Acquiescence in native and foreign languages, Padua, November 10th, 2023 (#150552)

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1) Have any data been collected for this study already?
No, no data have been collected for this study yet.

2) What's the main question being asked or hypothesis being tested in this study?
In this study, we investigate how language influences response styles. We hypothesize that native Italian speakers will exhibit more acquiescent response patterns when evaluating dichotomous personality traits (e.g., introverted vs. extroverted) in English (a foreign language) compared to their native language (Italian). This hypothesis is grounded in previous research suggesting that increased cognitive load, such as that experienced when processing a foreign language, can lead to a more acquiescent responding style.

Our primary method for assessing acquiescent response patterns will be through a mixed effects linear statistical model. This model will predict the probability of participants selecting that a given trait describes them. We expect to find a higher probability of acquiescent responses when participants are responding in English compared to Italian.

Additionally, we anticipate that processing a foreign language is less automatic and fluent, leading to longer response times for rejecting traits. Response time will be measured from the onset of the stimuli until a response is selected via a button press. This serves as a proxy for processing fluency.

To control for confounding variables, we will measure and include participants' English proficiency as a covariate in our statistical models. Other factors such as word frequency, age of acquisition of the foreign language, foreign language exposure, and foreign language proficiency will also be considered.

In summary, our study aims to explore the interplay between language and response styles, particularly focusing on the tendency towards acquiescence under increased cognitive load in a foreign language context.

3) Describe the key dependent variable(s) specifying how they will be measured.
Dichotomous Decisions on Personality Traits:
The primary dependent variable in this study is the participants' decisions on a series of personality traits. Each participant will be presented with a list of 100 personality traits, one at a time. For each trait, participants are required to make a dichotomous decision – whether the trait describes them ('It's me') or does not describe them ('It's not me'). This binary choice provides a clear, quantifiable measure of how participants perceive and relate to various personality traits. The cumulative data from these decisions will allow us to assess patterns of acquiescence or rejection in relation to the language of presentation (Italian vs. English).

Reaction Time:
The second key dependent variable is the reaction time, which serves as an indirect measure of processing fluency. Reaction time will be meticulously recorded as the duration from the onset of each personality trait word on the screen to the moment the participant makes a decision by pressing a designated button. This measure is crucial as it provides insight into the cognitive processes underlying language comprehension and decision-making. Longer reaction times in a foreign language (English) as compared to the native language (Italian) may indicate decreased processing fluency, which is hypothesized to influence the acquiescent response pattern.

4) How many and which conditions will participants be assigned to?
In our study, participants will be assigned to two distinct conditions based on the language in which they will decide on the personality traits:

Native Language Condition:
In this condition, participants will evaluate the personality traits presented in their native language, Italian. This serves as the baseline or control condition, allowing us to gauge participants' natural response patterns and processing fluency when engaging with familiar linguistic constructs.

Foreign Language Condition:
Conversely, in this condition, participants will engage with the same set of personality traits, but presented in a foreign language they have studied, which is English in this case. This condition is designed to assess the impact of processing a non-native language on their response patterns and reaction times.

5) Specify exactly which analyses you will conduct to examine the main question/hypothesis.
Analysis of Dichotomous Decisions:

For the dichotomous decision data (whether a trait describes the participant or not), we will employ a generalized linear mixed-effects model (GLMM) fitted with a binomial family distribution. This model will aim to predict the binary outcome variable 'Decision' (acceptance or rejection) based primarily on the fixed effect of 'Language' (native vs. foreign). To account for individual differences and variability in responses to different personality traits, we will include random intercepts for each 'Item' (personality trait), nested within each 'Participant'. This approach will allow us to assess how language influences participants' likelihood of agreeing or disagreeing with each trait, while controlling for individual and item-level variability.

Analysis of Reaction Times:
For the reaction time data, we will use a generalized linear mixed-effects model (GLMM) fitted with an inverse Gaussian family distribution and an identity link function. The aim here is to predict the response time based on the interaction between the fixed effects of 'Decision' and 'Language'. Similar to the decision analysis, we will include random intercepts for 'Item' nested within 'Participant' to control for individual and trait-specific differences.

6) Describe exactly how outliers will be defined and handled, and your precise rule(s) for excluding observations.
In our study, outlier detection will focus on the reaction times recorded for each participant on a per-trial basis. To identify outliers, we will employ the Z-score method. Specifically, we will calculate the Z-score for each reaction time data point, representing the number of standard deviations a data point is from the mean reaction time for that participant.

A reaction time will be classified as an outlier if its Z-score exceeds a threshold of 2.5 standard deviations from the participant's mean reaction time. This criterion has been chosen as it effectively identifies values that are significantly divergent from a participant's typical response pattern, indicating potential anomalies or errors in data recording.

Observations identified as outliers by this method will be excluded from further analysis. This approach ensures that our analysis is not skewed by extreme values that may not be representative of the participant's typical response behavior. By applying this standardized rule across all participants, we aim to maintain consistency in outlier handling and ensure the integrity of our data set.

7) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.
In our study, the sample size will be determined based on parameters that align with standards set in previous experiments in this field. Specifically, we plan to collect data from at least 108 participants. This decision is informed by a power analysis conducted using G*Power, taking into account the following statistical parameters:

Alpha (Type I Error Rate): Set at .05, this parameter represents the probability of rejecting a true null hypothesis, thus controlling for the likelihood of false positive results.
Power (1 - Type II Error Rate): Set at .95, indicating a 95% probability of correctly rejecting a false null hypothesis. This high level of power ensures a robust ability to detect an effect, should one exist.
Effect Size (f): A medium effect size of .25 is anticipated, based on norms and precedents in similar psychological research. This effect size is used to estimate the minimum number of participants required to reliably detect an effect of this magnitude.

8) Anything else you would like to pre-register? (e.g., secondary analyses, variables collected for exploratory purposes, unusual analyses planned?)
Beyond the primary analyses, our study includes several secondary and exploratory components:

Collection of Foreign Language Experience Data:
We will gather detailed information about participants' experiences with the foreign language (English). This includes:

Age of Acquisition: At what age participants began learning English.
Amount of Exposure: The extent and frequency of their exposure to English in various contexts.
Proficiency Assessment: Participants' proficiency in English will be evaluated using a 25-item language test provided by Cambridge English.
These variables will serve as covariates in our analyses. Including them will allow us to control for the potential impact of varying levels of language experience and proficiency on the study's main outcome measures (dichotomous decisions and reaction times).

Assessment of Understanding of Personality Traits in the Foreign Language:
In the foreign language condition, we will also collect data on whether participants understand the meaning of each personality trait presented in English. This will be crucial for ensuring that the data analyzed is representative of participants' actual perceptions and decisions about the traits, rather than being confounded by lack of comprehension.