000
Czech	Danish	−6.233	2.897	−2.151	1.000
	Estonian	−3.397	2.897	−1.173	1.000
	Finnish	−8.603	2.897	−2.969	0.749
	Greek	−7.068	2.897	−2.440	1.000
	Hungarian	−2.877	2.897	−0.993	1.000
	Icelandic	−6.740	2.897	−2.326	1.000
	Irish	−5.767	2.897	−1.990	1.000
	Latvian	1.803×10^{-13}	2.897	6.223×10^{-14}	1.000
	Maltese	−2.671	2.897	−0.922	1.000
	Norwegian	−3.767	2.897	−1.300	1.000
	Polish	−6.822	2.897	−2.354	1.000
	Portuguese	−1.685	2.897	−0.582	1.000
	Romanian	1.247	2.897	0.430	1.000
	Slovene	1.041	2.897	0.359	1.000
	Swedish	−4.753	2.897	−1.641	1.000
	Turkish	2.301	2.897	0.794	1.000
	Ukrainian	−3.973	2.897	−1.371	1.000
	Welsh	−1.795	2.897	−0.619	1.000
Danish	Estonian	2.836	2.897	0.979	1.000
	Finnish	−2.370	2.897	−0.818	1.000
	Greek	−0.836	2.897	−0.288	1.000
	Hungarian	3.356	2.897	1.158	1.000
	Icelandic	−0.507	2.897	−0.175	1.000
	Irish	0.466	2.897	0.161	1.000
	Latvian	6.233	2.897	2.151	1.000
	Maltese	3.562	2.897	1.229	1.000
	Norwegian	2.466	2.897	0.851	1.000
	Polish	−0.589	2.897	−0.203	1.000
	Portuguese	4.548	2.897	1.570	1.000
	Romanian	7.479	2.897	2.581	1.000
	Slovene	7.274	2.897	2.510	1.000
	Swedish	1.479	2.897	0.511	1.000

* $p < .05$

Note. P-value adjusted for comparing a family of 253

		Mean Difference	SE	t	Pholm
	Turkish	8.534	2.897	2.945	0.802
	Ukrainian	2.260	2.897	0.780	1.000
	Welsh	4.438	2.897	1.532	1.000
Estonian	Finnish	−5.205	2.897	−1.797	1.000
	Greek	−3.671	2.897	−1.267	1.000
	Hungarian	0.521	2.897	0.180	1.000
	Icelandic	−3.342	2.897	−1.154	1.000
	Irish	−2.370	2.897	−0.818	1.000
	Latvian	3.397	2.897	1.173	1.000
	Maltese	0.726	2.897	0.251	1.000
	Norwegian	−0.370	2.897	−0.128	1.000
	Polish	−3.425	2.897	−1.182	1.000
	Portuguese	1.712	2.897	0.591	1.000
	Romanian	4.644	2.897	1.603	1.000
	Slovene	4.438	2.897	1.532	1.000
	Swedish	−1.356	2.897	−0.468	1.000
	Turkish	5.699	2.897	1.967	1.000
	Ukrainian	−0.575	2.897	−0.199	1.000
	Welsh	1.603	2.897	0.553	1.000
Finnish	Greek	1.534	2.897	0.530	1.000
	Hungarian	5.726	2.897	1.976	1.000
	Icelandic	1.863	2.897	0.643	1.000
	Irish	2.836	2.897	0.979	1.000
	Latvian	8.603	2.897	2.969	0.749
	Maltese	5.932	2.897	2.047	1.000
	Norwegian	4.836	2.897	1.669	1.000
	Polish	1.781	2.897	0.615	1.000
	Portuguese	6.918	2.897	2.388	1.000
	Romanian	9.849	2.897	3.399	0.174
	Slovene	9.644	2.897	3.328	0.224
	Swedish	3.849	2.897	1.329	1.000
	Turkish	10.904	2.897	3.763	0.044*
	Ukrainian	4.630	2.897	1.598	1.000
	Welsh	6.808	2.897	2.350	1.000
Greek	Hungarian	4.192	2.897	1.447	1.000
	Icelandic	0.329	2.897	0.113	1.000
	Irish	1.301	2.897	0.449	1.000
	Latvian	7.068	2.897	2.440	1.000
	Maltese	4.397	2.897	1.518	1.000
	Norwegian	3.301	2.897	1.139	1.000
	Polish	0.247	2.897	0.085	1.000
	Portuguese	5.384	2.897	1.858	1.000
	Romanian	8.315	2.897	2.870	1.000
	Slovene	8.110	2.897	2.799	1.000
	Swedish	2.315	2.897	0.799	1.000
	Turkish	9.370	2.897	3.234	0.312
	Ukrainian	3.096	2.897	1.068	1.000
	Welsh	5.274	2.897	1.820	1.000
Hungarian	Icelandic	−3.863	2.897	−1.333	1.000
	Irish	−2.890	2.897	−0.998	1.000
	Latvian	2.877	2.897	0.993	1.000
	Maltese	0.205	2.897	0.071	1.000
	Norwegian	−0.890	2.897	−0.307	1.000
	Polish	−3.945	2.897	−1.362	1.000
	Portuguese	1.192	2.897	0.411	1.000
	Romanian	4.123	2.897	1.423	1.000

		Mean Difference	SE	t	Pholm
	Slovene	3.918	2.897	1.352	1.000
	Swedish	−1.877	2.897	−0.648	1.000
	Turkish	5.178	2.897	1.787	1.000
	Ukrainian	−1.096	2.897	−0.378	1.000
	Welsh	1.082	2.897	0.374	1.000
Icelandic	Irish	0.973	2.897	0.336	1.000
	Latvian	6.740	2.897	2.326	1.000
	Maltese	4.068	2.897	1.404	1.000
	Norwegian	2.973	2.897	1.026	1.000
	Polish	−0.082	2.897	−0.028	1.000
	Portuguese	5.055	2.897	1.745	1.000
	Romanian	7.986	2.897	2.756	1.000
	Slovene	7.781	2.897	2.685	1.000
	Swedish	1.986	2.897	0.686	1.000
	Turkish	9.041	2.897	3.120	0.456
	Ukrainian	2.767	2.897	0.955	1.000
	Welsh	4.945	2.897	1.707	1.000
Irish	Latvian	5.767	2.897	1.990	1.000
	Maltese	3.096	2.897	1.068	1.000
	Norwegian	2.000	2.897	0.690	1.000
	Polish	−1.055	2.897	−0.364	1.000
	Portuguese	4.082	2.897	1.409	1.000
	Romanian	7.014	2.897	2.421	1.000
	Slovene	6.808	2.897	2.350	1.000
	Swedish	1.014	2.897	0.350	1.000
	Turkish	8.068	2.897	2.785	1.000
	Ukrainian	1.795	2.897	0.619	1.000
	Welsh	3.973	2.897	1.371	1.000
Latvian	Maltese	−2.671	2.897	−0.922	1.000
	Norwegian	−3.767	2.897	−1.300	1.000
	Polish	−6.822	2.897	−2.354	1.000
	Portuguese	−1.685	2.897	−0.582	1.000
	Romanian	1.247	2.897	0.430	1.000
	Slovene	1.041	2.897	0.359	1.000
	Swedish	−4.753	2.897	−1.641	1.000
	Turkish	2.301	2.897	0.794	1.000
	Ukrainian	−3.973	2.897	−1.371	1.000
	Welsh	−1.795	2.897	−0.619	1.000
Maltese	Norwegian	−1.096	2.897	−0.378	1.000
	Polish	−4.151	2.897	−1.433	1.000
	Portuguese	0.986	2.897	0.340	1.000
	Romanian	3.918	2.897	1.352	1.000
	Slovene	3.712	2.897	1.281	1.000
	Swedish	−2.082	2.897	−0.719	1.000
	Turkish	4.973	2.897	1.716	1.000
	Ukrainian	−1.301	2.897	−0.449	1.000
	Welsh	0.877	2.897	0.303	1.000
Norwegian	Polish	−3.055	2.897	−1.054	1.000
	Portuguese	2.082	2.897	0.719	1.000
	Romanian	5.014	2.897	1.730	1.000
	Slovene	4.808	2.897	1.659	1.000
	Swedish	−0.986	2.897	−0.340	1.000
	Turkish	6.068	2.897	2.094	1.000
	Ukrainian	−0.205	2.897	−0.071	1.000
	Welsh	1.973	2.897	0.681	1.000

		Mean Difference	SE	t	Pholm
Polish	Portuguese	5.137	2.897	1.773	1.000
	Romanian	8.068	2.897	2.785	1.000
	Slovene	7.863	2.897	2.714	1.000
	Swedish	2.068	2.897	0.714	1.000
	Turkish	9.123	2.897	3.149	0.416
	Ukrainian	2.849	2.897	0.983	1.000
	Welsh	5.027	2.897	1.735	1.000
Portuguese	Romanian	2.932	2.897	1.012	1.000
	Slovene	2.726	2.897	0.941	1.000
	Swedish	−3.068	2.897	−1.059	1.000
	Turkish	3.986	2.897	1.376	1.000
	Ukrainian	−2.288	2.897	−0.790	1.000
	Welsh	−0.110	2.897	−0.038	1.000
Romanian	Slovene	−0.205	2.897	−0.071	1.000
	Swedish	−6.000	2.897	−2.071	1.000
	Turkish	1.055	2.897	0.364	1.000
	Ukrainian	−5.219	2.897	−1.801	1.000
	Welsh	−3.041	2.897	−1.050	1.000
Slovene	Swedish	−5.795	2.897	−2.000	1.000
	Turkish	1.260	2.897	0.435	1.000
	Ukrainian	−5.014	2.897	−1.730	1.000
	Welsh	−2.836	2.897	−0.979	1.000
Swedish	Turkish	7.055	2.897	2.435	1.000
	Ukrainian	0.781	2.897	0.269	1.000
	Welsh	2.959	2.897	1.021	1.000
Turkish	Ukrainian	−6.274	2.897	−2.165	1.000
	Welsh	−4.096	2.897	−1.414	1.000
Ukrainian	Welsh	2.178	2.897	0.752	1.000

* p < .05

Note. P-value adjusted for comparing a family of 253

FAMILIARITY

GERMAN

Within Subjects Effects

Cases	Sum of Squares	df	Mean Square	F	p
Language	37010.406[a]	22[a]	1682.291[a]	2.897[a]	< .001[a]
Residuals	447139.333	770	580.700		

Note. Type III Sum of Squares

[a] Mauchly's test of sphericity indicates that the assumption of sphericity is violated (p < .05).

Post Hoc Test:

		Mean Difference	SE	t	Pholm
Albanian	Basque	−8.667	5.680	−1.526	1.000
	Breton	−5.778	5.680	−1.017	1.000
	Catalan	−13.917	5.680	−2.450	1.000
	Czech	−2.556	5.680	−0.450	1.000
	Danish	−14.583	5.680	−2.568	1.000
	Estonian	−4.889	5.680	−0.861	1.000
	Finnish	−5.167	5.680	−0.910	1.000
	Greek	−20.944	5.680	−3.687	0.060
	Hungarian	−9.778	5.680	−1.721	1.000
	Icelandic	−4.306	5.680	−0.758	1.000
	Irish	−9.056	5.680	−1.594	1.000
	Latvian	3.167	5.680	0.558	1.000
	Maltese	−2.528	5.680	−0.445	1.000
	Norwegian	−24.556	5.680	−4.323	0.004**
	Polish	−9.278	5.680	−1.633	1.000
	Portuguese	−17.083	5.680	−3.008	0.636
	Romanian	−7.306	5.680	−1.286	1.000
	Slovene	−14.861	5.680	−2.616	1.000
	Swedish	−13.556	5.680	−2.387	1.000
	Turkish	−8.750	5.680	−1.541	1.000
	Ukrainian	−17.556	5.680	−3.091	0.488
	Welsh	−4.722	5.680	−0.831	1.000
Basque	Breton	2.889	5.680	0.509	1.000
	Catalan	−5.250	5.680	−0.924	1.000
	Czech	6.111	5.680	1.076	1.000
	Danish	−5.917	5.680	−1.042	1.000
	Estonian	3.778	5.680	0.665	1.000
	Finnish	3.500	5.680	0.616	1.000
	Greek	−12.278	5.680	−2.162	1.000
	Hungarian	−1.111	5.680	−0.196	1.000
	Icelandic	4.361	5.680	0.768	1.000
	Irish	−0.389	5.680	−0.068	1.000
	Latvian	11.833	5.680	2.083	1.000
	Maltese	6.139	5.680	1.081	1.000
	Norwegian	−15.889	5.680	−2.797	1.000
	Polish	−0.611	5.680	−0.108	1.000
	Portuguese	−8.417	5.680	−1.482	1.000
	Romanian	1.361	5.680	0.240	1.000
	Slovene	−6.194	5.680	−1.091	1.000
	Swedish	−4.889	5.680	−0.861	1.000
	Turkish	−0.083	5.680	−0.015	1.000
	Ukrainian	−8.889	5.680	−1.565	1.000
	Welsh	3.944	5.680	0.694	1.000
Breton	Catalan	−8.139	5.680	−1.433	1.000
	Czech	3.222	5.680	0.567	1.000
	Danish	−8.806	5.680	−1.550	1.000
	Estonian	0.889	5.680	0.156	1.000
	Finnish	0.611	5.680	0.108	1.000
	Greek	−15.167	5.680	−2.670	1.000
	Hungarian	−4.000	5.680	−0.704	1.000
	Icelandic	1.472	5.680	0.259	1.000
	Irish	−3.278	5.680	−0.577	1.000
	Latvian	8.944	5.680	1.575	1.000
	Maltese	3.250	5.680	0.572	1.000
	Norwegian	−18.778	5.680	−3.306	0.239
	Polish	−3.500	5.680	−0.616	1.000
	Portuguese	−11.306	5.680	−1.990	1.000
	Romanian	−1.528	5.680	−0.269	1.000
	Slovene	−9.083	5.680	−1.599	1.000
	Swedish	−7.778	5.680	−1.369	1.000
	Turkish	−2.972	5.680	−0.523	1.000
	Ukrainian	−11.778	5.680	−2.074	1.000
	Welsh	1.056	5.680	0.186	1.000
Catalan	Czech	11.361	5.680	2.000	1.000
	Danish	−0.667	5.680	−0.117	1.000
	Estonian	9.028	5.680	1.589	1.000
	Finnish	8.750	5.680	1.541	1.000
	Greek	−7.028	5.680	−1.237	1.000
	Hungarian	4.139	5.680	0.729	1.000
	Icelandic	9.611	5.680	1.692	1.000
	Irish	4.861	5.680	0.856	1.000
	Latvian	17.083	5.680	3.008	0.636
	Maltese	11.389	5.680	2.005	1.000
	Norwegian	−10.639	5.680	−1.873	1.000
	Polish	4.639	5.680	0.817	1.000
	Portuguese	−3.167	5.680	−0.558	1.000
	Romanian	6.611	5.680	1.164	1.000
	Slovene	−0.944	5.680	−0.166	1.000
	Swedish	0.361	5.680	0.064	1.000
	Turkish	5.167	5.680	0.910	1.000
	Ukrainian	−3.639	5.680	−0.641	1.000
	Welsh	9.194	5.680	1.619	1.000
Czech	Danish	−12.028	5.680	−2.118	1.000
	Estonian	−2.333	5.680	−0.411	1.000
	Finnish	−2.611	5.680	−0.460	1.000
	Greek	−18.389	5.680	−3.238	0.300
	Hungarian	−7.222	5.680	−1.272	1.000
	Icelandic	−1.750	5.680	−0.308	1.000
	Irish	−6.500	5.680	−1.144	1.000
	Latvian	5.722	5.680	1.007	1.000
	Maltese	0.028	5.680	0.005	1.000
	Norwegian	−22.000	5.680	−3.873	0.029*
	Polish	−6.722	5.680	−1.184	1.000
	Portuguese	−14.528	5.680	−2.558	1.000
	Romanian	−4.750	5.680	−0.836	1.000
	Slovene	−12.306	5.680	−2.167	1.000
	Swedish	−11.000	5.680	−1.937	1.000
	Turkish	−6.194	5.680	−1.091	1.000
	Ukrainian	−15.000	5.680	−2.641	1.000
	Welsh	−2.167	5.680	−0.381	1.000
Danish	Estonian	9.694	5.680	1.707	1.000
	Finnish	9.417	5.680	1.658	1.000
	Greek	−6.361	5.680	−1.120	1.000
	Hungarian	4.806	5.680	0.846	1.000
	Icelandic	10.278	5.680	1.810	1.000
	Irish	5.528	5.680	0.973	1.000
	Latvian	17.750	5.680	3.125	0.437
	Maltese	12.056	5.680	2.122	1.000
	Norwegian	−9.972	5.680	−1.756	1.000
	Polish	5.306	5.680	0.934	1.000
	Portuguese	−2.500	5.680	−0.440	1.000
	Romanian	7.278	5.680	1.281	1.000
	Slovene	−0.278	5.680	−0.049	1.000
	Swedish	1.028	5.680	0.181	1.000

* p < .05, ** p < .01, *** p < .001

Note. P-value adjusted for comparing a family of 253

		Mean Difference	SE	t	Pholm
	Turkish	5.833	5.680	1.027	1.000
	Ukrainian	−2.972	5.680	−0.523	1.000
	Welsh	9.861	5.680	1.736	1.000
Estonian	Finnish	−0.278	5.680	−0.049	1.000
	Greek	−16.056	5.680	−2.827	1.000
	Hungarian	−4.889	5.680	−0.861	1.000
	Icelandic	0.583	5.680	0.103	1.000
	Irish	−4.167	5.680	−0.734	1.000
	Latvian	8.056	5.680	1.418	1.000
	Maltese	2.361	5.680	0.416	1.000
	Norwegian	−19.667	5.680	−3.463	0.137
	Polish	−4.389	5.680	−0.773	1.000
	Portuguese	−12.194	5.680	−2.147	1.000
	Romanian	−2.417	5.680	−0.425	1.000
	Slovene	−9.972	5.680	−1.756	1.000
	Swedish	−8.667	5.680	−1.526	1.000
	Turkish	−3.861	5.680	−0.680	1.000
	Ukrainian	−12.667	5.680	−2.230	1.000
	Welsh	0.167	5.680	0.029	1.000
Finnish	Greek	−15.778	5.680	−2.778	1.000
	Hungarian	−4.611	5.680	−0.812	1.000
	Icelandic	0.861	5.680	0.152	1.000
	Irish	−3.889	5.680	−0.685	1.000
	Latvian	8.333	5.680	1.467	1.000
	Maltese	2.639	5.680	0.465	1.000
	Norwegian	−19.389	5.680	−3.414	0.163
	Polish	−4.111	5.680	−0.724	1.000
	Portuguese	−11.917	5.680	−2.098	1.000
	Romanian	−2.139	5.680	−0.377	1.000
	Slovene	−9.694	5.680	−1.707	1.000
	Swedish	−8.389	5.680	−1.477	1.000
	Turkish	−3.583	5.680	−0.631	1.000
	Ukrainian	−12.389	5.680	−2.181	1.000
	Welsh	0.444	5.680	0.078	1.000
Greek	Hungarian	11.167	5.680	1.966	1.000
	Icelandic	16.639	5.680	2.929	0.808
	Irish	11.889	5.680	2.093	1.000
	Latvian	24.111	5.680	4.245	0.006**
	Maltese	18.417	5.680	3.242	0.297
	Norwegian	−3.611	5.680	−0.636	1.000
	Polish	11.667	5.680	2.054	1.000
	Portuguese	3.861	5.680	0.680	1.000
	Romanian	13.639	5.680	2.401	1.000
	Slovene	6.083	5.680	1.071	1.000
	Swedish	7.389	5.680	1.301	1.000
	Turkish	12.194	5.680	2.147	1.000
	Ukrainian	3.389	5.680	0.597	1.000
	Welsh	16.222	5.680	2.856	1.000
Hungarian	Icelandic	5.472	5.680	0.963	1.000
	Irish	0.722	5.680	0.127	1.000
	Latvian	12.944	5.680	2.279	1.000
	Maltese	7.250	5.680	1.276	1.000
	Norwegian	−14.778	5.680	−2.602	1.000
	Polish	0.500	5.680	0.088	1.000
	Portuguese	−7.306	5.680	−1.286	1.000
	Romanian	2.472	5.680	0.435	1.000

		Mean Difference	SE	t	Pholm
	Slovene	−5.083	5.680	−0.895	1.000
	Swedish	−3.778	5.680	−0.665	1.000
	Turkish	1.028	5.680	0.181	1.000
	Ukrainian	−7.778	5.680	−1.369	1.000
	Welsh	5.056	5.680	0.890	1.000
Icelandic	Irish	−4.750	5.680	−0.836	1.000
	Latvian	7.472	5.680	1.316	1.000
	Maltese	1.778	5.680	0.313	1.000
	Norwegian	−20.250	5.680	−3.565	0.095
	Polish	−4.972	5.680	−0.875	1.000
	Portuguese	−12.778	5.680	−2.250	1.000
	Romanian	−3.000	5.680	−0.528	1.000
	Slovene	−10.556	5.680	−1.858	1.000
	Swedish	−9.250	5.680	−1.629	1.000
	Turkish	−4.444	5.680	−0.782	1.000
	Ukrainian	−13.250	5.680	−2.333	1.000
	Welsh	−0.417	5.680	−0.073	1.000
Irish	Latvian	12.222	5.680	2.152	1.000
	Maltese	6.528	5.680	1.149	1.000
	Norwegian	−15.500	5.680	−2.729	1.000
	Polish	−0.222	5.680	−0.039	1.000
	Portuguese	−8.028	5.680	−1.413	1.000
	Romanian	1.750	5.680	0.308	1.000
	Slovene	−5.806	5.680	−1.022	1.000
	Swedish	−4.500	5.680	−0.792	1.000
	Turkish	0.306	5.680	0.054	1.000
	Ukrainian	−8.500	5.680	−1.497	1.000
	Welsh	4.333	5.680	0.763	1.000
Latvian	Maltese	−5.694	5.680	−1.003	1.000
	Norwegian	−27.722	5.680	−4.881	< .001***
	Polish	−12.444	5.680	−2.191	1.000
	Portuguese	−20.250	5.680	−3.565	0.095
	Romanian	−10.472	5.680	−1.844	1.000
	Slovene	−18.028	5.680	−3.174	0.372
	Swedish	−16.722	5.680	−2.944	0.774
	Turkish	−11.917	5.680	−2.098	1.000
	Ukrainian	−20.722	5.680	−3.648	0.070
	Welsh	−7.889	5.680	−1.389	1.000
Maltese	Norwegian	−22.028	5.680	−3.878	0.029*
	Polish	−6.750	5.680	−1.188	1.000
	Portuguese	−14.556	5.680	−2.563	1.000
	Romanian	−4.778	5.680	−0.841	1.000
	Slovene	−12.333	5.680	−2.171	1.000
	Swedish	−11.028	5.680	−1.942	1.000
	Turkish	−6.222	5.680	−1.095	1.000
	Ukrainian	−15.028	5.680	−2.646	1.000
	Welsh	−2.194	5.680	−0.386	1.000
Norwegian	Polish	15.278	5.680	2.690	1.000
	Portuguese	7.472	5.680	1.316	1.000
	Romanian	17.250	5.680	3.037	0.580
	Slovene	9.694	5.680	1.707	1.000
	Swedish	11.000	5.680	1.937	1.000
	Turkish	15.806	5.680	2.783	1.000
	Ukrainian	7.000	5.680	1.232	1.000
	Welsh	19.833	5.680	3.492	0.124

		Mean Difference	SE	t	Pholm
Polish	Portuguese	−7.806	5.680	−1.374	1.000
	Romanian	1.972	5.680	0.347	1.000
	Slovene	−5.583	5.680	−0.983	1.000
	Swedish	−4.278	5.680	−0.753	1.000
	Turkish	0.528	5.680	0.093	1.000
	Ukrainian	−8.278	5.680	−1.457	1.000
	Welsh	4.556	5.680	0.802	1.000
Portuguese	Romanian	9.778	5.680	1.721	1.000
	Slovene	2.222	5.680	0.391	1.000
	Swedish	3.528	5.680	0.621	1.000
	Turkish	8.333	5.680	1.467	1.000
	Ukrainian	−0.472	5.680	−0.083	1.000
	Welsh	12.361	5.680	2.176	1.000
Romanian	Slovene	−7.556	5.680	−1.330	1.000
	Swedish	−6.250	5.680	−1.100	1.000
	Turkish	−1.444	5.680	−0.254	1.000
	Ukrainian	−10.250	5.680	−1.805	1.000
	Welsh	2.583	5.680	0.455	1.000
Slovene	Swedish	1.306	5.680	0.230	1.000
	Turkish	6.111	5.680	1.076	1.000
	Ukrainian	−2.694	5.680	−0.474	1.000
	Welsh	10.139	5.680	1.785	1.000
Swedish	Turkish	4.806	5.680	0.846	1.000
	Ukrainian	−4.000	5.680	−0.704	1.000
	Welsh	8.833	5.680	1.555	1.000
Turkish	Ukrainian	−8.806	5.680	−1.550	1.000
	Welsh	4.028	5.680	0.709	1.000
Ukrainian	Welsh	12.833	5.680	2.259	1.000

* p < .05, ** p < .01, *** p < .001

Note. P-value adjusted for comparing a family of 253

Repeated Measures ANOVA

Between subjects[2]

EROS

	LANGUAGE	Effect	DFn	DFd	F	p	p<.05	ges	p.adj
1	1	L1	1	147	16.322	8.58e-05	*	1.00e-01	0.0018018
2	2	L1	1	147	1.438	2.32e-01		1.00e-02	1.0000000
3	3	L1	1	147	0.340	5.61e-01		2.00e-03	1.0000000
4	4	L1	1	147	1.181	2.79e-01		8.00e-03	1.0000000
5	5	L1	1	147	17.685	4.51e-05	*	1.07e-01	0.0009922
6	6	L1	1	147	11.875	7.42e-04	*	7.50e-02	0.0148400
7	7	L1	1	147	1.150	2.85e-01		8.00e-03	1.0000000
8	8	L1	1	147	3.626	5.90e-02		2.40e-02	0.5900000
9	9	L1	1	147	0.056	8.13e-01		3.81e-04	1.0000000
10	10	L1	1	147	8.460	4.00e-03	*	5.40e-02	0.0720000
11	11	L1	1	147	4.317	3.90e-02	*	2.90e-02	0.4290000
12	12	L1	1	147	23.676	2.90e-06	*	1.39e-01	0.0000667
13	13	L1	1	147	5.994	1.60e-02	*	3.90e-02	0.2400000
14	14	L1	1	147	5.070	2.60e-02	*	3.30e-02	0.3380000
15	15	L1	1	147	6.313	1.30e-02	*	4.10e-02	0.2080000
16	16	L1	1	147	7.848	6.00e-03	*	5.10e-02	0.1020000
17	17	L1	1	146	0.858	3.56e-01		6.00e-03	1.0000000
18	18	L1	1	147	0.005	9.44e-01		3.42e-05	1.0000000
19	19	L1	1	147	9.683	2.00e-03	*	6.20e-02	0.0380000
20	20	L1	1	147	1.681	1.97e-01		1.10e-02	1.0000000
21	21	L1	1	147	5.413	2.10e-02	*	3.60e-02	0.2940000
22	22	L1	1	147	0.898	3.45e-01		6.00e-03	1.0000000
23	23	L1	1	147	4.866	2.90e-02	*	3.20e-02	0.3480000

[2] Languages: 1. Albanian 2. Basque 3. Breton, 4. Catalan 5. Czech 6. Danish 7. Estonian 8. Finnish 9. Greek 10. Hungarian 11. Icelandic 12. Irish 13. Latvian 14. Maltese 15. Norwegian 16. Polish 17. Portuguese 18. Romanian 19. Slovene 20. Swedish 21. Turkish, 22. Ukrainian 23. Welsh.

STATUS

	LANGUAGE	Effect	DFn	DFd	F	p	p<.05	ges	p.adj
1	1	L1	1	147	9.544	2.00e-03	*	6.10e-02	0.0440000
2	2	L1	1	147	0.815	3.68e-01		6.00e-03	1.0000000
3	3	L1	1	147	3.259	7.30e-02		2.20e-02	0.8760000
4	4	L1	1	147	3.190	7.60e-02		2.10e-02	0.8760000
5	5	L1	1	147	18.071	3.76e-05	*	1.09e-01	0.0008648
6	6	L1	1	147	4.082	4.50e-02	*	2.70e-02	0.6300000
7	7	L1	1	147	0.011	9.17e-01		7.42e-05	1.0000000
8	8	L1	1	147	3.493	6.40e-02		2.30e-02	0.8320000
9	9	L1	1	147	0.092	7.63e-01		6.23e-04	1.0000000
10	10	L1	1	147	8.612	4.00e-03	*	5.50e-02	0.0760000
11	11	L1	1	147	0.872	3.52e-01		6.00e-03	1.0000000
12	12	L1	1	147	8.815	3.00e-03	*	5.70e-02	0.0630000
13	13	L1	1	147	1.594	2.09e-01		1.10e-02	1.0000000
14	14	L1	1	147	5.262	2.30e-02	*	3.50e-02	0.3680000
15	15	L1	1	147	1.396	2.39e-01		9.00e-03	1.0000000
16	16	L1	1	147	7.129	8.00e-03	*	4.60e-02	0.1440000
17	17	L1	1	146	0.954	3.30e-01		6.00e-03	1.0000000
18	18	L1	1	147	1.717	1.92e-01		1.20e-02	1.0000000
19	19	L1	1	147	6.895	1.00e-02	*	4.50e-02	0.1700000
20	20	L1	1	147	0.165	6.85e-01		1.00e-03	1.0000000
21	21	L1	1	147	8.878	3.00e-03	*	5.70e-02	0.0630000
22	22	L1	1	147	4.245	4.10e-02	*	2.80e-02	0.6150000
23	23	L1	1	147	2.806	9.60e-02		1.90e-02	0.9600000

BEAUTY

	LANGUAGE	Effect	DFn	DFd	F	p	p<.05	ges	p.adj
1	1	L1	1	147	6.1760000	1.40e-02	*	4.00e-02	0.3080000
2	2	L1	1	147	0.1760000	6.76e-01		1.00e-03	1.0000000
3	3	L1	1	147	0.6310000	4.28e-01		4.00e-03	1.0000000
4	4	L1	1	147	0.0340000	8.54e-01		2.30e-04	1.0000000
5	5	L1	1	147	16.6580000	7.32e-05	*	1.02e-01	0.0016836
6	6	L1	1	147	2.0860000	1.51e-01		1.40e-02	1.0000000
7	7	L1	1	147	2.0170000	1.58e-01		1.40e-02	1.0000000
8	8	L1	1	147	0.0910000	7.64e-01		6.17e-04	1.0000000
9	9	L1	1	147	0.8710000	3.52e-01		6.00e-03	1.0000000
10	10	L1	1	147	0.4350000	5.10e-01		3.00e-03	1.0000000
11	11	L1	1	147	0.0030000	9.54e-01		2.26e-05	1.0000000
12	12	L1	1	147	3.5930000	6.00e-02		2.40e-02	1.0000000
13	13	L1	1	147	0.4460000	5.05e-01		3.00e-03	1.0000000
14	14	L1	1	147	0.1640000	6.86e-01		1.00e-03	1.0000000
15	15	L1	1	147	0.3630000	5.48e-01		2.00e-03	1.0000000
16	16	L1	1	147	5.5250000	2.00e-02	*	3.60e-02	0.4000000
17	17	L1	1	146	0.0000438	9.95e-01		3.00e-07	1.0000000
18	18	L1	1	147	0.8450000	3.60e-01		6.00e-03	1.0000000
19	19	L1	1	147	5.9730000	1.60e-02	*	3.90e-02	0.3360000
20	20	L1	1	147	0.1730000	6.78e-01		1.00e-03	1.0000000
21	21	L1	1	147	3.8460000	5.20e-02		2.50e-02	0.9880000
22	22	L1	1	147	0.4090000	5.24e-01		3.00e-03	1.0000000
23	23	L1	1	147	0.5320000	4.67e-01		4.00e-03	1.0000000

ORDER

	LANGUAGE	Effect	DFn	DFd	F	p	p<.05	ges	p.adj
1	1	L1	1	147	4.018000	0.047	*	2.70e-02	0.940
2	2	L1	1	147	2.362000	0.126		1.60e-02	1.000
3	3	L1	1	147	1.358000	0.246		9.00e-03	1.000
4	4	L1	1	147	2.117000	0.148		1.40e-02	1.000
5	5	L1	1	147	5.363000	0.022	*	3.50e-02	0.484
6	6	L1	1	147	3.756000	0.055		2.50e-02	1.000
7	7	L1	1	147	1.180000	0.279		8.00e-03	1.000
8	8	L1	1	147	0.080000	0.777		5.45e-04	1.000
9	9	L1	1	147	0.204000	0.652		1.00e-03	1.000
10	10	L1	1	147	0.722000	0.397		5.00e-03	1.000
11	11	L1	1	147	0.034000	0.855		2.29e-04	1.000
12	12	L1	1	147	2.536000	0.113		1.70e-02	1.000
13	13	L1	1	147	1.566000	0.213		1.10e-02	1.000
14	14	L1	1	147	0.164000	0.686		1.00e-03	1.000
15	15	L1	1	147	0.004000	0.952		2.46e-05	1.000
16	16	L1	1	147	7.519000	0.007	*	4.90e-02	0.161
17	17	L1	1	146	2.060000	0.153		1.40e-02	1.000
18	18	L1	1	147	0.473000	0.493		3.00e-03	1.000
19	19	L1	1	147	0.833000	0.363		6.00e-03	1.000
20	20	L1	1	147	1.011000	0.316		7.00e-03	1.000
21	21	L1	1	147	4.213000	0.042	*	2.80e-02	0.882
22	22	L1	1	147	0.000353	0.985		2.40e-06	1.000
23	23	L1	1	147	1.170000	0.281		8.00e-03	1.000

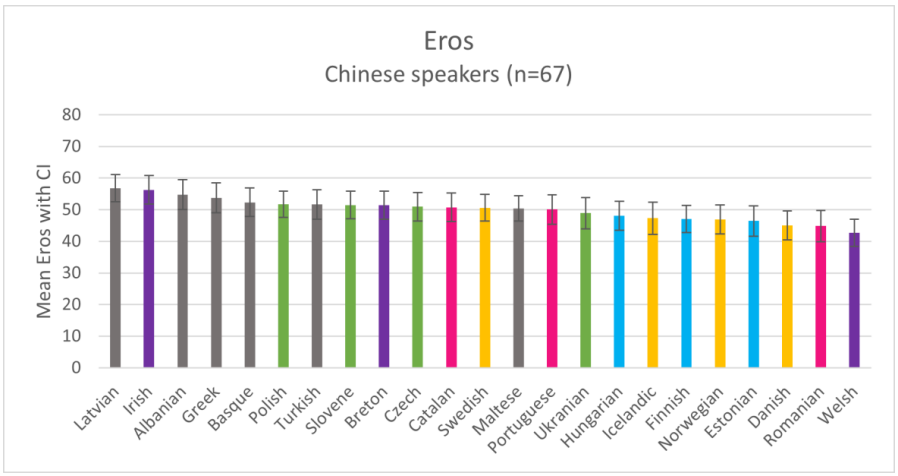
VOICE

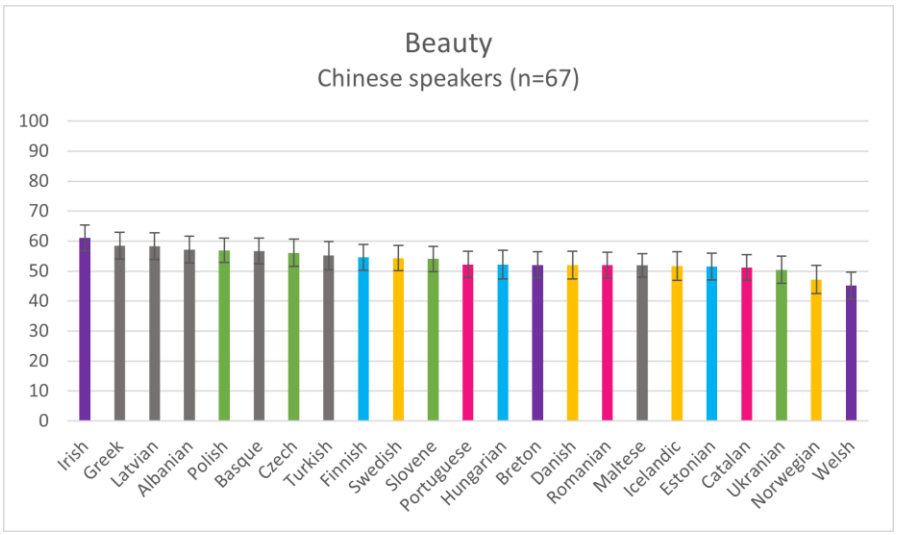
	LANGUAGE	Effect	DFn	DFd	F	p	p<.05	ges	p.adj
1	1	L1	1	147	3.8690000	0.051000		2.60e-02	0.663000
2	2	L1	1	147	4.5330000	0.035000	*	3.00e-02	0.525000
3	3	L1	1	147	5.5290000	0.020000	*	3.60e-02	0.323000
4	4	L1	1	147	0.2330000	0.630000		2.00e-03	1.000000
5	5	L1	1	147	0.1070000	0.745000		7.24e-04	1.000000
6	6	L1	1	147	6.1100000	0.015000	*	4.00e-02	0.285000
7	7	L1	1	147	11.3170000	0.000979	*	7.10e-02	0.022517
8	8	L1	1	147	4.5410000	0.035000	*	3.00e-02	0.525000
9	9	L1	1	147	9.3100000	0.003000	*	6.00e-02	0.063000
10	10	L1	1	147	0.3510000	0.554000		2.00e-03	1.000000
11	11	L1	1	147	3.8340000	0.052000		2.50e-02	0.663000
12	12	L1	1	147	0.7410000	0.391000		5.00e-03	1.000000
13	13	L1	1	147	9.5230000	0.002000	*	6.10e-02	0.044000
14	14	L1	1	147	8.3410000	0.004000	*	5.40e-02	0.080000
15	15	L1	1	147	5.8890000	0.016000	*	3.90e-02	0.288000
16	16	L1	1	147	1.4730000	0.227000		1.00e-02	1.000000
17	17	L1	1	146	0.5230000	0.471000		4.00e-03	1.000000
18	18	L1	1	147	2.5230000	0.114000		1.70e-02	1.000000
19	19	L1	1	147	1.9740000	0.162000		1.30e-02	1.000000
20	20	L1	1	147	5.6420000	0.019000	*	3.70e-02	0.323000
21	21	L1	1	147	3.8460000	0.052000		2.50e-02	0.663000
22	22	L1	1	147	3.0770000	0.082000		2.10e-02	0.820000
23	23	L1	1	147	0.0000727	0.993000		4.95e-07	1.000000

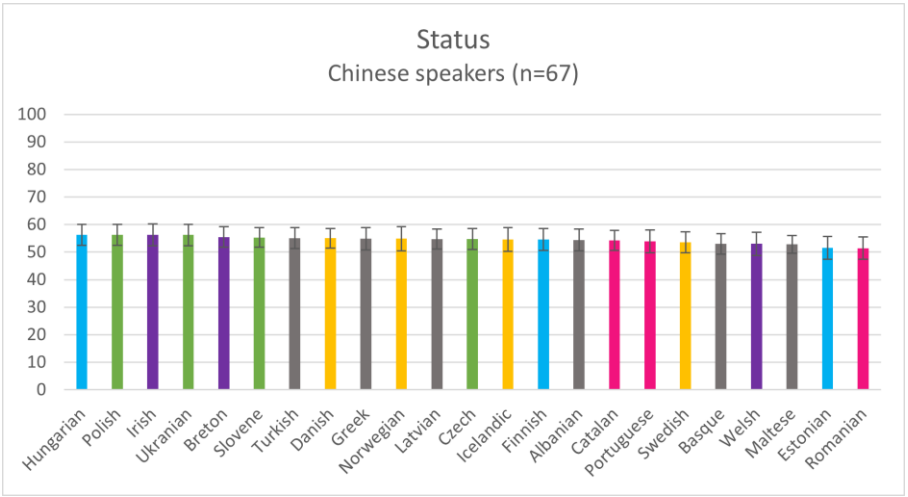
FAMILIARITY

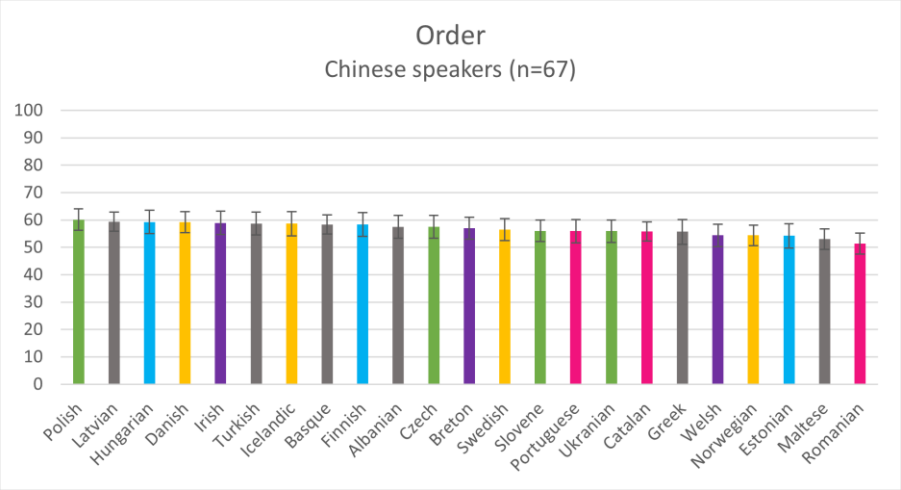
	LANGUAGE	Effect	DFn	DFd	F	p	p<.05	ges	p.adj
1	1	L1	1	147	5.799	1.70e-02	*	0.038000	0.3060000
2	2	L1	1	147	0.245	6.21e-01		0.002000	1.0000000
3	3	L1	1	147	0.066	7.98e-01		0.000448	1.0000000
4	4	L1	1	147	4.964	2.70e-02	*	0.033000	0.4320000
5	5	L1	1	147	0.798	3.73e-01		0.005000	1.0000000
6	6	L1	1	147	3.895	5.00e-02		0.026000	0.6600000
7	7	L1	1	147	0.614	4.34e-01		0.004000	1.0000000
8	8	L1	1	147	0.021	8.84e-01		0.000145	1.0000000
9	9	L1	1	147	9.594	2.00e-03	*	0.061000	0.0400000
10	10	L1	1	147	4.092	4.50e-02	*	0.027000	0.6600000
11	11	L1	1	147	0.445	5.06e-01		0.003000	1.0000000
12	12	L1	1	147	0.461	4.98e-01		0.003000	1.0000000
13	13	L1	1	147	1.223	2.71e-01		0.008000	1.0000000
14	14	L1	1	147	1.189	2.77e-01		0.008000	1.0000000
15	15	L1	1	147	14.002	2.61e-04	*	0.087000	0.0057420
16	16	L1	1	147	2.708	1.02e-01		0.018000	1.0000000
17	17	L1	1	146	9.881	2.00e-03	*	0.063000	0.0400000
18	18	L1	1	147	4.132	4.40e-02	*	0.027000	0.6600000
19	19	L1	1	147	16.247	8.89e-05	*	0.100000	0.0020447
20	20	L1	1	147	3.521	6.30e-02		0.023000	0.7560000
21	21	L1	1	147	5.140	2.50e-02	*	0.034000	0.4250000
22	22	L1	1	147	10.969	1.00e-03	*	0.069000	0.0210000
23	23	L1	1	147	0.066	7.97e-01		0.000450	1.0000000

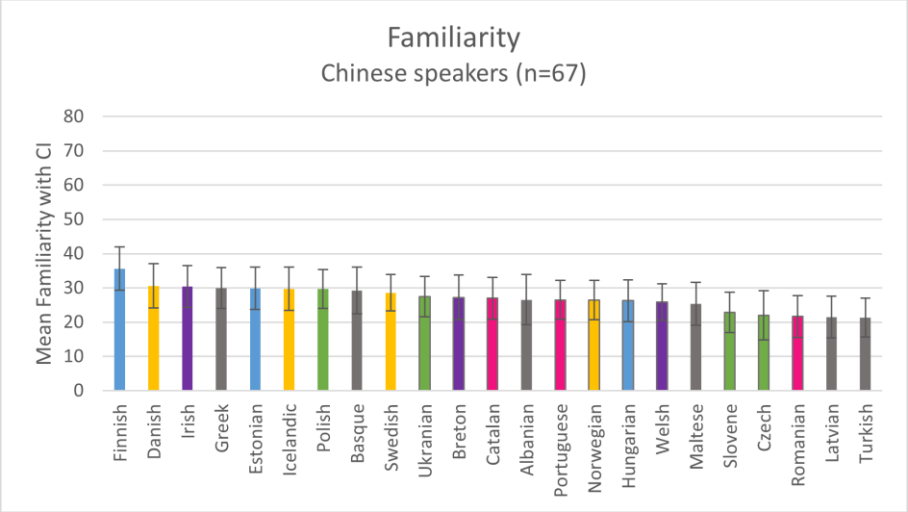
Data results with fifteen participants excluded (15 Chinese speakers and 3 German speakers) Rating results (Chinese speakers)

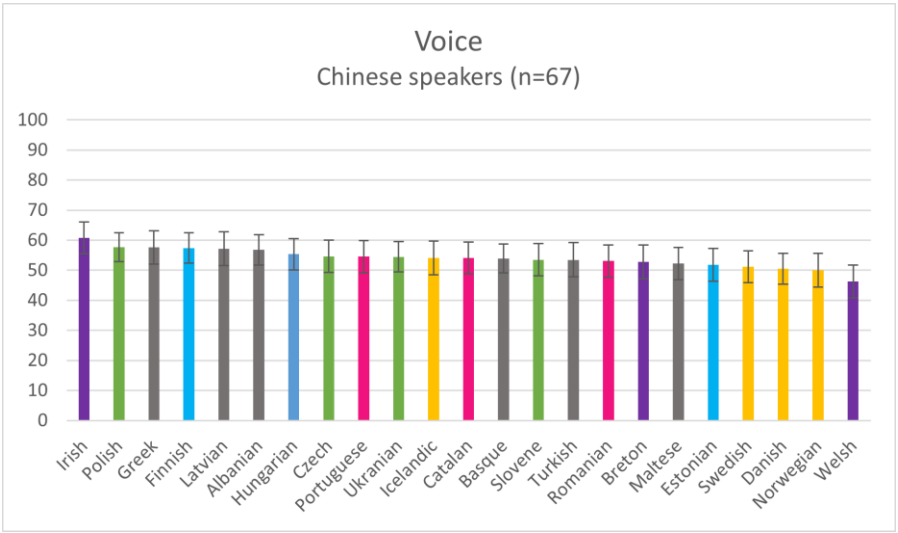

Eros
Chinese speakers (n=67)
Mean Eros with CI
80
70
60
50
40
30
20
10
0
Latvian
Irish
Albanian
Greek
Basque
Polish
Turkish
Slovene
Breton
Czech
Catalan
Swedish
Maltese
Portuguese
Ukranian
Hungarian
Icelandic
Finnish
Norwegian
Estonian
Danish
Romanian
Welsh


Beauty
Chinese speakers (n=67)
100
90
80
70
60
50
40
30
20
10
0
Irish
Greek
Latvian
Albanian
Polish
Basque
Czech
Turkish
Finnish
Swedish
Slovene
Portuguese
Hungarian
Breton
Danish
Romanian
Maltese
Icelandic
Estonian
Catalan
Ukranian
Norwegian
Welsh


Status
Chinese speakers (n=67)
100
90
80
70
60
50
40
30
20
10
0
Hungarian
Polish
Irish
Ukranian
Breton
Slovene
Turkish
Danish
Greek
Norwegian
Latvian
Czech
Icelandic
Finnish
Albanian
Catalan
Portuguese
Swedish
Basque
Welsh
Maltese
Estonian
Romanian


Order
Chinese speakers (n=67)
100
90
80
70
60
50
40
30
20
10
0
Polish
Latvian
Hungarian
Danish
Irish
Turkish
Icelandic
Basque
Finnish
Albanian
Czech
Breton
Swedish
Slovene
Portuguese
Ukranian
Catalan
Greek
Welsh
Norwegian
Estonian
Maltese
Romanian


Familiarity
Chinese speakers (n=67)
Mean Familiarity with CI
80
70
60
50
40
30
20
10
0
Finnish
Danish
Irish
Greek
Estonian
Icelandic
Polish
Basque
Swedish
Ukranian
Breton
Catalan
Albanian
Portuguese
Norwegian
Hungarian
Welsh
Maltese
Slovene
Czech
Romanian
Latvian
Turkish


Voice
Chinese speakers (n=67)
100
90
80
70
60
50
40
30
20
10
0
Irish
Polish
Greek
Finnish
Latvian
Albanian
Hungarian
Czech
Portuguese
Ukranian
Icelandic
Catalan
Basque
Slovene
Turkish
Romanian
Breton
Maltese
Estonian
Swedish
Danish
Norwegian
Welsh

Repeated Measures ANOVA

Between subjects[3]

EROS

	LANGUAGE	Effect	DFn	DFd	F	p	p<.05	ges	p.adj
1	1	L1	1	129	15.722	1.21e-04	*	0.109000	0.00266200
2	2	L1	1	129	1.286	2.59e-01		0.010000	1.00000000
3	3	L1	1	129	0.296	5.87e-01		0.002000	1.00000000
4	4	L1	1	129	0.970	3.26e-01		0.007000	1.00000000
5	5	L1	1	129	15.348	1.44e-04	*	0.106000	0.00302400
6	6	L1	1	129	9.569	2.00e-03	*	0.069000	0.04000000
7	7	L1	1	129	0.554	4.58e-01		0.004000	1.00000000
8	8	L1	1	129	2.517	1.15e-01		0.019000	1.00000000
9	9	L1	1	129	0.045	8.32e-01		0.000351	1.00000000
10	10	L1	1	129	7.826	6.00e-03	*	0.057000	0.10200000
11	11	L1	1	129	2.309	1.31e-01		0.018000	1.00000000
12	12	L1	1	129	22.875	4.64e-06	*	0.151000	0.00010672
13	13	L1	1	129	8.357	5.00e-03	*	0.061000	0.09000000
14	14	L1	1	129	4.014	4.70e-02	*	0.030000	0.56400000
15	15	L1	1	129	5.132	2.50e-02	*	0.038000	0.35000000
16	16	L1	1	129	5.969	1.60e-02	*	0.044000	0.24000000
17	17	L1	1	128	0.676	4.12e-01		0.005000	1.00000000
18	18	L1	1	129	0.065	7.98e-01		0.000507	1.00000000
19	19	L1	1	129	8.521	4.00e-03	*	0.062000	0.07600000
20	20	L1	1	129	1.464	2.29e-01		0.011000	1.00000000
21	21	L1	1	129	6.977	9.00e-03	*	0.051000	0.14400000
22	22	L1	1	129	0.904	3.43e-01		0.007000	1.00000000
23	23	L1	1	129	4.552	3.50e-02	*	0.034000	0.45500000

[3] Languages: 1. Albanian 2. Basque 3. Breton, 4. Catalan 5. Czech 6. Danish 7. Estonian 8. Finnish 9. Greek 10. Hungarian 11. Icelandic 12. Irish 13. Latvian 14. Maltese 15. Norwegian 16. Polish 17. Portuguese 18. Romanian 19. Slovene 20. Swedish 21. Turkish, 22. Ukrainian 23. Welsh.

BEAUTY

	LANGUAGE	Effect	DFn	DFd	F	p	p<.05	ges	p.adj
1	1	L1	1	129	7.432	7.00e-03	*	0.054000	0.1540000
2	2	L1	1	129	0.656	4.19e-01		0.005000	1.0000000
3	3	L1	1	129	0.167	6.83e-01		0.001000	1.0000000
4	4	L1	1	129	0.125	7.25e-01		0.000964	1.0000000
5	5	L1	1	129	18.810	2.89e-05	*	0.127000	0.0006647
6	6	L1	1	129	2.488	1.17e-01		0.019000	1.0000000
7	7	L1	1	129	1.100	2.96e-01		0.008000	1.0000000
8	8	L1	1	129	0.227	6.35e-01		0.002000	1.0000000
9	9	L1	1	129	0.138	7.11e-01		0.001000	1.0000000
10	10	L1	1	129	0.743	3.90e-01		0.006000	1.0000000
11	11	L1	1	129	0.029	8.64e-01		0.000227	1.0000000
12	12	L1	1	129	6.142	1.40e-02	*	0.045000	0.2660000
13	13	L1	1	129	2.154	1.45e-01		0.016000	1.0000000
14	14	L1	1	129	0.162	6.88e-01		0.001000	1.0000000
15	15	L1	1	129	0.164	6.86e-01		0.001000	1.0000000
16	16	L1	1	129	6.851	1.00e-02	*	0.050000	0.2000000
17	17	L1	1	128	0.039	8.43e-01		0.000308	1.0000000
18	18	L1	1	129	0.771	3.81e-01		0.006000	1.0000000
19	19	L1	1	129	7.097	9.00e-03	*	0.052000	0.1890000
20	20	L1	1	129	0.537	4.65e-01		0.004000	1.0000000
21	21	L1	1	129	5.054	2.60e-02	*	0.038000	0.4680000
22	22	L1	1	129	0.082	7.76e-01		0.000632	1.0000000
23	23	L1	1	129	0.176	6.76e-01		0.001000	1.0000000

STATUS

	LANGUAGE	Effect	DFn	DFd	F	p	p<.05	ges	p.adj
1	1	L1	1	129	1.0543e+01	1.00e-03	*	7.60e-02	0.0210000
2	2	L1	1	129	1.0920e+00	2.98e-01		8.00e-03	1.0000000
3	3	L1	1	129	3.7620e+00	5.50e-02		2.80e-02	0.7150000
4	4	L1	1	129	3.4110e+00	6.70e-02		2.60e-02	0.8040000
5	5	L1	1	129	1.8765e+01	2.95e-05	*	1.27e-01	0.0006785
6	6	L1	1	129	4.6870e+00	3.20e-02	*	3.50e-02	0.4800000
7	7	L1	1	129	7.4800e-06	9.98e-01		5.80e-08	1.0000000
8	8	L1	1	129	3.3280e+00	7.00e-02		2.50e-02	0.8040000
9	9	L1	1	129	4.1900e-01	5.19e-01		3.00e-03	1.0000000
10	10	L1	1	129	9.9920e+00	2.00e-03	*	7.20e-02	0.0400000
11	11	L1	1	129	4.9900e-01	4.81e-01		4.00e-03	1.0000000
12	12	L1	1	129	9.3440e+00	3.00e-03	*	6.80e-02	0.0570000
13	13	L1	1	129	2.5870e+00	1.10e-01		2.00e-02	1.0000000
14	14	L1	1	129	3.9610e+00	4.90e-02	*	3.00e-02	0.6860000
15	15	L1	1	129	1.2140e+00	2.73e-01		9.00e-03	1.0000000
16	16	L1	1	129	7.7320e+00	6.00e-03	*	5.70e-02	0.1080000
17	17	L1	1	128	1.0780e+00	3.01e-01		8.00e-03	1.0000000
18	18	L1	1	129	2.1760e+00	1.43e-01		1.70e-02	1.0000000
19	19	L1	1	129	7.9620e+00	6.00e-03	*	5.80e-02	0.1080000
20	20	L1	1	129	2.5700e-01	6.13e-01		2.00e-03	1.0000000
21	21	L1	1	129	1.1999e+01	7.23e-04	*	8.50e-02	0.0159060
22	22	L1	1	129	5.0980e+00	2.60e-02	*	3.80e-02	0.4160000
23	23	L1	1	129	2.4750e+00	1.18e-01		1.90e-02	1.0000000

ORDER

	LANGUAGE	Effect	DFn	DFd	F	p	p<.05	ges	p.adj
1	1	L1	1	129	6.113000	0.015	*	4.50e-02	0.300
2	2	L1	1	129	4.013000	0.047	*	3.00e-02	0.799
3	3	L1	1	129	3.003000	0.086		2.30e-02	1.000
4	4	L1	1	129	3.507000	0.063		2.60e-02	0.945
5	5	L1	1	129	6.333000	0.013	*	4.70e-02	0.273
6	6	L1	1	129	5.943000	0.016	*	4.40e-02	0.304
7	7	L1	1	129	0.422000	0.517		3.00e-03	1.000
8	8	L1	1	129	0.286000	0.594		2.00e-03	1.000
9	9	L1	1	129	0.000773	0.978		5.99e-06	1.000
10	10	L1	1	129	2.381000	0.125		1.80e-02	1.000
11	11	L1	1	129	0.092000	0.762		7.11e-04	1.000
12	12	L1	1	129	5.038000	0.026	*	3.80e-02	0.468
13	13	L1	1	129	3.735000	0.055		2.80e-02	0.880
14	14	L1	1	129	0.165000	0.685		1.00e-03	1.000
15	15	L1	1	129	0.170000	0.681		1.00e-03	1.000
16	16	L1	1	129	9.954000	0.002	*	7.20e-02	0.046
17	17	L1	1	128	2.888000	0.092		2.20e-02	1.000
18	18	L1	1	129	0.552000	0.459		4.00e-03	1.000
19	19	L1	1	129	0.207000	0.650		2.00e-03	1.000
20	20	L1	1	129	1.747000	0.189		1.30e-02	1.000
21	21	L1	1	129	7.770000	0.006	*	5.70e-02	0.132
22	22	L1	1	129	0.322000	0.572		2.00e-03	1.000
23	23	L1	1	129	2.123000	0.148		1.60e-02	1.000

VOICE

	LANGUAGE	Effect	DFn	DFd	F	p	p<.05	ges	p.adj
1	1	L1	1	129	1.903000	0.170		1.50e-02	1.000
2	2	L1	1	129	2.411000	0.123		1.80e-02	1.000
3	3	L1	1	129	2.879000	0.092		2.20e-02	1.000
4	4	L1	1	129	0.000927	0.976		7.19e-06	1.000
5	5	L1	1	129	0.003000	0.959		2.02e-05	1.000
6	6	L1	1	129	4.331000	0.039	*	3.20e-02	0.741
7	7	L1	1	129	8.081000	0.005	*	5.90e-02	0.115
8	8	L1	1	129	3.557000	0.062		2.70e-02	0.992
9	9	L1	1	129	6.558000	0.012	*	4.80e-02	0.264
10	10	L1	1	129	0.017000	0.896		1.33e-04	1.000
11	11	L1	1	129	2.352000	0.128		1.80e-02	1.000
12	12	L1	1	129	0.111000	0.739		8.62e-04	1.000
13	13	L1	1	129	4.313000	0.040	*	3.20e-02	0.741
14	14	L1	1	129	5.749000	0.018	*	4.30e-02	0.378
15	15	L1	1	129	3.864000	0.051		2.90e-02	0.867
16	16	L1	1	129	0.278000	0.599		2.00e-03	1.000
17	17	L1	1	128	0.009000	0.926		6.75e-05	1.000
18	18	L1	1	129	1.618000	0.206		1.20e-02	1.000
19	19	L1	1	129	0.637000	0.426		5.00e-03	1.000
20	20	L1	1	129	4.844000	0.030	*	3.60e-02	0.600
21	21	L1	1	129	1.820000	0.180		1.40e-02	1.000
22	22	L1	1	129	0.864000	0.354		7.00e-03	1.000
23	23	L1	1	129	0.216000	0.643		2.00e-03	1.000