



Center for Research in Economics, Management and the Arts

Guiltily Indebted? How a Word Can Affect Individual Borrowing

Working Paper No. 2019-03

CREMA Südstrasse 11 CH - 8008 Zürich www.crema-research.ch

Guiltily Indebted? How a Word Can Affect Individual Borrowing*

Tamara Bogatzki^a

David Stadelmann^{a,b,c}

Benno Torgler^{b,c,d}

May 2019

Abstract

Using World Values Survey data, we show that individuals whose primary language uses the same word for (financial) debt and (moral) guilt have a statistically significant and economically relevant lower probability of borrowing money. This relation holds even when we control for a large array of covariates, fixed effects, grammatical future tense reference, and Germanic language family.

Keywords: economics of language; debts; borrowing; behaviour

JEL Classification: D14, D83, Z13.

Length: 1763 words (including references)

* We would like to thank the participants of the Workshop on Political Economy organized by Indiana University and the University of Bayreuth. We also thank Reiner Eichenberger and Gerhard Glomm, and Gustavo Torrens for thoughtful comments.

^a University of Bayreuth, Bayreuth, Germany. Corresponding author: David Stadelmann, david.stadelmann@uni-bayreuth.de

^b CREMA – Center for Research in Economics, Management and the Arts, Zurich, Switzerland.

^c Centre for Behavioural Economics, Society and Technology (BEST). Queensland University of Technology, Brisbane, Australia

^d School of Economics and Finance, Queensland University of Technology, Brisbane, Australia.

I. INTRODUCTION

In German, as in several other languages, the word *Schuld* (“debt”) also means “guilt”, “blame” or “fault”, imbuing the act of incurring financial debt with an intimation of moral wrong, of guilt disproportionate to merely taking possession of financial capital with a promise of future return.¹ It is thus rational to hypothesize that this direct semantic association between (financial) debt and (moral) guilt may affect individual borrowing behaviour, perhaps even leading to a lower probability of borrowing money because of a higher reluctance to incur debt. In fact, despite weakening empirical support for the prominent Sapir-Whorf hypothesis of language’s influence on individual thought and behaviour (see, e.g., Pütz and Verspoor 2000),² economists have become interested in the “economics of language” (Ginsburgh and Weber 2011), not only for its possible effect on behaviour but also regarding the relevance of single words (Farrow et al. 2018).

At the same time, measures for linguistic diversity and fractionalization have become firmly entrenched in both the economics of trade and migration, and the analysis of human capital investment (Feldmann 2019). In particular, evidence on individual borrowing behaviour indicates that speakers of languages which distinguish grammatically between present and future events (i.e., employ future time reference) take fewer future-oriented actions, including borrowing and saving, possibly because the future feels more distant (Chen 2013; Sutter et al. 2015). We add to this literature by using World Value Survey (WVS) data on different language speakers to provide evidence that even when confounding factors are controlled for, there is a marked relation between the word for “debt”, its additional meanings and connotations, and individual borrowing behaviour.

¹ According to Google Translator (accessed March 22, 2019), *Schuld* translates as debt, guilt, blame and fault (<https://translate.google.com/#view=home&op=translate&sl=en&tl=de&text=debt%2C%20guilt%2C%20blame%20and%20fault>).

² We acknowledge resistance and justified doubt among linguists about the Sapir-Whorf hypothesis and its possible variations (see Gentner and Goldin-Meadow 2003 for various stances on the topic).

II. DATA AND ESTIMATION STRATEGY

Data

Our data set includes individual level data on WVS respondents from 91 countries across four waves between 1994 and 2014 (Inglehart, et al. 2014). Because these waves report the languages spoken at home, we are able to use country fixed effects to compare the borrowing behaviour of different language speakers, a dependent variable measured based on responses to the following question: “During the past year, did your family: 1: Save money; 2: Just get by; 3: Spent some savings; 4: Spent savings and borrowed money?”. We recode these responses as the binary variable *Borrowed* by combining 3 and 4 as an indicator that spending/borrowing took place (with 1 and 2 signalling that it did not).³

The main independent variable of interest is dichotomous and takes the value 1 if the word for “debt” in the language spoken by the respondent at home is also used to mean “guilt”, “blame” or “fault” (hereafter, debt/guilt synonymity; *Debt = Guilt*). After employing Google Translate to code 96 languages that span the vast majority of global citizens (see Table A1), we double-check the translation quality using two widely translated texts: a passage on financial debt from an official EU document and an excerpt from Harry Potter that mentions guilt and fault. Building on Chen (2013), we include the following covariates as potential confounding factors: employment status, immigrant status, trust (Most people can be trusted = 1; Need to be very careful = 0), valuing family (Very important 4; Not at all important = 1), valuing savings (Mentioned = 1; Not mentioned = 0), valuing responsibility (Mentioned = 1; Not mentioned = 0), age, sex, income, education, marriage and number of children. We also account for whether the home language has a future tense reference that may affect future-oriented actions (Chen 2013; Sutter et al. 2015) and whether it belongs to the Germanic language family.

³ Coding only answer 4 as *Borrowed* yields qualitatively identical and quantitatively similar results (see Online Appendix, Table A4)

Estimation Strategy

To test for any link between individual borrowing behaviour and debt/guilt synonymy, we estimate the following conditional fixed-effects logistic regression (logit model, Λ) for individual i in wave t in a repeated cross-section:

$$P(\text{Borrowed}_{it}) = \Lambda(\alpha + \beta_1(\text{Debt} = \text{Guilt})_{it} + \beta_2(\text{Future Tense Reference})_{it} + \mathbf{X}_{it}\boldsymbol{\beta}_3 + (\mathbf{F}_{it}^I \times \mathbf{F}_{it}^H \times \mathbf{F}_t^C)\boldsymbol{\beta}_4)$$

Here, the coefficient β_1 captures the link between debt/guilt synonymy (i.e., $\text{Debt} = \text{Guilt}$) and borrowing behaviour when controls account for both future tense reference and individual characteristics (\mathbf{X}_{it}). To be congruent with the literature, our regressions also include a set of individual fixed effects (\mathbf{F}_{it}^I) considered exogenous to individual choice; in particular, sex, age, household level characteristics (\mathbf{F}_{it}^H) and country/wave fixed effects (\mathbf{F}_t^C) and their interactions.⁴

III. DEBTS AS GUILT REDUCES INDIVIDUAL BORROWING

As Figure 1 shows, our analysis reveals around a 30 percent lower unconditional probability of borrowing money during the past year for speakers of debt/guilt synonymous languages (e.g., German) relative to others (e.g., English speakers). This observation is reinforced in Table 1, in which the odds ratio for all specifications is below unity, statistically significant and between 0.6-0.7, thereby confirming the link between debt/guilt synonymy and a lower likelihood of borrowing. Speakers of non-debt/guilt synonymous languages, in contrast, have about a 1.5 greater likelihood of having borrowed money in the past year.

⁴ Chen (2013) demonstrates the ability of such an interaction model to compare the borrowing behavior of individuals in one category (e.g., female college graduates living in Switzerland) based on language variation.

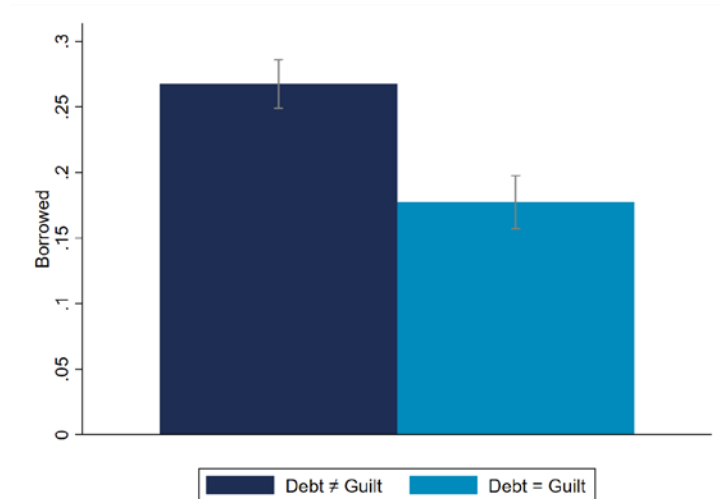


Figure 1: Association between debt/guilt synonymy and lower borrowing
($n = 214,234$)

Having accounted for country and wave fixed effects in specification (1) and introduced individual attributes in specification (2), we include an indicator for whether or not the language has *Future Tense Reference* in specification (3). Although the odds ratio above unity is not statistically significant for this future tense reference, that for debt/guilt synonymous languages remains statistically significant for our key independent variable of *Debt=Guilt*. Next, to ensure that these results are not being driven by other factors, in specifications (4) and (5), we add in several covariates that might be related to borrowing behaviour and language, including being unemployed or an immigrant. Not only do these factors not appear to be driving the outcomes, but including variables on trust and the importance of family also has no effect on the odds of our key independent variable *Debt=Guilt*. Likewise, controlling for attitudes on the importance of teaching children to save or be responsible has no effect on either the *Debt = Guilt* odds ratio or the significance level. Lastly, we conduct a diverse set of robustness tests (see the Online Appendix) that confirm the results of Table 1: (1) We analyse countries whose majority language is Germanic (see Table A2); (2) we show the variable *Future Tense Reference* to be statistically significant once immigrants are excluded from the sample (see Table A3) while *Debt=Guilt* remains statistically significant too; (3) we reconfirm the results for a recoding of the dependent binary variable, where *Borrowed* equals unity only

in case the respondent reported category 4, i.e. having spent savings and having borrowed money, and zero otherwise (see Table A4).

	(1)	(2)	(3)	(4)	(5)
Dependent variable: Borrowed					
<i>Debt = Guilt</i>	0.752	0.683	0.703	0.677	0.677
	[0.042]***	[0.066]***	[0.050]***	[0.057]***	[0.057]***
Future tense reference			1.306	1.345	1.346
			[0.262]	[0.291]	[0.292]
Germanic language spoken				0.842	0.842
				[0.126]	[0.126]
Unemployed				1.274	1.275
				[0.048]***	[0.048]***
Immigrant				1.144	1.144
				[0.087]*	[0.087]*
Trust				0.92	0.92
				[0.032]**	[0.032]**
Family is important				0.923	0.922
				[0.031]**	[0.031]**
Teaching children to save is important					1.008
					[0.026]
Teaching children responsibility is important					1.015
					[0.028]
Fixed effects:					
<i>Country x Wave</i>	Yes	Yes	Yes	Yes	Yes
<i>Age x Sex</i>	No	Yes	Yes	Yes	Yes
<i>Income x Education</i>	No	Yes	Yes	Yes	Yes
<i>Married x Number of Children</i>	No	Yes	Yes	Yes	Yes
Interactions of all fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	214234	42777	42363	38076	38071
Pseudo R ²	0.0503	0.0005	0.0008	0.0030	0.0030

Notes: The table reports conditional (fixed-effect) logistic regression estimates and odd ratios for the full sample. Robust standard errors clustered at the country level are given in brackets. The symbols *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

Table 1: The link between debt/guilt synonymy and individual borrowing

IV. CONCLUSIONS

The above evidence that speakers of debt/guilt synonymous languages are less likely to borrow money – and thus to incur financial debt – is noteworthy in that it holds even when we control for a broad range of potentially confounding factors. It thus underscores the

potential for even a single word to affect individual behaviour in economically relevant decisions.

Nonetheless, although the association is notable, it would be misleading to interpret our results as causal in the sense the word *causal* is employed by some economists today because of the multifaceted complexity of language. For example, just as the German financial term *Schuld* (“debt”) taken out of context is indistinguishable from its moral equivalent *Schuld* (“guilt”), these two terms can also be linked in other languages. In English, for instance, a debt is a financial *liability*, an *obligation* or *burden*, whose reimbursement is a *duty* or *commitment* requiring *responsibility* that when unmet is associated with *guilt*.⁵ Thus, debt and guilt need not be seen as categorically different even in English. Nevertheless, given our results and the social importance of financial debt, economists should continue exploring the established association between word use and meaning, and economic behaviour.

REFERENCES

- Chen, M. K. (2013). The effect of language on economic behavior: Evidence from savings rates, health behaviors, and retirement assets. *American Economic Review* 103(2), 690–731.
- Farrow, K., G. Grolleau, and N. Mzoughi (2018). What in the word! The scope for the effect of word choice on economic behavior. *Kyklos* 71(4), 557–580.
- Feldmann, H. (2019). Do linguistic structures affect human capital? The case of pronoun drop. *Kyklos* 72(1), 29–54.
- Gentner, D. and S. Goldin-Meadow (Eds.) (2003). *Language in mind: Advances in the study of language and thought*. MIT Press, Cambridge MA.
- Ginsburgh, V. and S. Weber (2011). *How many languages do we need? The economics of linguistic diversity*. Princeton University Press, Princeton.
- Inglehart, R. et al. (2014). World values survey. All Rounds - Country-Pooled Datafile Version, accessed November 2017, <http://www.worldvaluessurvey.org/WVSDocumentationWVL.jsp>, Madrid: JD Systems Institute.

⁵ On Thesaurus.com (accessed February 1, 2019), a search beginning with word “debt” leads through the above chain of synonyms and eventually to “guilt”.

Pütz, M. and M. Verspoor (2000). *Explorations in linguistic relativity*, Volume Current Issues in Linguistic Theory, 199. John Benjamins Publishing, Amsterdam.

Sutter, M., S. Angerer, D. Rützler, and P. Lergepöcher (2015). The effect of language on economic behavior: Experimental evidence from children's intertemporal choices. CESifo Working Paper Series No. 5532, CESifo, Munich.

ONLINE APPENDIX

Afrikaans	Finnish	Kurdish/Esid	Shona
Albanian	French	Lao	Sindhi
Amharic	Gallegan	Latvian	Slovak
Arabic	Georgian	Lithuanian	Slovenian
Armenian	German	Macedonian	Sotho, Southern, Ssesotho
Azerbaijani	Greek	Malay	Spanish; Castilian
Bambara	Gujarati	Malayalam	Sundanese
Basque	Hausa	Maltese	Suomea
Belarusian	Hausa	Mandarin	Swahili; Kiswahili
Belarusian	Hindi/Hindu	Maori	Swedish
Bemba	Hungarian	Marathi	Taiwanese
Bengali	Igbo	Nepali	Tamil
Bengali	Igbo	Nepali	Telegu
Bosnian	India: Oriya	Norwegian	Thai
Bulgarian	Indonesian	Nyanja	Turkish
Cantonese	Italian	Persian	Turkish
Catalan; Valencian	Italian	Polish	Ukrainian
Chinese	Japanese	Portuguese	Urdu
Croatian	Javanese	Pushto	Uzbek
Czech	Kannada	Romanian	Vietnamese/Kiinaa
Dutch; Flemish	Khmer	Russian	Xhosa
English	Kirghiz	Russian	Yoruba
Estonian	Korean	Serbian	Yoruba
Farsi	Kurdish	Serbo-Croatian	Zulu

Notes: Languages in which the word for debt can also mean guilt, blame or fault are in **bold**.

Table A1: Languages analysed

	(1)	(2)	(3)	(4)	(5)
Dependent variable: Borrowed					
<i>Debt = Guilt</i>	0.603	0.303	0.300	0.384	0.365
	[0.186]	[0.147]**	[0.136]***	[0.156]**	[0.157]**
Future tense reference			0.989	1.124	1.095
			[0.083]	[0.150]	[0.154]
Germanic language spoken	NA	NA	NA	NA	NA
Unemployed				1.444	1.422
				[0.334]	[0.339]
Immigrant				0.971	0.967
				[0.094]	[0.093]
Trust				0.929	0.923
				[0.091]	[0.092]
Family is important				1.066	1.064
				[0.079]	[0.080]
Teaching children to save is important					0.875
					[0.109]
Teaching children responsibility is important					1.158
					[0.091]*
Fixed effects:					
<i>Country x Wave</i>	Yes	Yes	Yes	Yes	Yes
<i>Age x Sex</i>	No	Yes	Yes	Yes	Yes
<i>Income x Education</i>	No	Yes	Yes	Yes	Yes
<i>Married x Number of Children</i>	No	Yes	Yes	Yes	Yes
Interactions of all fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	22534	2884	2884	2752	2750
Pseudo R ²	0.0300	0.0070	0.0070	0.0080	0.0100

Notes: The table reports conditional (fixed-effects) logistic regression estimations and odds ratios for a restricted sample of countries with a Germanic majority language. Robust standard errors clustered at the country level are given in brackets. The symbols *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

Table A2: Individual borrowing behaviour and debt/guilt synonymity for countries with a Germanic majority language

	(1)	(2)	(3)	(4)	(5)
Dependent variable: Borrowed					
<i>Debt = Guilt</i>	0.611	0.632	0.643	0.708	0.710
	[0.053]***	[0.099]***	[0.086]***	[0.088]***	[0.086]***
Future tense reference			1.132	1.267	1.273
			[0.314]	[0.364]	[0.365]
Germanic language spoken				0.731	0.732
				[0.145]	[0.144]
Unemployed				1.231	1.233
				[0.071]***	[0.071]***
Immigrant	NA	NA	NA	NA	NA
Trust				0.987	0.987
				[0.051]	[0.051]
Family is important				0.938	0.937
				[0.045]	[0.045]
Teaching children to save is important					1.087
					[0.046]**
Teaching children responsibility is important					1.017
					[0.041]
Fixed effects:					
<i>Country x Wave</i>	Yes	Yes	Yes	Yes	Yes
<i>Age x Sex</i>	No	Yes	Yes	Yes	Yes
<i>Income x Education</i>	No	Yes	Yes	Yes	Yes
<i>Married x Number of Children</i>	No	Yes	Yes	Yes	Yes
Interactions of all fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	100487	19919	19513	17577	17572
Pseudo R ²	0.0550	0.0033	0.0009	0.0026	0.0030

Notes: The table reports conditional (fixed-effects) logistic regression estimations and odds ratios for a sample that excludes immigrants. Robust standard errors clustered at the country level are given in brackets. The symbols *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

Table A3: Individual borrowing behaviour and debt/guilt synonymity with immigrants excluded

	(1)	(2)	(3)	(4)	(5)
Dependent variable: <i>Borrowed (Category 4)</i>					
<i>Debt = Guilt</i>	0.837	0.6127	0.610	0.541	0.542
	[0.096]	[0.086]***	[0.099]***	[0.090]***	[0.090]***
Future tense reference			0.976	0.847	0.848
			[0.543]	[0.461]	[0.461]
Germanic language spoken				1.000	0.999
				[0.166]	[0.165]
Unemployed				1.387	1.386
				[0.076]***	[0.076]***
Immigrant				1.237	1.237
				[0.134]**	[0.134]**
Trust				0.904	0.903
				[0.048]*	[0.048]*
Family is important				0.916	0.916
				[0.058]	[0.058]
Teaching children to save is important					0.979
					[0.033]
Teaching children responsibility is important					0.983
					[0.036]
Fixed effects:					
<i>Country x Wave</i>	Yes	Yes	Yes	Yes	Yes
<i>Age x Sex</i>	No	Yes	Yes	Yes	Yes
<i>Income x Education</i>	No	Yes	Yes	Yes	Yes
<i>Married x Number of Children</i>	No	Yes	Yes	Yes	Yes
Interactions of all fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	214234	23348	23145	20593	20591
Pseudo R ²	0.0720	0.0006	0.0006	0.0043	0.0044

Notes: The table reports conditional (fixed-effects) logistic regression estimations and odds ratios for a more strict encoding of the dependent variable. *Borrowed (Category 4)* equals unity if the respondent reported to have spent savings and have borrowed money and zero otherwise. Robust standard errors clustered at the country level are given in brackets. The symbols *, ** and *** represent statistical significance at the 10%, 5% and 1% levels, respectively.

Table A4: Individual borrowing behaviour and debt/guilt synonymity with recoding of the dependent variable