

How Foreign Language Impacts Moral Decision Making

Lindsey King¹

¹ University of Chicago

Author Note

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The authors made the following contributions. Lindsey King: Conceptualization, Writing - Original Draft Preparation, Writing - Review & Editing.

Correspondence concerning this article should be addressed to Lindsey King. E-mail: lindseyking@uchicago.edu

Abstract

12

13 One or two sentences providing a **basic introduction** to the field, comprehensible to a
14 scientist in any discipline. Two to three sentences of **more detailed background**,
15 comprehensible to scientists in related disciplines. One sentence clearly stating the **general**
16 **problem** being addressed by this particular study. One sentence summarizing the main
17 result (with the words “**here we show**” or their equivalent). Two or three sentences
18 explaining what the **main result** reveals in direct comparison to what was thought to be
19 the case previously, or how the main result adds to previous knowledge. One or two
20 sentences to put the results into a more **general context**. Two or three sentences to provide
21 a **broader perspective**, readily comprehensible to a scientist in any discipline.

22

Keywords: keywords

23

Word count: X

How Foreign Language Impacts Moral Decision Making

Introduction

Geipel, Hadjichristidis, and Surian (2015) tested the effects of foreign language on moral decision making, finding that participants were more consequentialist, or willing to take an action that may be unmoral to ultimately save a life, when they are asked in their foreign language. It is also seen that people are in general less consequentialist when presented with the footbridge dilemma compared to the original trolley dilemma. This is likely because of the increased involvement in the footbridge dilemma (having to physically push someone onto the train track) compared to the trolley dilemma (Greene et al., 2009). This involvement in the dilemma is tied to higher levels of emotion as well which has been shown to lead to less consequentialist choices in moral dilemmas (Huebner, Dwyer, & Hauser, 2009). Given this information, it is sensical that foreign language would lead to higher consequentialist responses. This is because we know that people are more rational and systematic and less emotional in their decision making in a foreign language (Cipolletti, McFarlane, & Weissglass, 2016; Costa et al., 2014).

Methods

Participants

Material

This is a replication of Study 1 in the paper by Geipel et al. (2015). The trolley problem originates from Thomson (1985) and is adapted to test moral decision making across language conditions.

Procedure

Data analysis

We used R (Version 4.3.2; R Core Team, 2023) and the R-packages *dplyr* (Version 1.1.3; Wickham, François, Henry, Müller, & Vaughan, 2023), *forcats* (Version 1.0.0; Wickham, 2023a), *ggplot2* (Version 3.4.4; Wickham, 2016), *ggsci* (Version 3.0.0; Xiao, 2023), *kableExtra* (Version 1.4.0; Zhu, 2024), *knitr* (Version 1.45; Xie, 2015), *lubridate* (Version 1.9.3; Grolemund & Wickham, 2011), *papaja* (Version 0.1.2; Aust & Barth, 2023), *purrr* (Version 1.0.2; Wickham & Henry, 2023), *readr* (Version 2.1.4; Wickham, Hester, & Bryan, 2023), *reshape2* (Version 1.4.4; Wickham, 2007), *scales* (Version 1.2.1; Wickham & Seidel, 2022), *stringr* (Version 1.5.1; Wickham, 2023b), *tibble* (Version 3.2.1; Müller & Wickham, 2023), *tidyr* (Version 1.3.0; Wickham, Vaughan, & Girlich, 2023), *tidyverse* (Version 2.0.0; Wickham et al., 2019), and *tinylabels* (Version 0.2.4; Barth, 2023) for all our analyses.

Assignment 10 plot markups

```
## Warning: Removed 2 rows containing missing values (`position_stack()`).

## Warning: Removed 2 rows containing non-finite values (`stat_smooth()`).

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric = parametric,
## : pseudoinverse used at 4.975

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric = parametric,
## : neighborhood radius 2.025

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric = parametric,
## : reciprocal condition number 1.1725e-15

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric = parametric,
## : There are other near singularities as well. 1
```

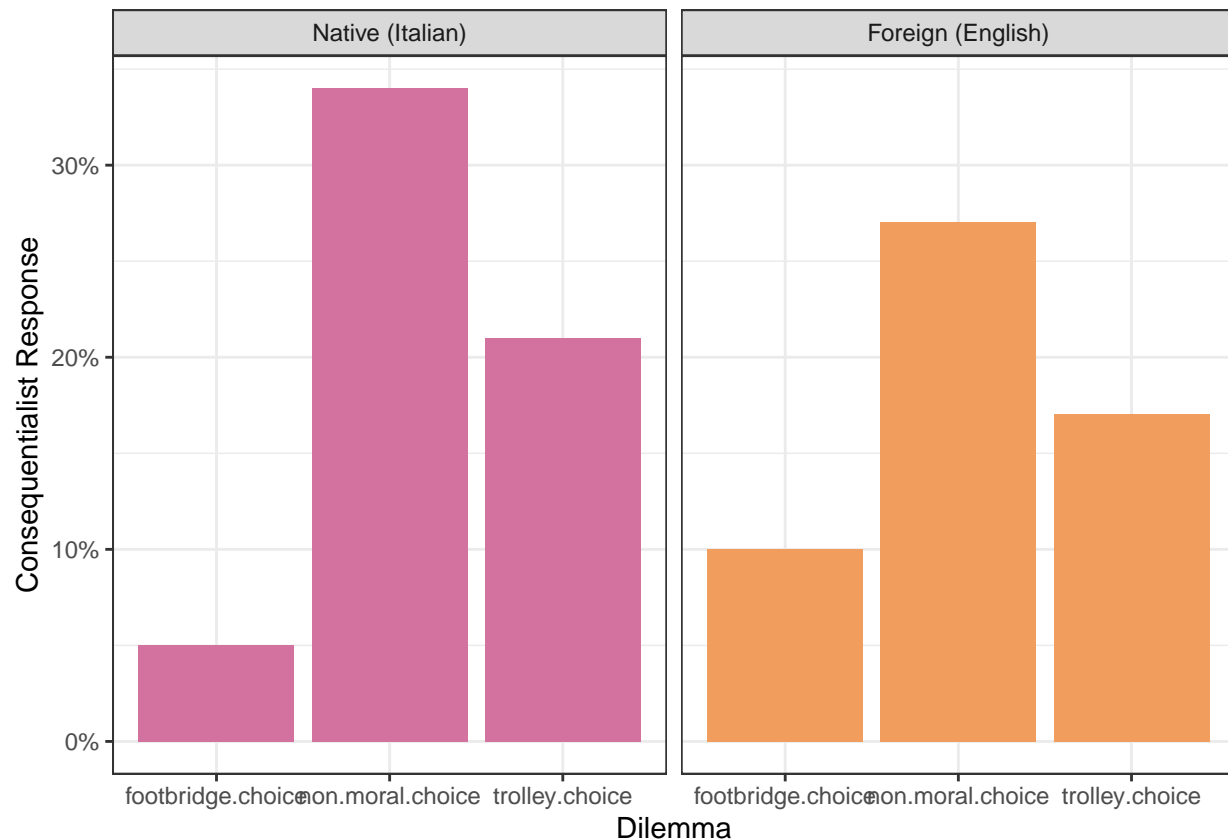


Figure 1. Italian versus English

```

68 ## Warning in predLoess(object$y, object$x, newx = if (is.null(newdata)) object$x
69 ## else if (is.data.frame(newdata))
70 ## as.matrix(model.frame(delete.response(terms(object))), : pseudoinverse used at
71 ## 4.975

72 ## Warning in predLoess(object$y, object$x, newx = if (is.null(newdata)) object$x
73 ## else if (is.data.frame(newdata))
74 ## as.matrix(model.frame(delete.response(terms(object))), : neighborhood radius
75 ## 2.025

76 ## Warning in predLoess(object$y, object$x, newx = if (is.null(newdata)) object$x
77 ## else if (is.data.frame(newdata))
78 ## as.matrix(model.frame(delete.response(terms(object))), : reciprocal condition

```

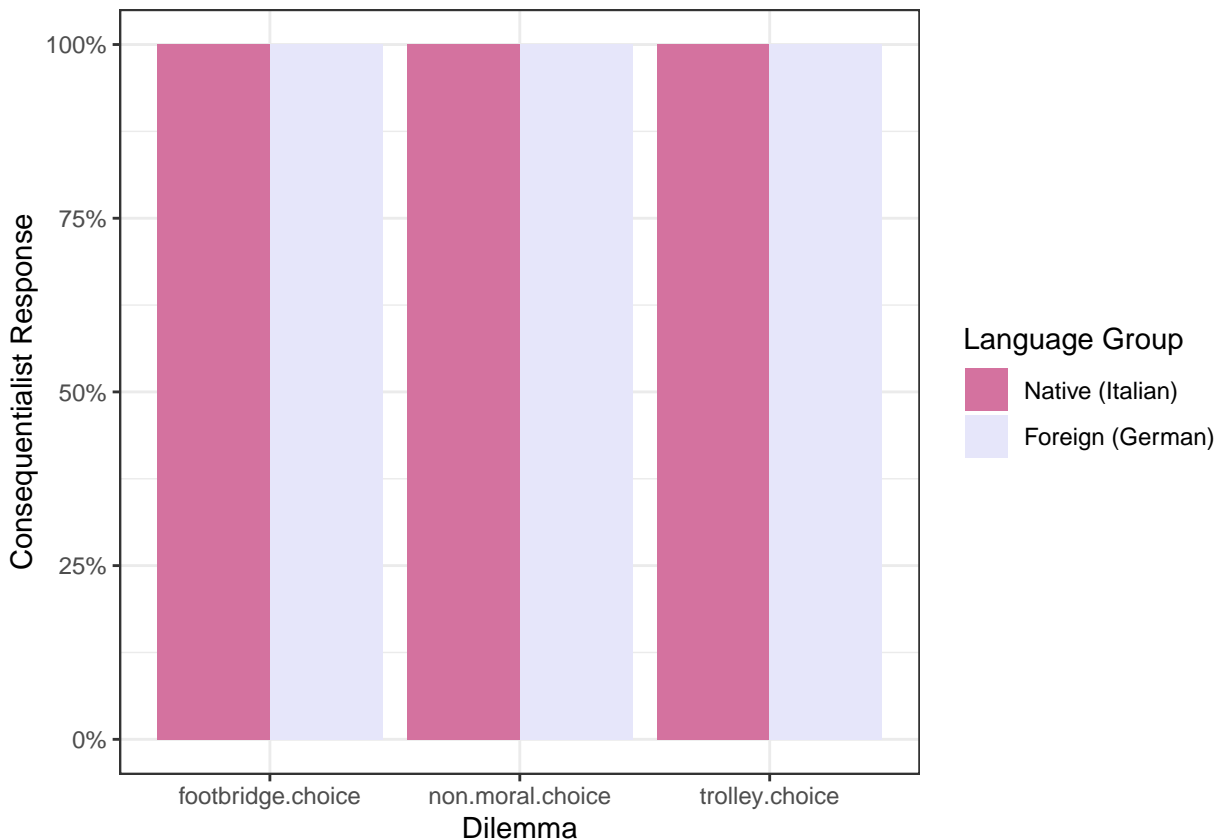


Figure 2. Italian versus German

```

79 ## number 1.1725e-15

80 ## Warning in predLoess(object$y, object$x, newx = if (is.null(newdata)) object$x
81 ## else if (is.data.frame(newdata))
82 ## as.matrix(model.frame(delete.response(terms(object))), : There are other near
83 ## singularities as well. 1

84 ## Warning: Removed 2 rows containing missing values (`geom_point()`).

```

85 Assignment 15 analysis plans

86 descriptive

87 summarized df of dilemma choices for each language condition

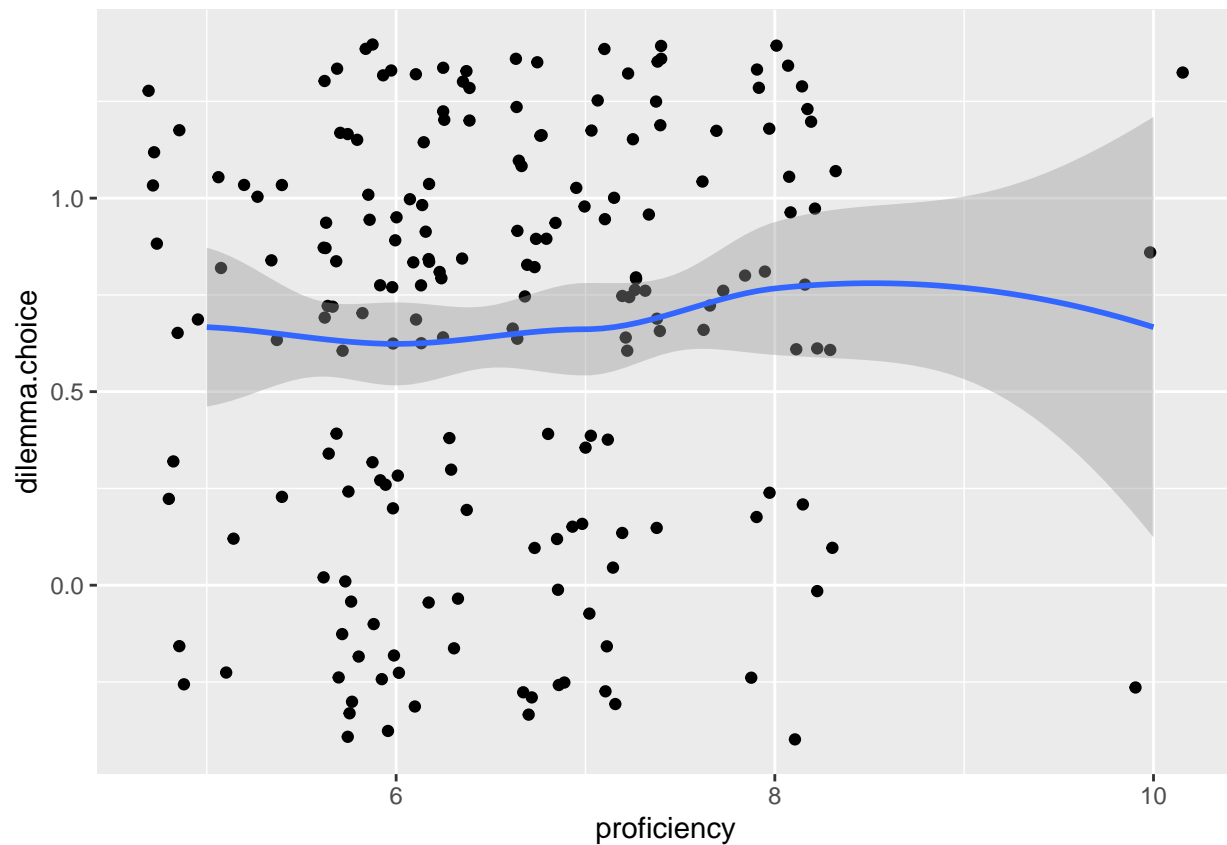


Figure 3. Proficiency of foreign language.

```

88 ## # A tibble: 9 x 5
89 ## # Groups:   language.group [3]
90 ##   language.group dilemma.type      mean median    sd
91 ##       <int> <chr>          <dbl>  <int> <dbl>
92 ## 1         1 footbridge.choice 0.128     0 0.339
93 ## 2         1 non.moral.choice 0.872     1 0.339
94 ## 3         1 trolley.choice   0.538     1 0.505
95 ## 4         3 footbridge.choice 0.432     0 0.502
96 ## 5         3 non.moral.choice 0.919     1 0.277
97 ## 6         3 trolley.choice   0.730     1 0.450
98 ## 7         5 footbridge.choice 0.370     0 0.492
99 ## 8         5 non.moral.choice 0.926     1 0.267

```

Table 1

Demographics With Consequentialist Means

Condition	N	Trolley Mean %	Footbridge Mean %	Non-Moral Mean %
Italian	39	54%	13%	87%
German	28	73%	43%	92%
English	36	61%	36%	93%

```
100 ## 9          5 trolley.choice    0.630      1 0.492
```

```
101 ## # A tibble: 3 x 4
```

```
102 ##   dilemma.type      mean median    sd
```

```
103 ##   <chr>          <dbl> <int> <dbl>
```

```
104 ## 1 footbridge.choice 0.301      0 0.461
```

```
105 ## 2 non.moral.choice  0.903      1 0.298
```

```
106 ## 3 trolley.choice    0.631      1 0.485
```

```
107                                     hypothesis test
```

```
108      ANCOVA for effect of language group on dilemma choice for each dilemma type
```

```
109 ## Anova Table (Type III tests)
```

```
110 ##
```

```
111 ## Response: value
```

```
112 ##           Sum Sq Df F value    Pr(>F)
```

```
113 ## (Intercept)    2.061   1 11.7114 0.000706 ***
```

```
114 ## language.group  1.014   1  5.7637 0.016960 *
```

```
115 ## dilemma.type   18.718   2 53.1918 < 2.2e-16 ***
```

```
116 ## Residuals      53.665 305
```

```
117 ## ---
```


118 ## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

119 Results

120 A significant effect of dilemma type on consequentialism across language conditions (p
 121 $< .001$) is seen showing that any differences in consequentialism are not due to
 122 misunderstanding in the foreign language. This is because we expect consequentialism to be
 123 highest in the non-moral dilemma ($\mu = 0.90$) and lowest in the footbridge dilemma ($\mu =$
 124 0.30) . This is because there is no moral dilemma in the non-moral dilemma and therefore no
 125 reason to not choose the consequentialist response where as the inverse is true for the
 126 footbridge dilemma. The trolley dilemma falls in the middle ($\mu = 0.63$). To understand
 127 these percentages better, they can be viewed in Figure 1 and Figure 2.

128 Table 1 shows the breakdown of the language categories as well as the mean
 129 consequentialism participants exhibited for the different dilemmas. There is a significant
 130 effect of language condition on consequentialism ($p = .017$).

131 Discussion

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