

The Power of Liberty in the American Workplace: Unveiling the Global Impact of Free Will Perceptions on Job Satisfaction*

Nowhere near done yet! We had significant issues with our last dataset and had to restart, so bare with us.

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First sentence. Second sentence. Third sentence. Fourth sentence.

1 Introduction

In recent years, the intersection between personal beliefs in free will and cognitive behavioral outcomes has emerged as a pivotal area of psychological inquiry. While the existence of free will is a highly theoretical and philosophical question, the belief in free will has undeniable effects on various other psychological constructs such as autonomy, meaningfulness, and self-efficacy ((baumeister2014?), (alquist2013?)). Despite the robustness of these relationships, there remain gaps in the literature of the specific dynamics of these effects and the generalizability in field settings. (feldman2017?) conducted a study investigating the effects of the belief in free will on job satisfaction and attempted to draw cross-cultural and longitudinal conclusions on the positive correlation between the belief in free will and job satisfaction.

They executed three distinct studies: the first with real estate agents in Taiwan over three months, the second involving American workers over six months using Amazon Mechanical Turk, and the third utilizing a large cross-cultural sample from the World Values Survey encompassing 16 countries. This multifaceted approach allowed them to assess the generalizability of free will beliefs as predictors of job satisfaction across various cultural contexts and professional environments, providing a robust examination of how these beliefs influence job satisfaction over time.

*Code and data are available at: https://github.com/samielsabri/freewill_analysis. SSRP replication available at: <https://www.socialsciencereproduction.org/reproductions/94caaeaf-7e11-4efa-9269-7729fc2e0837/index>

Utilizing the same dataset and a similar methodology to Feldman et al. (2017), we aim to replicate their results in the context of the United States, a very heterogenous country that is characterized by a high importance of individualist, but also cultural diversity and socioeconomic inequality. While Feldman et al. did investigate the relationship between the belief in free will and job satisfaction in the United States, they did not integrate these results to the cross-cultural analysis, as the US were not included in the sample of 16 countries. This paper, therefore, seeks to fill this gap and reproduce these aspects of the Feldman et al. paper: (1) the relationship between the belief in free will and job satisfaction applies to the context of American adults working at Amazon Mechanical Turk (2) free will is a significant predictor of job satisfaction at the national-level, using the World Values Survey. We will also consider whether there are any significant differences between the national-level data and the Amazon Mechanical Turk data. The estimand is the correlation between the belief in free will and job satisfaction. Our reproduction was conducted using the statistical programming language R (R Core Team (2022)). In the data analysis and visualization process, we also made use of the following R packages: tidyverse ((**citetidyverse?**)), dplyr ((**citedplyr?**)), knitr ((**citekknitr?**)), kableExtra ((**citekExtra?**)), and countrycode ((**citecc?**)).

We begin our paper with a closer look at the data source and measurement (Section 2), followed by a selection of relevant results (Section 3). Finally, we will conclude with a discussion of our findings to integrate our replication with the original paper by (**feldman2017?**) and the broader literature on free will beliefs. We will also discuss potential ethical biases, limitations, and future directions. This shift towards recognizing and nurturing free will beliefs could serve as a key lever for boosting job satisfaction, employee engagement, and organizational performance across the United States. ### TALK ABOUT FINDINGS HERE###

2 Data

2.1 Source

Dataset Overview:

Introduction to the Dataset: Start by providing a brief overview of the dataset(s) used, including the source (e.g., Amazon Mechanical Turk, World Values Survey) and the rationale for selecting these datasets for replication. Scope and Scale: Mention the size of the dataset, the number of participants, and the time frame covered by the data collection. ## Measurement {#sec-measurement} Variables Description:

Dependent Variable(s): Describe the main variable of interest, job satisfaction, including how it was measured or operationalized in the dataset. Independent Variable(s): Explain the measurement of free will beliefs and any other relevant variables that were analyzed as predictors or controls in the study (e.g. job autonomy, self-efficacy etc.)

Table 1: Cronbach Alpha Reliability Coefficients for Psychological Constructs measured in Feldman et al. (2017)

Rows	Reliability.Coefficient
Job Satisfaction (T1)	0.79
Job Satisfaction (T2)	0.84
Belief in Free Will (T1)	0.88
Job Autonomy (T1)	0.83
Job Autonomy (T2)	0.85
Locus of Control	0.61
Implicit Beliefs	0.90
Self-Esteem	0.92
Self-Efficacy	0.90
Self-Control	0.88

Covariates and Controls: If applicable, detail any additional variables used as controls or covariates in your analysis, such as demographic information, employment characteristics, or cultural factors.

GO INTO GREAT DETAIL WITH MEASUREMENT!

In order to assess the internal validity and reliability of the psychological constructs measured in (feldman2017?), we verified the Cronbach-Alpha reliability coefficients based on the raw dataset. As shown in Table 1, we were able to successfully replicate the coefficients for most constructs. The only deviation is with the trait locus of control, which has a coefficient = .58 in (rotter1966?), but 0.61 in our replication, indicating even greater confidence that the survey questions indeed measure the underlying construct.

2.2 Data Characteristics

The original research survey data published by (feldman2017?) did not require any further data cleaning. Using the aforementioned constructs which are derived from their respective set of survey questions, we were able to replicate all the means and standard deviations, as seen in Table 2.

The World Values Survey dataset needed some additional cleaning steps, filtering for certain variables of interest and only for surveys based in the United States of America. See Table 3 for summary statistics of selected psychological constructs.

Summary Statistics and Initial Observations:

Descriptive Statistics: Provide summary statistics for the main variables, including means, standard deviations, and ranges. This gives readers a sense of the data’s central tendencies and variability. Visualizations: Include graphs or tables that offer an initial view of the data,

Table 2: Summary Statistics for Psychological Constructs measured in Feldman et al. (2017)

Variable	Mean	SD
Age	34.77	10.60
Job Satisfaction (T1)	4.97	1.05
Job Satisfaction (T2)	4.93	1.22
Belief in Free Will (T1)	4.98	0.72
Job Autonomy (T1)	5.61	1.11
Job Autonomy (T2)	5.65	1.18
Locus of Control	6.89	2.47
Implicit Beliefs	3.03	1.04
Self-Esteem	5.29	1.25
Self-Efficacy	6.07	0.96
Self-Control	3.48	0.77

Table 3: Summary Statistics for selected Psychological Constructs measured in the World Values Survey USA, 1981-2017

Variable	Mean	SD
Age	45.28	17.67
Belief in Free Will	7.65	1.94
Job Satisfaction	7.84	1.88
Job Autonomy	7.35	2.37
Pride in Job	2.87	0.36
Belief in Fate	3.91	2.05

such as distributions of job satisfaction and free will beliefs. Discuss any notable patterns or preliminary observations. Comparative Analysis (if applicable):

Comparison with Original Study: If you have access to summary statistics or data visualizations from the Feldman et al. study, briefly compare those findings with your dataset to highlight similarities or differences. Rationale for Differences: Discuss any expected or surprising differences in the data between the original study and your replication effort, potentially attributable to cultural or temporal differences.

3 Results

3.1 Amazon Mechanical Turk Sample

In exploring free will beliefs and their impact on job satisfaction in the context of American Amazon Mechanical Turk workers, our study replicates and extends Feldman et al.'s results. As seen in Figure 1, most variables are significantly correlated with each other, with the highest correlations being unsurprisingly between the two measurements of Job satisfaction. Locus of control lacks any significant correlations, which together with its low reliability coefficient designates it as a less decisive control variable. The most important relationship, however, is between free will beliefs and job satisfaction: The belief in free will was significantly positively correlated with job satisfaction both at Time 1 ($r = 0.31$, $p < .001$, CI [0.18, 0.43]) and at Time 2 ($r = 0.3$, $p < .001$, CI [0.14, 0.43]). However, this correlation is not as strong as the one between free will beliefs and job autonomy ($r = 0.46$, $p < .001$, CI [0.35, 0.56]). This supports the claim that job autonomy may be the most important mediating variable between free will beliefs and job satisfaction. Moreover, a step-wise multiple regression on job satisfaction with all psychological agency constructs (full results in `?@sec-apx-stepwise`) confirmed that the effect of free will beliefs on job satisfaction is robust and the strongest relative impact, even when controlling for other agency constructs (Time 1: $p < 0.034$; Time 2: $p < 0.031$).

The replication of study 2 of (feldman2017?) supports the claim that there is a direct positive correlation between the belief in free will and job satisfaction over time and controlling for other psychological agency constructs.

3.1.1 Demographic Factors

Figure 2 shows that there are slight differences in the median belief in free will among the age groups. However, these differences were not found to be statistically significant, as shown using ANOVA ($F(4, 204) = 1.886$, $p = .114$), even when collapsing individuals over 50 into one age group ($F(3, 205) = 2.08$, $p = .257$). Similarly, using linear regression with Age Group as an interaction term, we do not observe a significant effect of age on the relationship between the belief in free will and job satisfaction.

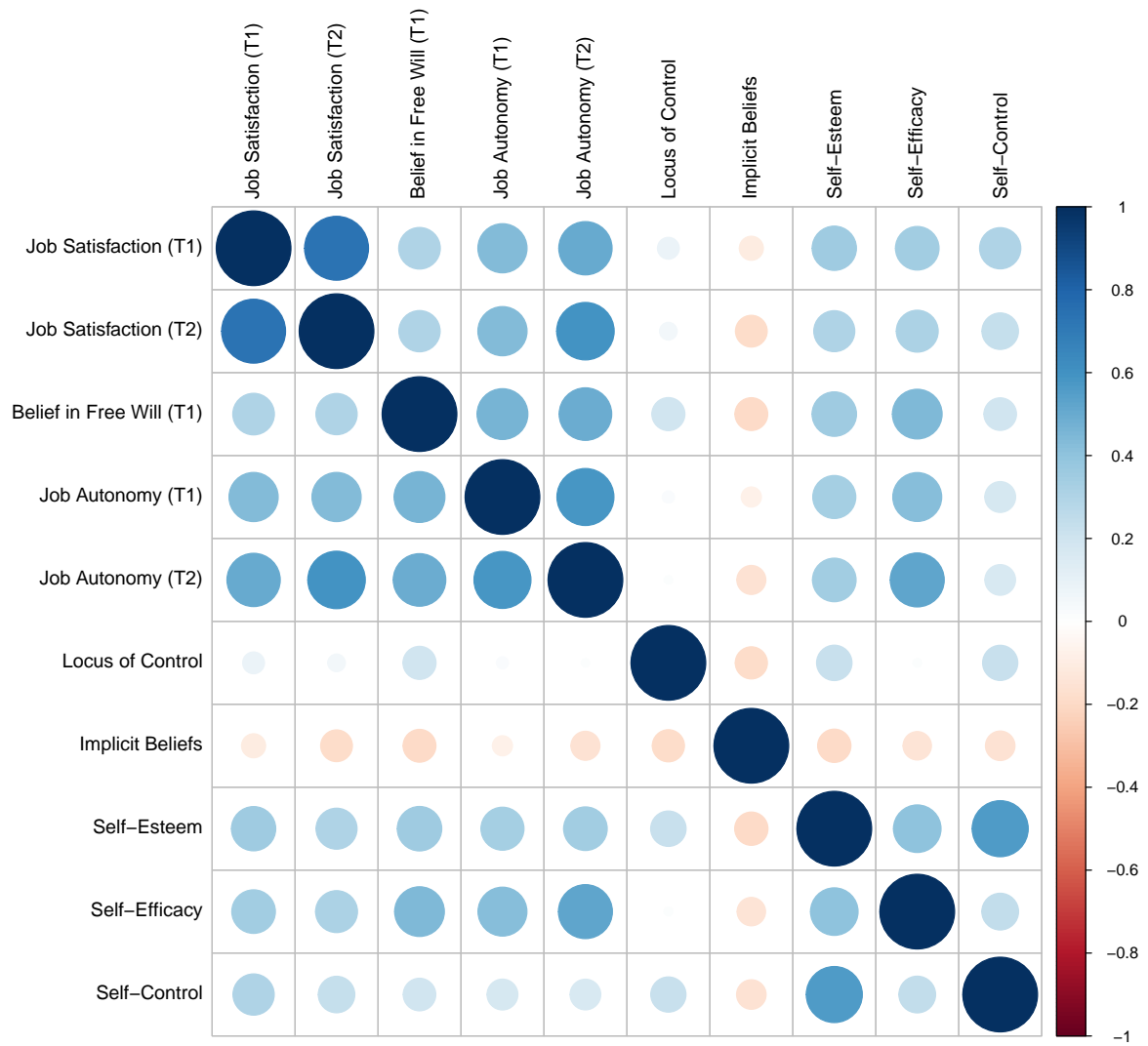


Figure 1: Correlation Matrix for Psychological Constructs measured in Study 2 of Feldman et al. (2017)

Looking at sex (Figure 3), on the other hand, we observe a significant difference in the belief in free will, with women having on average higher ratings of believing in free will ($p < 0.05$). However, the effect of sex on the relationship between free will beliefs and job satisfaction has not been found to be significant ($p = 0.58$).

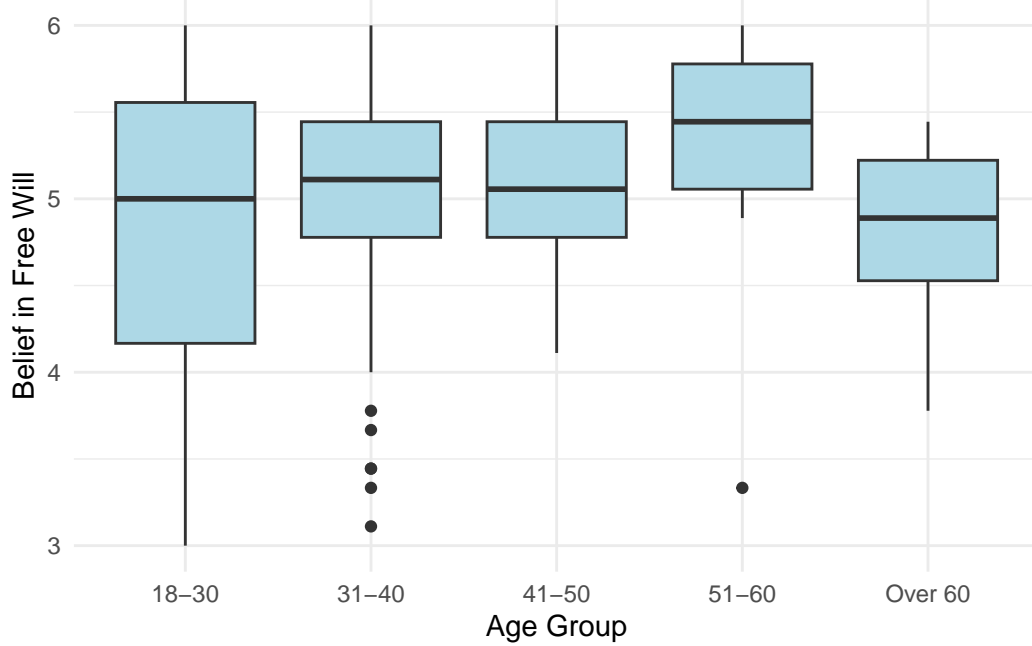


Figure 2: Belief in free will among US-American Amazon Mechanical Turk Workers by Age Group

3.2 National Sample (WVS)

As shown in Figure 4, the results of the national-level World Values Survey also show a positive correlation between free will beliefs and job satisfaction ($r = 0.27$, $p < .001$, CI [0.21, 0.32]). Similarly, job autonomy is highly correlated with job satisfaction ($r = 0.55$, $p < .001$, CI [0.51, 0.59]) and with free will beliefs ($r = 0.21$, $p < .001$, CI [0.15, 0.26]). Since we created these psychological constructs based on single-item questions of the World Values Survey, internal validity and reliability cannot be guaranteed as concretely as with the Amazon Mechanical Turk survey sample. However, the construct ‘Belief in Fate’ negatively correlated with the belief in free will, as expected ($r = -0.32$, $p < .001$, CI [-0.37, -0.27]). Similarly, the construct ‘Pride in Job’ is positively correlated with all other variables except for the belief in fate, as expected.

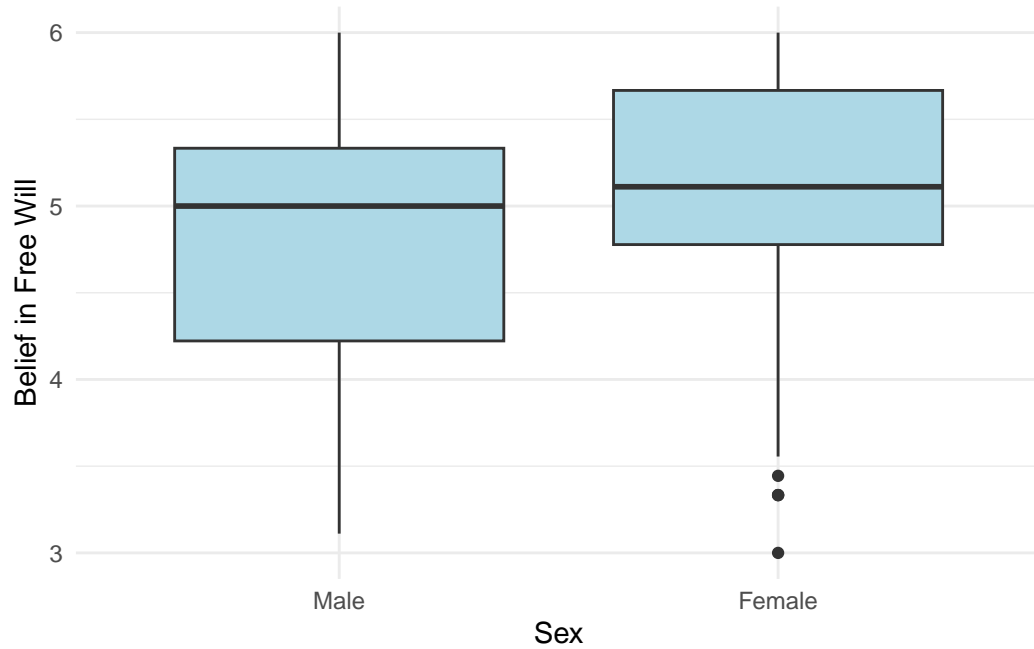


Figure 3: Belief in free will among US-American Amazon Mechanical Turk Workers by Sex

Table 4: Correlations Between Belief in Free Will and Job Satisfaction by Country in the World Values Survey

3.2.1 Comparison to other countries

Compared to the 16 countries sampled in (feldman2017?), the United States has a relatively high average belief in free will, coming second just after Mexico (Table 4). While the correlation between the belief in free will and job satisfaction is not as high as in Mexico, it is still one of the stronger significant correlations in the sample of countries.

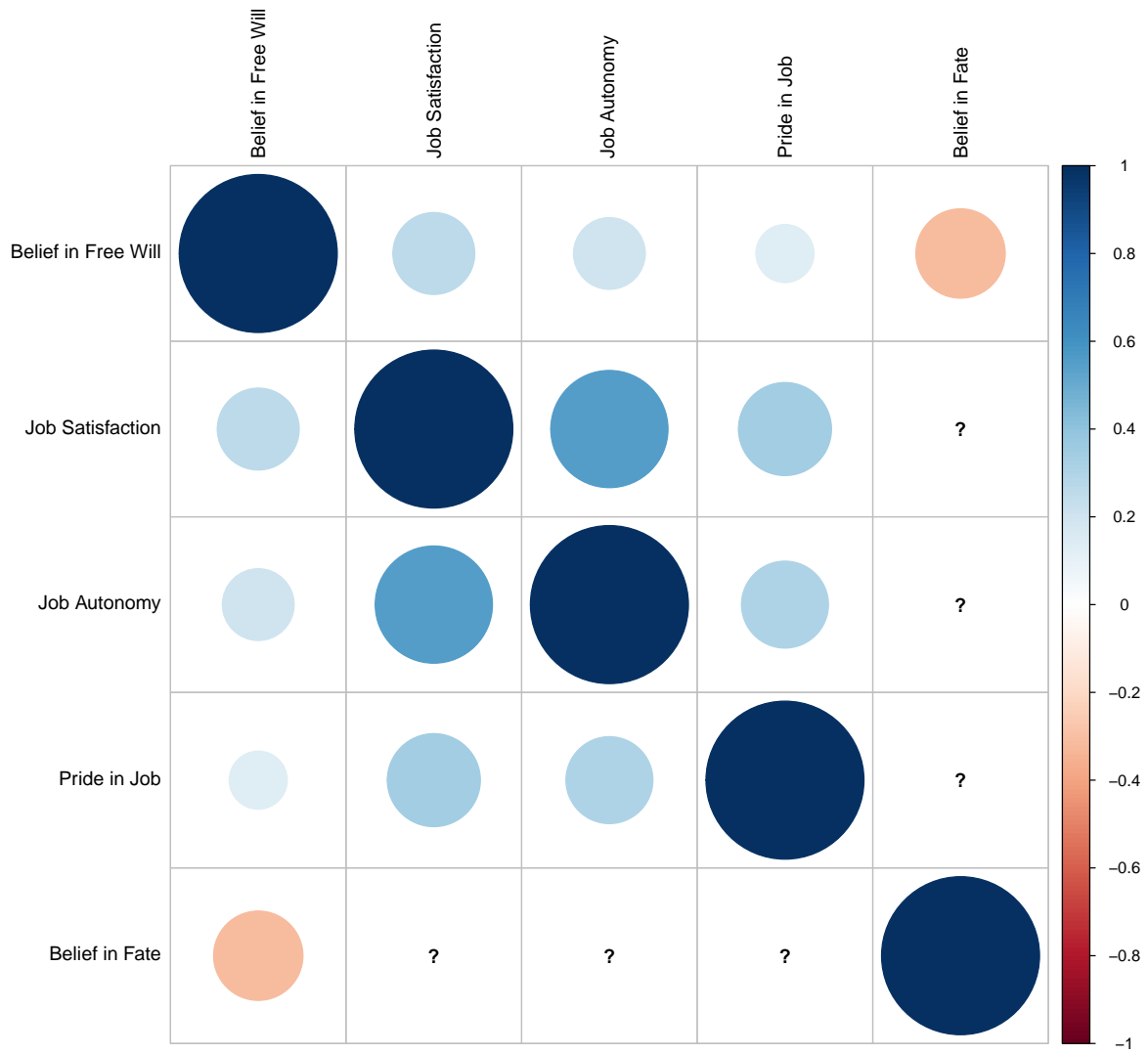


Figure 4: Correlation Matrix for selected Psychological Constructs measured in World Values Survey USA 1981-2017

4 Discussion

4.1 First discussion point

If my paper were 10 pages, then should be at least 2.5 pages. The discussion is a chance to show off what you know and what you learnt from all this.

4.2 Second discussion point

4.3 Third discussion point

4.4 Weaknesses and next steps

Weaknesses and next steps should also be included.

A Appendix {sec-appendix}

A.1 Step-Wise regression results {sec-apx-stepwise}

Call:

```
lm(formula = `Job Satisfaction (T1)` ~ `Belief in Free Will (T1)` +  
  `Self-Esteem` + `Self-Efficacy` + `Self-Control`, data = satisfaction_data_usa_rel)
```

Residuals:

Min	1Q	Median	3Q	Max
-3.4582	-0.5470	0.0476	0.6568	1.8544

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	1.31316	0.54930	2.391	0.0177 *
`Belief in Free Will (T1)`	0.22395	0.10491	2.135	0.0340 *
`Self-Esteem`	0.11592	0.06916	1.676	0.0952 .
`Self-Efficacy`	0.19671	0.07975	2.466	0.0145 *
`Self-Control`	0.21166	0.10348	2.046	0.0421 *

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

Residual standard error: 0.9502 on 204 degrees of freedom

Multiple R-squared: 0.2037, Adjusted R-squared: 0.1881

F-statistic: 13.05 on 4 and 204 DF, p-value: 1.765e-09

Analysis of Variance Table

Response: Job Satisfaction (T1)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
`Belief in Free Will (T1)`	1	22.225	22.2249	24.6177	1.471e-06 ***
`Self-Esteem`	1	15.404	15.4036	17.0620	5.276e-05 ***
`Self-Efficacy`	1	5.712	5.7124	6.3274	0.01266 *
`Self-Control`	1	3.777	3.7775	4.1842	0.04209 *
Residuals	204	184.172	0.9028		

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

	2.5 %	97.5 %
(Intercept)	0.230134717	2.3961939
`Belief in Free Will (T1)`	0.017094543	0.4307973

`Self-Esteem`	-0.020432681	0.2522816
`Self-Efficacy`	0.039461855	0.3539552
`Self-Control`	0.007643193	0.4156790

Call:

```
lm(formula = `Job Satisfaction (T2)` ~ `Belief in Free Will (T1)` +
  `Self-Efficacy` + `Self-Control` + `Implicit Beliefs`, data = satisfaction_data_usa_rel)
```

Residuals:

Min	1Q	Median	3Q	Max
-3.7890	-0.6493	0.0428	0.8378	3.1252

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	1.56316	0.90754	1.722	0.0873 .
`Belief in Free Will (T1)`	0.32663	0.14957	2.184	0.0307 *
`Self-Efficacy`	0.22907	0.10528	2.176	0.0313 *
`Self-Control`	0.22238	0.12459	1.785	0.0766 .
`Implicit Beliefs`	-0.13326	0.09328	-1.429	0.1555

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

Residual standard error: 1.127 on 132 degrees of freedom

(72 observations deleted due to missingness)

Multiple R-squared: 0.1743, Adjusted R-squared: 0.1493

F-statistic: 6.967 on 4 and 132 DF, p-value: 4.04e-05

Analysis of Variance Table

Response: Job Satisfaction (T2)

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
`Belief in Free Will (T1)`	1	18.839	18.8394	14.8332	0.0001824 ***
`Self-Efficacy`	1	9.066	9.0663	7.1383	0.0084959 **
`Self-Control`	1	4.899	4.8995	3.8576	0.0516227 .
`Implicit Beliefs`	1	2.592	2.5921	2.0409	0.1554826
Residuals	132	167.651	1.2701		

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

	2.5 %	97.5 %
(Intercept)	-0.23204821	3.35836168

`Belief in Free Will (T1)`	0.03076256	0.62249538
`Self-Efficacy`	0.02081595	0.43733271
`Self-Control`	-0.02407474	0.46883202
`Implicit Beliefs`	-0.31778237	0.05125864

References

R Core Team. 2022. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. <https://www.R-project.org/>.

Country Name	FW Mean	Correlation	n
Mexico	7.78	0.42	7726
United States	7.61	0.27	8065
Brazil	7.46	0.16	4380
Switzerland	7.36	0.22	3810
Argentina	7.33	0.21	5058
Chile	7.17	0.23	4645
China	7.06	0.32	5204
South Africa	7.03	0.34	12933
Nigeria	6.93	0.19	4963
South Korea	6.74	0.23	4471
Spain	6.69	0.23	4927
Poland	6.48	0.15	1858
India	6.36	0.28	7533
Czechia	6.29	0.11	2033
Slovakia	6.26	0.15	1526
Russia	6.25	0.19	5738
Japan	5.78	0.17	5212

Note:

FW Mean = National Average of the Belief in Free Will