

## Uncovering the Role of Foreign Language on Acquiescence

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Manuscripts

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3 **1 Running header:**  
4 **2 Foreign Language and Acquiescence**  
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**Uncovering the Role of Foreign Language on Acquiescence**

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**Competing interests:**

The authors declare none

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1  
2  
3 **1 Abstract**  
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6 2 Foreign language can either enhance decision-making by triggering more deliberation  
7  
8 3 or worsen it due to cognitive overload. We tested these two hypotheses in one response bias:  
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10 4 acquiescence. In three experiments, 413 participants made dichotomous decisions about  
11  
12 5 whether 100 personality traits describe them or not. Participants showed more acquiescence in  
13  
14 6 a foreign language (vs. native), giving more certifying responses when deciding on known  
15  
16 7 traits. Reaction time results suggest that a foreign language particularly impacts rejection more  
17  
18 8 than certification of their comprehension. These findings support the cognitive overload  
19  
20 9 hypothesis and provide valuable insights for the influence of language on response bias.  
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25  
26 11 **Keywords:** *foreign language effect, bilingualism, decision-making, response bias, yay-saying*  
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## 1. Introduction

People can make slightly different decisions depending on the language of thought (Keysar et al., 2012). Known as the Foreign Language Effect (FLE), it posits that a foreign language creates more psychological distance than a native language, leading to more deliberative than automatic responses (Costa et al., 2014). This can be either beneficial or disadvantageous for decision-making (McFarlane et al., 2020; Pavlenko, 2017). The *cognitive enhancement hypothesis* assumes that some cognitive biases are reduced in a foreign language as stimuli are elaborated more analytically, e.g., causality bias (Díaz-Lago & Matute, 2019). However, the cognitive demands of a foreign language may also drain brain resources for other cognitive processes (Volk et al., 2014). Building on this second interpretation, the *cognitive overload hypothesis* assumes that people are worse in cognitive reflection in a foreign language, e.g., in detecting fake news (Muda et al., 2023). Additionally, several studies have reported null-FLE on the outcome bias and representativeness heuristic (Vives et al., 2018). These mixed findings of the FLE on cognitive biases warrants further research to understand the impact of a foreign language on decision-making using different tasks. In this paper, we investigate whether a foreign language can induce a specific response bias: acquiescence.

Acquiescence refers to the act of passively accepting something, often without resistance (Paulhus, 1991). It has been studied as a form of response bias as the tendency to agree with questions or to go along with the status quo (Ray, 1983). Acquiescence in dichotomous accept-reject decisions is linked to increased cognitive load of the task (Knowles & Condon, 1999; Knowles & Nathan, 1997). For instance, Knowles and Condon (1999) manipulated cognitive load during a dichotomous decision task, in which participants decided whether 50 pairs of opposite personality traits describe themselves or not. Ideally, if they choose “It’s me” for 50 personality traits, then they would rationally choose “It’s not

1 me” for the other 50 traits, e.g., you would not choose “It’s me” for both *extroverted* and  
2 *introverted*. These authors discovered that people exhibited more acquiescence, that is, they  
3 chose more “It’s me” than “It’s not me”, under higher cognitive load. Furthermore, these  
4 authors showed that people chose “It’s not me” much more slowly than “It’s me”. They  
5 explained these results under Gilbert’s (1991) Spinozan account of belief: Comprehending a  
6 yes-no question mandates automatic acceptance, therefore such decision is essentially made  
7 between certifying the acceptance or rejecting it; since rejecting requires more cognitive  
8 resources than certifying (Gilbert et al., 1990), increased cognitive load would increase the  
9 difficulty in rejecting, leading to more acquiescence.

10 We adopt the paradigm of Knowles and Condon (1999) to investigate the effect of  
11 foreign language on acquiescence. Since processing a foreign language is less automatic  
12 (Abutalebi, 2008) and under the *cognitive overload hypothesis*, we expected participants to  
13 exhibit more acquiescence for accept-reject dichotomous decisions in a foreign (vs. native)  
14 language. As reaction time is a sensitive measure to extraneous processing cost (DeLeeuw &  
15 Mayer, 2008), we also expected people to be generally slower in a foreign language, and  
16 more critically, much slower in rejecting a personality trait than certifying the acceptance of  
17 it. Conversely, if the *cognitive enhancement hypothesis* holds, we would expect participants  
18 to exhibit less acquiescence in a foreign language and no interference of it on rejection.

## 19 **2. Method.**

20 Three experiments are conducted to test these hypotheses. Experiment 1 was  
21 conducted online, Experiments 2 and 3 were conducted in presence, and Experiment 3 was  
22 pre-registered (<https://aspredicted.org/23fu7.pdf>) to replicate and extend Experiment 2.  
23 Experiments were implemented on Labvanced (<https://www.labvanced.com>). The study was  
24 approved by the Research Ethics Committees of the University of Padua (Protocol number:

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2  
3 1 5084) and was conducted in accordance with the Helsinki Declaration of 1975, as revised in  
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5 2 2008.

### 6 7 8 3 **2.1. Participants.**

9  
10 4 A priori power analysis using G\*Power (Faul et al., 2007) suggested a sample size of  
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12 5 108 ( $\alpha = .05$ ,  $1 - \beta = .95$ , and  $f = .25$ ) for a repeated measure between factor ANOVA design.  
13  
14 6 In Experiment 1, we tested 193 native Italian-speakers via Prolific (<https://www.prolific.co>);  
15  
16 7 in Experiment 2, we tested 105 native Italian-speakers (university students); and in  
17  
18 8 Experiment 3, we tested 115 native Italian-speakers (university students). See Table 1 for  
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20 9 details of the participant pool.  
21  
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23  
24 10 <Insert Table 1 about here>

### 25 26 11 **2.1. Materials.**

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28 12 We utilized a validated 5-factor scale in Italian containing 100 personality traits (Di  
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30 13 Blas & Forzi, 1999, Table 2). Within each factor, half the traits had positive loadings and the  
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32 14 other half had negative loadings, e.g., *extroverted* and *introverted* (see Supplementary  
33  
34 15 materials). There is no difference in letter count,  $t(191.84) = 0$ , 95% CI [-0.71,0.71],  $p = 1$ ,  
35  
36 16 between the Italian version ( $M = 8.74$ ,  $SD = 2.31$ ) and the English version ( $M = 8.74$ ,  $SD =$   
37  
38 17  $2.78$ ) of the stimuli.  
39

### 40 41 42 18 **2.2. Procedure.**

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44 19 After consent, participants were randomly assigned to complete the experiment in  
45  
46 20 either Italian (native language) or English (foreign language). They first read the instructions  
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48 21 and completed two practice trials. In Experiment 1, all trials began with a 500 ms fixation  
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50 22 cross, followed by a small black square at the center of the computer screen. Participants  
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52 23 moved the mouse inside the square to start the critical frame, where they saw a personality  
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54 24 trait (Lato bold font, size 26) and were asked to decide whether it described themselves or  
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56 25 not. Participants clicked on the “It’s me” or the “It’s not me” button for a certifying or  
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1 rejecting decision, respectively. Immediately afterwards in the English version, participants  
2 indicated whether they knew the presented personality trait. Afterwards, participants reported  
3 their English proficiency on a 10-point Likert scale. In Experiments 2 and 3, participants  
4 completed the experiment on smartphones individually in a dimly-lit and sound-proof  
5 auditorium. All trials began with a 500 ms fixation cross, followed by a personality trait at the  
6 screen center and a question below. They used their dominant finger to touch the “It’s me” or  
7 the “It’s not me” button to decide whether it described themselves or not. Immediately  
8 afterwards in the English version, participants indicated whether they knew the presented  
9 personality trait. In Experiment 2, participants did not report their English proficiency,  
10 whereas in Experiment 3 they reported their English proficiency on a 7-point Likert scale and  
11 completed a 25-item English test at the end ([www.cambridgeenglish.org](http://www.cambridgeenglish.org)).

### 12 **2.3. Analyses.**

13 Analyses were performed in R (R Core Team, 2022) with the lme4 package (Bates et  
14 al., 2015). We first excluded participants that were not native Italian-speakers and those with  
15 incomplete data. Then we excluded trials with RTs falling outside the 2.5 standard deviation  
16 from the mean. This resulted in 0.94%, 2.29%, and 2.39% of data loss in Experiments 1, 2,  
17 and 3, respectively. The English Proficiency score was aggregated from listening, speaking,  
18 reading, and writing ratings in Experiment 1, and the correct answer count in Experiment 3.  
19 Due to a programming error, participants’ comprehension of each personality trait in English  
20 was not recorded in Experiment 1, the main analyses were therefore performed on all  
21 personality traits between English and Italian. Whereas in Experiments 2 and 3, the main  
22 analyses were performed between English and Italian excluding the traits participants did not  
23 know in English<sup>1</sup>. For decisions, we fitted a mixed-effects linear model with Language as a

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57 <sup>1</sup> Additional analyses included the unknown personality traits in English as a third level under the variable  
58 Condition. The results paralleled those reported with two levels, i.e., Native and Foreign-known personality  
59 traits (see OSF repository for comprehensive data representation and analyses).  
60

1 fixed factor and Participant as a random factor. For RTs, we fitted a mixed-effects linear  
2 model with Language and Decision as fixed factors, Participant as a random factor. Word  
3 frequency and participant English proficiency were added as covariates in the models as a  
4 methodological safeguard, ensuring that any observed effects of Language and Decision are  
5 not driven by these potentially influential factors.

## 6 **2.4. Results.**

### 7 2.4.1 Experiment 1.

8 *Decisions.* The effect of Language was not significant (OR = 0.94, 95% CI [0.85,  
9 1.04],  $p = .234$ ), nor was the effect of English\_proficiency (OR = 1.01, 95% CI [0.97, 1.05],  $p$   
10 = .503). The effect of Frequency was significant (OR = 1.35, 95% CI [1.32, 1.39],  $p < .001$ ),  
11 indicating the more frequent the trait word is the more likely participants chose “It’s me”.

12 *RTs.* The effect of Language on RTs was significant (Estimate = -156.49, 95% CI [-215.94, -  
13 97.03],  $p < .001$ ), participants responded more slowly in English. Decision was significant  
14 (Estimate = -252.45, 95% CI [-279.91, -224.99],  $p < .001$ ), participants selected “It’s not me”  
15 more slowly than “It’s me”. The interaction of Language and Decision was significant  
16 (Estimate = 148.44, 95% CI [111.61, 185.27],  $p < .001$ ), participants selected “It's not me”  
17 much more slowly in English than Italian (see Figure 1). English\_proficiency effect was  
18 significant (Estimate = -38.78, 95% CI [-6.54, -17.02],  $p < .001$ ), suggesting faster responses  
19 with higher English proficiency. Frequency was significant (Estimate = -39.86, 95% CI [-  
20 47.06, -32.65],  $p < .001$ ), with more frequent trait words eliciting quicker responses.

21 <Insert Figure 1 about here>

### 22 2.4.2 Experiment 2.

23 *Decisions.* For known words, the effect of Language was significant (OR = 0.86, 95%  
24 CI [0.77, 0.95],  $p = .005$ ), participants were more likely to choose “It’s me” in English than  
25 Italian. The effect of frequency was also significant (OR = 1.17, 95% CI [1.13, 1.21],  $p$

1 < .001), suggesting the more frequent the trait word is the more likely participants chose “It’s  
2 me”.

3 *RTs.* The effect of Language was significant (Estimate = -416.31, 95% CI [-537.49, -  
4 295.14],  $p < .001$ ), participants responded more slowly in English. Decision was also  
5 significant (Estimate = -321.85, 95% CI [-392.59, -251.10],  $p < .001$ ), participants selected  
6 “It’s not me” more slowly than “It’s me”. The interaction between Language and Decision  
7 was significant (Estimate = 114.93, 95% CI [32.55, 197.30],  $p = .006$ ), participants selected  
8 “It’s not me” much more slowly than “It’s me” in English than Italian (see Figure 2).  
9 Additionally, the effect of frequency was significant (Estimate = -39.33, 95% CI [-53.39, -  
10 25.27],  $p < .001$ ), the more frequent the trait words, the more quickly the responses.

11 <Insert Figure 2 about here>

### 12 2.4.3 Experiment 3.

13 *Decisions.* The effect of Language was significant (OR = 0.85, 95% CI [0.77, 0.94],  $p$   
14 = .001), participants were less likely to choose “It’s me” in English than Italian.  
15 English\_proficiency was significant (OR = 0.99, 95% CI [0.97, 1.00],  $p = .017$ ), the lower the  
16 English\_proficiency the higher the likelihood of choosing “It’s me”. Frequency was also  
17 significant (OR = 1.21, 95% CI [1.17, 1.25],  $p < .001$ ), the higher the frequency the higher  
18 the likelihood of “It’s me” decision.

19 *RTs.* The effect of Language was significant (Estimate = -574.88, 95% CI [-687.32, -  
20 462.44],  $p < .001$ ), participants responded more quickly in Italian than English. The effect of  
21 Decision was significant (Estimate = -346.20, 95% CI [-411.48, -280.92],  $p < .001$ ),  
22 participants selected “It’s me” faster than “It’s not me”. The interaction between Language  
23 and Decision was significant (Estimate = 208.29, 95% CI [132.10, 284.47],  $p < .001$ ),  
24 participants selected “It’s not me” much more slowly than “It’s me” in English than Italian.  
25 Moreover, English\_proficiency was significant (Estimate = -18.70, 95% CI [-30.69, -6.71],  $p$

1 = .002), suggesting faster responses with higher English proficiency. Frequency was  
2 significant (Estimate = -62.21, 95% CI [-75.05, -49.36],  $p < .001$ ), with more frequent trait  
3 words eliciting quicker responses.

4 <Insert Figure 3 about here>

### 5 **3. Discussion.**

6 Our research comprised three experimental studies aimed at elucidating the influence  
7 of utilizing a foreign language on levels of acquiescence. Cumulatively, the findings from  
8 these experiments suggest a propensity for increased acquiescence when respondents engage  
9 in a foreign language. In Experiment 1, a marginal increase was observed in the propensity of  
10 participants to affirmatively choose "It's me" responses in a foreign language as compared to  
11 their native language. However, this variation failed to reach statistical significance, initially  
12 implying that foreign language usage might not escalate acquiescence. This preliminary  
13 conclusion, though, warrants cautious interpretation, as it may be confounded by unaccounted  
14 variables, particularly pertaining to participants' comprehension of the personality traits in  
15 the foreign language. For instance, people have the tendency to resist novel or unfamiliar  
16 concepts (Townsend, 2017), it is therefore plausible that participants demonstrated an  
17 inclination to choose "It's not me" responses for personality traits they found less  
18 comprehensible in English. It is worth noting that this result is of theoretical relevance in  
19 bilingual research, as previous assumptions of acquiescence stem from research in the native  
20 language, in which comprehension is not an issue (Gilbert, 1991; Knowles & Condon, 1999).  
21 Is it still the case in a foreign language when we often encounter incomprehensible words?

22 In Experiment 2, we addressed the comprehension issue of personality traits in a  
23 foreign language, asking participants to indicate explicitly whether they knew the trait or not.  
24 The analysis, consequently, focused on comparing responses to known traits in English with  
25 those in Italian, therefore eliminating the confounding effect of lexical comprehension. The

1 results aligned with our hypothesis, revealing a statistically significant greater likelihood of  
2 participants affirming "It's me" in English over Italian. Further bolstering this finding,  
3 Experiment 3, a pre-registered study, successfully replicated these results, lending additional  
4 credence to the hypothesis that thinking in a foreign language may indeed elevate  
5 acquiescence, above and beyond the issue of comprehension.

6 To account for the underlying mechanism for this phenomenon in relation to cognitive  
7 load, we incorporated reaction time measurements for each response in our experiments.  
8 Consistent with our predictions, participants across all experiments demonstrated prolonged  
9 decision-making times when responding in the foreign language as opposed to their native  
10 language. This aligns with existing literature, notably Abutalebi (2008), which posits that  
11 processing in a foreign language lacks the fluency and automaticity of one's native tongue.  
12 More critically for our aim, participants consistently took more time to select "It's not me"  
13 compared to "It's me." This finding corroborates Gilbert's two-stage theory of belief (Gilbert,  
14 1991), positing that rejecting or unaccepting a previously comprehended concept (i.e.,  
15 choosing "It's not me" for a personality trait) is cognitively more taxing than affirming and  
16 accepting it (i.e., choosing "It's me"). This pattern implies that the heightened cognitive  
17 demands of thinking in a foreign language not only slow down the overall decision-making  
18 process but also disproportionately amplify the challenge in rejecting previously processed  
19 information. The robustness of this interaction in Experiment 1 was further validated in  
20 Experiments 2 and 3, even after the exclusion of personality traits that were incomprehensible  
21 to participants in English. This reinforces the notion that increased cognitive load, such as  
22 that experienced while thinking in a foreign language, can significantly influence the  
23 reconsideration phase in dichotomous accept-reject decision processes.

24 It is important to note that other factors can contribute to acquiescence. For example,  
25 many other factors may also influence acquiescence, such as the individual's personality

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3 1 (Davis et al., 2020), cultural background (Baron-Epel et al., 2010), and political orientations  
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5 2 (Javeline, 1999). In this study, we only included linguistic variables such as the frequency of  
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7 3 the personality trait words and the individual foreign language proficiency. There seems to be  
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9 4 a positive relationship between word frequency and the tendency to choose “It’s me”, but the  
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11 5 relationship between English proficiency and such tendency is not so clear. Whereas, the self-  
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13 6 reported English proficiency did not have an effect on acquiescence in Experiment 1, the  
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15 7 objective evaluation of English proficiency in Experiment 3 revealed a negative relationship.  
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17 8 Future research could compare subjective and objective measures of language proficiency to  
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19 9 further explore this factor.  
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24 10 An alternative explanation for this phenomenon also merits consideration. Namely,  
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26 11 the increased propensity to choose “It’s me” in a foreign language, particularly for recognized  
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28 12 personality traits, may be attributed to confirmation bias (Nickerson, 1998). This bias  
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30 13 suggests that prior familiarity with a term could inadvertently steer individuals towards  
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32 14 affirming its applicability to themselves. However, it is important to note that our current  
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34 15 dataset does not offer empirical support for this specific hypothesis. While this alternative  
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36 16 explanation highlights the complexity as to why people show more acquiescence in a foreign  
37  
38 17 language, it does not negate the observed trend of this phenomenon. Future studies may  
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40 18 address the role of familiarity such as in a task involving learning novel words. Thus, we  
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42 19 advocate for further research to disentangle these complexities and to more comprehensively  
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44 20 understand the interplay between language use and cognitive biases in decision-making  
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46 21 processes. Such explorations are crucial for a more nuanced understanding of how language  
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48 22 influences cognitive and psychological responses.  
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#### 53 23 **4. Conclusion**

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56 24 This study investigated whether a foreign language contributes to more acquiescence  
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58 25 by testing two alternative hypotheses. According to the *cognitive overload hypothesis* people  
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3 1 should show more acquiescence in a foreign (vs. native) language; according to the *cognitive*  
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5 2 *enhancement hypothesis*, the more deliberative thinking style prompted by a foreign language  
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7 3 should result in less acquiescence. Our results lend support to the *cognitive overload*  
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9 4 *hypothesis*. We demonstrate that people show a higher tendency to choose cognitively easier  
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11 5 “It’s me” than cognitively harder “It’s not me” responses in a foreign language as compared  
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13 6 to their native language, given that they comprehended the task items.  
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16  
17 7 On a theoretical level, our study represents a pioneering effort in the investigation of  
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19 8 foreign language-induced response biases. Although we focused on the foreign language  
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21 9 effect in acquiescence, it is worthy of pointing out that there are also other types of response  
22  
23 10 biases such as socially desirable responding, extreme responding, and midpoint responding  
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25 11 (Garland, 1991; Paulhus, 1991). This research paves the way for future investigations  
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27 12 exploring these response biases in sequential bilinguals. On a practical level, understanding  
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29 13 that thinking in a foreign language interferes with the cognitive resources allocated for  
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31 14 evaluative reconsideration can enhance our awareness in the decision-making process,  
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33 15 especially in an increasingly multilingual world.  
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38 16 In conclusion, this original study provides evidence that people can be subjective to  
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40 17 more acquiescence when making decisions in a foreign language. The findings of this study  
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42 18 highlight the influence of language context on the cognitive processes that underlie decision  
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44 19 making, suggesting that increased cognitive effort to process a foreign language can impact  
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46 20 decisional outcomes.  
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1 **Data availability:**

2 The data and materials for all experiments are available at an OSF repository  
3 ([https://osf.io/yvcq8/?view\\_only=3d6088df8c504262b42643aeb9d044e4](https://osf.io/yvcq8/?view_only=3d6088df8c504262b42643aeb9d044e4)).

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For Peer Review

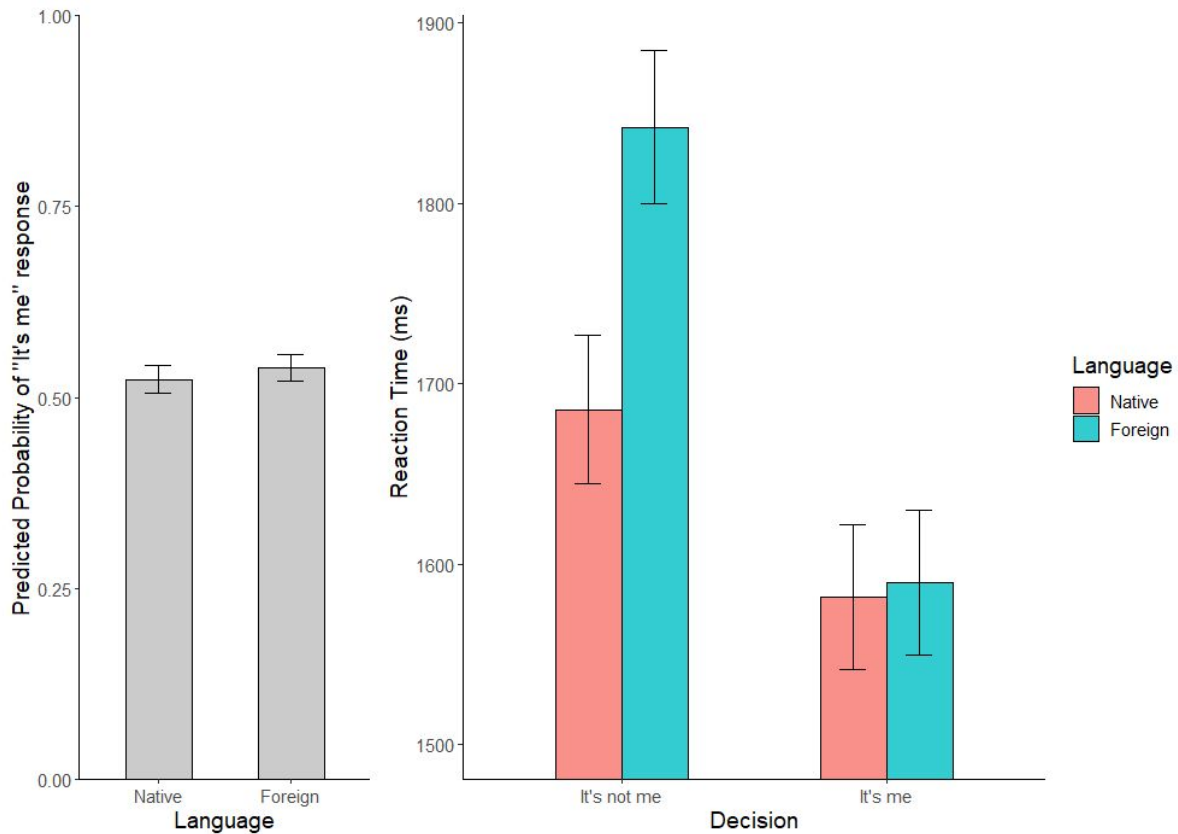


Figure 1. Decisions and Reaction Times in Experiment 1. The left panel presents the predicted probability of "It's me" responses by Language; the right panel presents reaction times (in milliseconds) by Language and Decision. Error bars represent 95% confidence intervals.

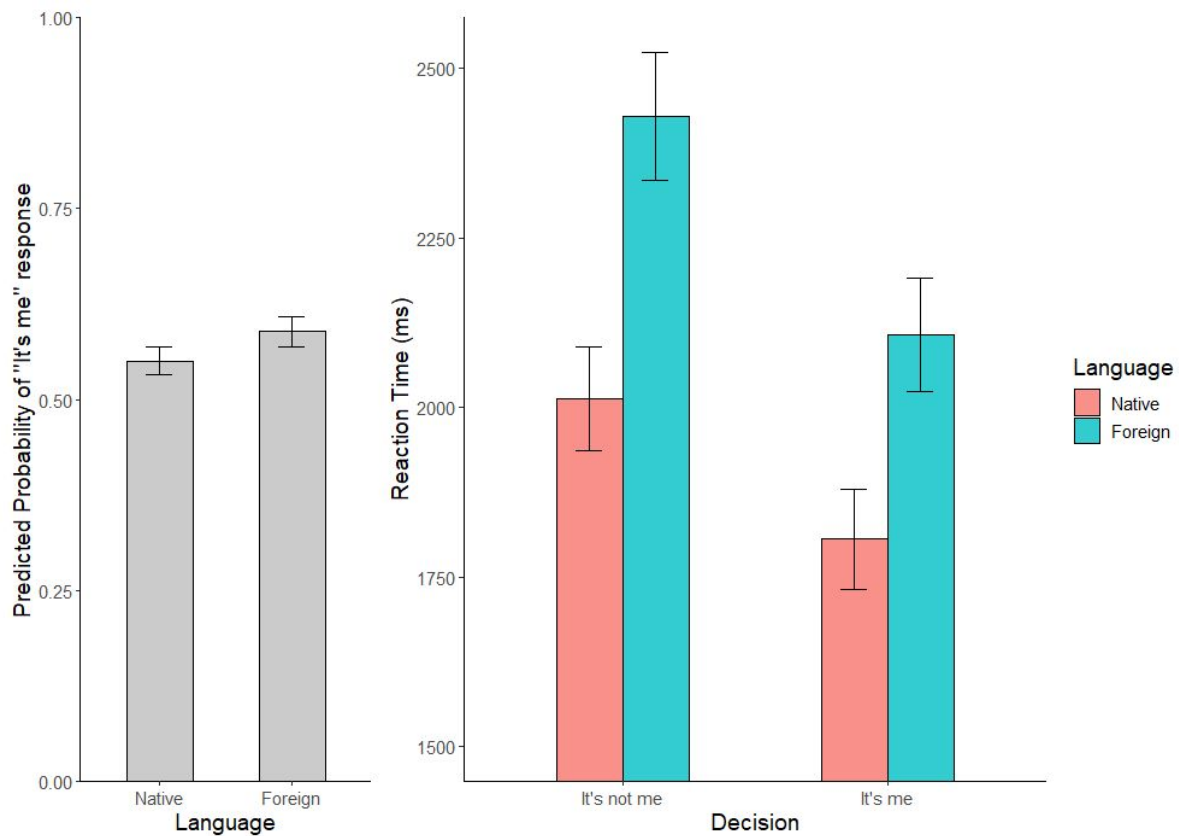


Figure 2. Decisions and Reaction Times in Experiment 2 (excluding unknown personality traits in the foreign language). The left panel presents the predicted probability of "It's me" responses by Language; the right panel presents reaction times (in milliseconds) by Language and Decision. Error bars represent 95% confidence intervals.

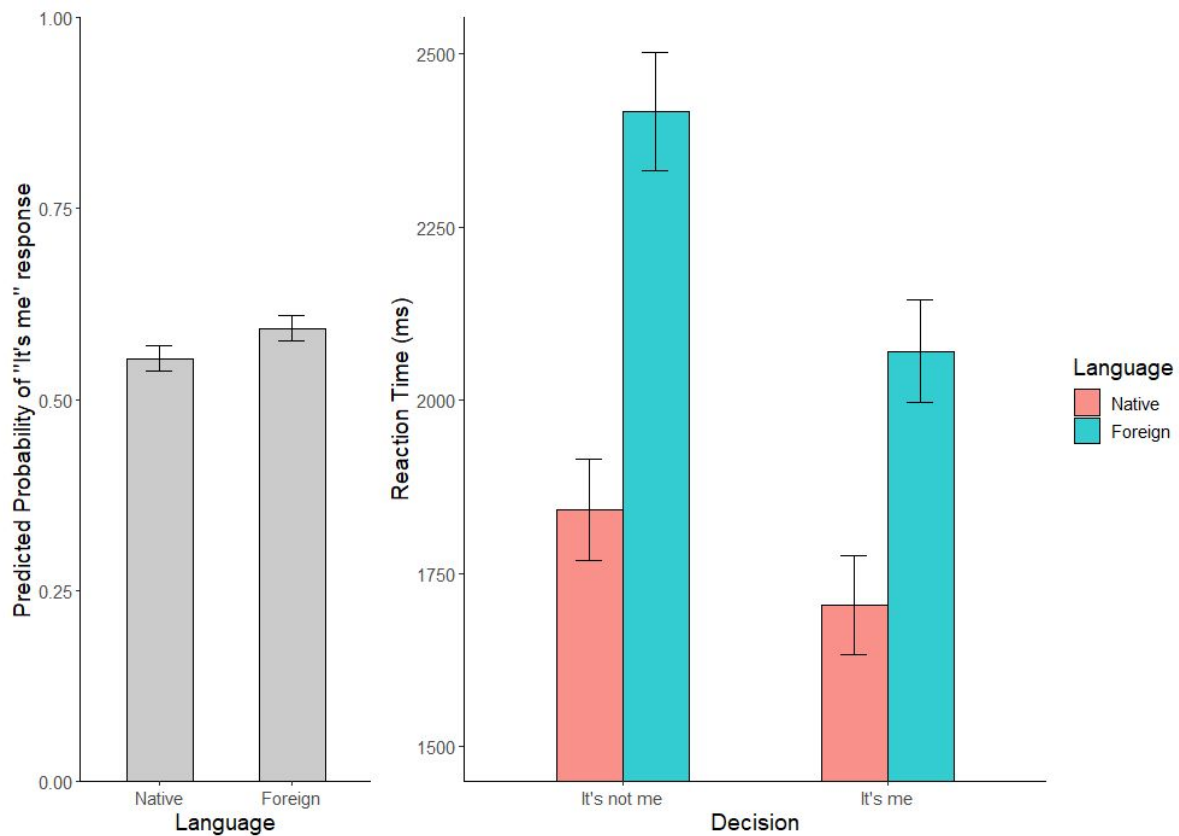


Figure 3. Decisions and Reaction Times in Experiment 3 (excluding unknown personality traits in the foreign language). The left panel presents the predicted probability of "It's me" responses by Language; the right panel presents reaction times (in milliseconds) by Language and Decision. Error bars represent 95% confidence intervals.

1 Table 1. *Descriptive statistics of participants in Experiments 1, 2, and 3, with mean values*  
 2 *and standard deviation in brackets.*

Experiment	1		2		3	
Group	Italian	English	Italian	English	Italian	English
Participant number	96 (33 females)	97 (49 females)	56 (44 females)	49 (36 females)	56 (45 females)	59 (46 females)
Age	29.41 (8.51)	29.07 (8.27)	19.08 (0.80)	19.70 (1.79)	19.29 (0.88)	19.75 (1.82)
Age of acquisition	-	-	-	-	6.36 (1.97)	6.71 (2.71)
Self-reported English proficiency	8.15 (1.31) Out of 10	7.86 (1.19) Out of 10	-	-	4.34 (1.66) Out of 7	4.19 (1.79) Out of 7
Test score of English proficiency	-	-	-	-	16.73 (4.17) Out of 25	16.80 (4.15) Out of 25
English exposure	-	-	-	-	5.10 (1.87) Out of 10	5.25 (1.38) Out of 10

3

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