

## THE INFLUENCE OF SOCIODEMOGRAPHIC CHARACTERISTICS ON PERSONAL FINANCE: A CROSS-CULTURAL COMPARISON BETWEEN THE UNITED STATES AND BRAZIL<sup>1</sup>

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### ABSTRACT

Personal finance has been explored considerably in the literature, nonetheless, it has been poorly explored through cross-cultural studies that compare developed and developing countries. The main objective was to statistically test the influence of individuals' sociodemographic characteristics on their personal finance in the United States and Brazil. Data from 2,223 American respondents and from 1,486 Brazilian respondents were analyzed with respect to sociodemographic characteristics and their impact on personal-finance-related variables. Correlation tests and multiple linear regressions were performed in order to deeply investigate these relationships. Among other findings, in Brazil, education level proved to be a predictor of how much individuals value teaching children how to save money and goods, which points out that education is able to lead population to be more conscious about personal finance. In addition, both in Brazil and in the United States, education level proved to be a predictor of the frequency individuals and their families run out of food or cash income, which points out that higher education levels are able to reduce social vulnerable situations. Age, sex, income level, and number of children also proved to be good predictors of other personal-finance-related variables.

**KEYWORDS:** Personal finance; Prediction analysis; Cross-cultural research.

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## A INFLUÊNCIA DE CARACTERÍSTICAS SOCIODEMOGRÁFICAS NAS FINANÇAS PESSOAIS: UMA COMPARAÇÃO TRANS-CULTURAL ENTRE OS ESTADOS UNIDOS E O BRASIL

### RESUMO

As finanças pessoais têm sido exploradas consideravelmente na literatura, no entanto, têm sido pouco exploradas por meio de estudos transculturais que comparam países desenvolvidos e em desenvolvimento. O objetivo principal foi testar estatisticamente a influência de características sociodemográficas dos indivíduos em suas finanças pessoais nos Estados Unidos e no Brasil. Dados de 2.223 respondentes americanos e de 1.486 respondentes brasileiros foram analisados em relação às características sociodemográficas e seu impacto nas variáveis relacionadas a finanças pessoais. Testes de correlação e regressões lineares múltiplas foram realizados para investigar essas relações. Entre outras constatações, no Brasil, a escolaridade se mostrou um preditor de quanto os indivíduos valorizam ensinar as crianças a economizar dinheiro e bens, o que aponta que a educação é capaz de levar a população a ter mais consciência sobre as finanças pessoais. Além disso, tanto no Brasil quanto nos Estados Unidos, a escolaridade mostrou-se um preditor da frequência com que os indivíduos e suas famílias ficam sem comida ou renda em dinheiro, o que aponta que a maior escolaridade é capaz de reduzir as situações de vulnerabilidade social. Idade, sexo, nível de renda e número de filhos também se mostraram bons preditores de outras variáveis relacionadas às finanças pessoais.

**PALAVRAS-CHAVE:** Finanças pessoais; Análise de predição; Pesquisa transcultural.1.

### INTRODUCTION

The study of personal finance has become increasingly expressive in the academia, once it is a relevant construct, in a micro context, to the study of personal development, and, in a macro context, to the study of economic development of nations (RIBEIRO, 2020; HOFMANN, 2020; DUARTE *et al.*, 2020; CUNHA, 2020; FRANZONI; QUARTIERI, 2020; VIEIRA *et al.*, 2019; SARAIVA, 2017; SILVA *et al.*, 2017). Despite the theoretical and practical importance of personal finance, data have shown that almost half of Brazilians still do not control their budget. In addition, research has indicated that only one in ten Brazilians is able to afford their expenses at the beginning of the year, while 22% do not plan it at all (CREDIT PROTECTION SERVICE [SPC], 2020).

When Brazil is compared with developed countries, such as the United States of America, with respect to personal finance, some differences are evident. According to Yazbak (2015), Brazil is only the 74<sup>th</sup> highest financially educated country in the world, while the largest economy in the world, the United States of America, occupies the 14<sup>th</sup> position. According to the Programme for International Student Assessment (PISA) of the Organization for Economic Cooperation and Development (OECD, 2018), with respect, specifically, to young people's financial competence, Brazil is the 4<sup>th</sup> worst country in the ranking, while the United States is the 6<sup>th</sup> best. In addition, theoretical-empirical research has highlighted this disparity, such as the study by Lin *et al.* (2019), conducted with more than 29,000 American

volunteers, which indicates that 41% of respondents spend less than their income, while only 19% spend more. The survey also pointed out that 58% of American respondents have some type of bank account focused on their retirement, which indicates considerable financial planning.

This apparent disparity between Brazil and the United States in terms of personal finance motivated the choice of these two countries to be compared in the present research. Such disparity constitutes an invitation for deeper investigations about differences in the personal finance profile of individuals in Brazil and in specific developed countries which are considered examples in financial education, such as Estonia, Canada, Finland, and Poland (OECD, 2018), and, more importantly, an invitation for studies that investigate possible variables associated with this profile. In this sense, the present study was guided by the following research problem: *which sociodemographic characteristics are able to predict personal-finance-related variables in the United States and Brazil?*

It is noteworthy that the comparison between these two countries was also motivated by the lack of studies that deal with this topic through a cross-cultural approach. Personal finance, as well as financial education, have been explored considerably in the literature (e.g., CUNHA, 2020; FRANZONI; QUARTIERI, 2020; VIEIRA *et al.*, 2019), nonetheless, they have not been explored, in the same frequency, through cross-cultural studies. It is expected that the present study can be taken as reference for future investigations aimed at proposing explanatory models of financial behavior that consider other variables besides sociodemographic characteristics. Moreover, it is expected that the empirical results of the present investigation may constitute relevant inputs for formulation and management of social public policies contextualized within specificities of the countries compared.

The main objective of the present research, therefore, was to statistically test the influence of individuals' sociodemographic characteristics on their personal finance in the United States and Brazil, and, supporting this main objective, the following specific objective was established: to explore, through literature review, relevant theoretical-empirical studies on personal finance, in order to raise study hypotheses to be empirically tested.

To this end, the World Values Survey (WVS) database was adopted, which is a worldwide investigation about changes in the political and socio-cultural views of individuals. Six variables were chosen to represent personal finance in the United States and Brazil, namely: (1) Importance given by respondents to teaching children how to save money and goods; (2) Importance given by respondents to being rich; (3) Respondents' satisfaction with the financial situation of their family; (4) Respondents' agreement with the statement "people can only get rich at the expense of others"; (5) Frequency in which respondents or their family run out of food in the last 12 months; and (6) Frequency in which respondents or their family run out of cash income in the last 12 months. These variables were chosen because they were directly related to the main topic and objective of the present research. Additionally, five variables were taken from the WVS database to represent, in this study, the respondents' sociodemographic profile: (a) Sex; (b) Age; (c) Number of children; (d) Education level; and (e) Income level.

Next, the literature review will be presented, as well as the seven study hypotheses that were raised to be statistically tested. Subsequently, the methodological procedures of the research will be addressed, followed by the presentation and discussion of results. At last, final considerations will be made, highlighting the implications presented by the investigation and suggesting the development of future research.

## 2. THEORETICAL FRAMEWORK

### 2.1 Personal finance and associated sociodemographic characteristics

An essential indicator of people's ability to make financial decisions is their level of financial education. Financial education can be understood as a learning process that encompasses all steps of decision and management of factors and issues related to money, in order to achieve objectives (OLIVIERI, 2013). The Organization for Economic Co-operation and Development (OECD, 2018) defines financial education as not only the knowledge and understanding of financial concepts and risks, but also the skills, motivation, and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society. On average, about one third of the global population has familiarity with the basic concepts that underlie everyday financial decisions (LUSARDI; MITCHELL, 2011).

The issue of financial education is becoming more and more important, which is mainly due to the dynamic development of the global financial markets (PANOS; WILSON, 2020). It is also becoming a challenge for financial institutions, third party financial service providers, state authorities, and non-profit organizations (JANC; JUREK; MARSZALEK, 2015). It is important to highlight that, in order to achieve better financial decision-making, one must assess not only what they know, but what they need to know, and then evaluate the gap between those things. There are a few fundamental concepts at the basis of most financial decision-making. These concepts are universal, applying to every context and economic environment: numeracy skill, as it relates to the capacity to do interest rate calculations; understanding of inflation; and understanding of risk diversification (LUSARDI, 2019). Wlodarska-Zola (2018) supports this idea by stating that the understanding of the principles of financial instruments is a prerequisite for effective management of personal finances, which highlights how much personal education and personal finance are interconnected.

Personal finance, in turn, is a field of science dealing with the collection of financial resources and their spending, related to the management of financial resources by household members (GALPERTI, 2019). Hence, it is important to clear out that personal finance is a narrower concept than household finance, covering all processes and phenomena related to the acquisition, accumulation, and disbursement of financial resources by individuals (WARCHLEWSKA; JANC; IWANSKI, 2021).

According to Domingos (2013), the way individuals plan, organize, and control their finances is a reflection, among other factors, of how this subject was treated in their childhood, that is, people's financial decision-making can be influenced by the teachings passed on by their parents. As an example, in a study carried out with Brazilian families, Lima *et al.* (2016) observed that the study and application of financial education were not common among these participant families, making them more prone to indebtedness. Moreover, Magro *et al.* (2018) analyzed the effect of family interaction on financial behavior of adolescents in public schools, concluding that the typical behavior of having no control of spending and the low propensity to saving are related to a weak discussion of this issue by the family. According to the referred authors, the family disseminates initial financial knowledge or does so through daily experiences. Martelo *et al.* (2020) add that contextual factors affect young people's intertemporal financial choices. Fiori *et al.* (2017) studied variables related to financial education and found that the higher the individuals' education level, the greater their interest in



researching about financial education and, in some way, in trying to apply the knowledge acquired.

Regarding satisfaction with personal financial situation, Borges (2011) concluded that the older the individuals, the higher the satisfaction level declared by them with their financial situation. According to the author, another factor that contributes to personal financial satisfaction is the habit of saving money, moreover, the higher the percentage saved, the higher the satisfaction declared. Additionally, Xiao (2016) states that financial education is among the most important determinants of financial well-being. In a survey conducted in North American states, Urban *et al.* (2020) pointed out that those states that included financial education in high school curriculum formed adults who are less prone to indebtedness, emphasizing that financial education has positive effects.

By analyzing whether behavioral factors and socioeconomic variables can make people more prone to indebtedness, Campara *et al.* (2016) found that the lower the family income, the greater the propensity for indebtedness. This points to the difficulty that many families find in their daily lives in managing the little capital they have. Another relevant factor related to indebtedness identified in that study was the attitude that people have towards purchases, which, in many cases, are made in a compulsive and less rational way. Furthermore, by analyzing the financial behavior of individuals, previously and during their entry into higher education, Maniçoba (2017) identified, statistically, that education level can positively influence people's financial behavior. The aforementioned author noted that higher education level provided good results with respect to the way purchases were made and to the process of managing personal resources. However, as Lusardi (2019) points out, it is important to understand that income levels do not by themselves equate to a more financially literate population. This means that countries that present higher income levels do not, necessarily, present a population financially educated nor satisfactorily capable to make effective financial decisions.

Variables, such as education level, marital status, age, and income level were also identified by Diniz *et al.* (2014) as factors directly associated with financial well-being. With respect to education, individuals with graduate degrees presented a higher level of financial well-being. Regarding marital status, married couples were those who declared the highest perception of financial well-being. As for age, it was observed that the older the individuals, the greater their perception of financial well-being. At last, the perception of well-being was also higher with the increase in income levels.

Concerning the propensity to take financial risks, Vieira *et al.* (2013) carried out a study with public employees and other categories of workers and identified sociodemographic factors that are directly related to people's propensity to take financial risks. It was found that older individuals with higher income levels are those who take less risks and have better perception of risks. On the other hand, younger individuals who are single and with lower education level are more prone to financial risks. In addition, a study by Lücke (2014) showed that adults, mostly parents, control their spending more and have less flexibility with their money. This fact is probably due to the fact that adults are, most of the time, responsible for the finances of their households, as well as have greater responsibilities. Melo and Silva (2010) also identified that younger male individuals occupying professional positions are more likely to take risks. On the other hand, Medeiros *et al.* (2017) did not identify considerable influence of gender on aversion to uncertainty, which can ultimately be assumed as aversion to taking risks.

In a survey conducted in the United States, Joo and Grable (2004) identified factors that had a direct and indirect effect on financial satisfaction. Among the factors that had the most significant and positive impact on financial satisfaction, the following stood out: financial knowledge, education level, number of dependents, and income level. Age, sex, ethnicity, and marital status did not present significant correlations.

Similar to the aforementioned research, Grable *et al.* (2012) studied families in an American state, in order to verify, among other factors, whether an adequate income is able to influence the perception of financial satisfaction. Through correlation analyses, the researchers came to the conclusion that participants who claimed to have lower income levels were more dissatisfied financially.

Concerning, specifically, financial knowledge, Scheresberg (2013) investigated the relationship between this variable and sociodemographic variables. Regarding sex, it was observed that most women did not know how to answer questions related to basic financial knowledge. Lusardi (2019) states that there is evidence of a lack of confidence when it comes to making financial decisions, particularly among women. With regard to education level, it was observed that only 25% of respondents who did not have a high school diploma knew how to answer questions related to finance, while 52% of those with higher education knew how to answer them. It was also observed that the older the respondents, the greater their understanding about the subject. With regard to income level, it was found that the higher the income level, the lower the mistake rates of participants in questions related to finance.

Robb and Woodyard (2011) analyzed variables, such as financial satisfaction, income, education, age, among others, from a sample comprised of 1,466 participants, and whether these variables were capable of influencing Americans' financial behavior. Results indicated that all these factors correlated positively with personal financial behavior, more specifically with better financial practices, such as the creation of an emergency fund, the creation of a retirement plan, the responsible use of credit cards, low need of loans, in addition to better financial risk management.

Focusing more directly on consumption and indebtedness variables, Silva *et al.* (2015) found that there are two major factors that can directly influence indebtedness: first, low finance education, which makes people not to plan correctly, and, second, the easy access to credit, made available, for instance, through credit cards from banking institutions, which allow successive purchases of large amounts which, along with the lack of planning, causes people to enter a vicious cycle of indebtedness.

By investigating the age demographic variable, Messias *et al.* (2015) pointed out the fragility of young people in relation to debt. In their investigation, it was found that consumerist behavior directly influenced the conduct of young people who participated in their research, most of them declaring that they feel desperate in relation to their financial situation.

At last, theoretical-empirical research also shows relationships between personal financial behavior and the variables sex and marital status. Santana *et al.* (2016), for instance, concluded that there are behavioral differences with respect to consumption between men and women. By analyzing male profiles separately, these authors observed that single men have their consumption associated more with necessity and satisfaction. On the other hand, consumption of married men is associated, primarily, with necessity, while divorced men and those in a stable relationship also have their consumption associated with necessity, although at less expressive levels.

In the analysis of female profiles, the authors identified, in the case of single women, raising self-esteem as the predominant reason for consumption, followed by the ease of purchases on credit, impulse consumption, and, lastly, consumption by necessity. Married women also have raising self-esteem as the main reason for consumption, but in lower percentages compared to single women. Divorced women, in turn, have consumption motivated by the ease of purchases on credit, while women in stable relationships have their consumption motivated, primarily, by raising self-esteem.

Personal finance and propensity to take financial risks are even more important topics in times of the current economic situation related to COVID-19 pandemic which forces consumers to use remote channels to access their finances (WALISZEWSKI; WARCHLEWSKA, 2021). In this scenario of increasing uncertainty and reduced income, individuals may be led to the ruin of their households' finances or to loss of liquidity (WARCHLEWSKA; JANC; IWANSKI, 2021).

## 2.2 Study hypotheses

Based on the literature review, in which relevant theoretical-empirical studies were raised on the topic personal finance and its possible associations with sociodemographic characteristics, seven study hypotheses were established to be empirically tested in the present research, summarized in Chart 1.

Chart 1 - Study hypotheses

Hypotheses	Description	Theoretical-empirical basis
Hypothesis 1 (H-1)	Individuals' education level is able to predict the importance given by them to teaching children how to save money and goods.	Urban <i>et al.</i> (2020); Fiori <i>et al.</i> (2017); Maniçoba (2017); Xiao (2016); Diniz <i>et al.</i> (2014); Domingos (2013).
Hypothesis 2 (H-2)	Individuals' education level is able to predict their satisfaction with household financial situation.	Urban <i>et al.</i> (2020); Fiori <i>et al.</i> (2017); Maniçoba (2017); Xiao (2016); Diniz <i>et al.</i> (2014); Domingos (2013); Joo and Grable (2004).
Hypothesis 3 (H-3)	Individuals' education level is able to predict the frequency they run out of food or out of cash income.	Urban <i>et al.</i> (2020); Fiori <i>et al.</i> (2017); Maniçoba (2017); Xiao (2016); Diniz <i>et al.</i> (2014); Domingos (2013).
Hypothesis 4 (H-4)	Individuals' age is able to predict their satisfaction with household financial situation.	Messias, Silva, and Silva (2015); Diniz <i>et al.</i> (2014); Borges (2011).
Hypothesis 5 (H-5)	Individuals' income level is able to predict the frequency they run out of food or out of cash income.	Campara, Vieira, and Ceretta (2016).
Hypothesis 6 (H-6)	Individuals' sex is able to predict the frequency they run out of food or out of cash income.	Lusardi (2019); Santana, Vidotti, and Oliveira (2016).
Hypothesis 7 (H-7)	Individuals' number of children is able to predict the importance given by them to teaching children how to save money and goods.	Lücke (2014).

Source: Elaborated by the authors.

The first three hypotheses deal with education level and are anchored in a growing body of evidence that suggests that financial education is among the most important determinants of financial well-being (XIAO, 2016). Informed financial decisions have shown to be a key factor in making effective financial choices (LUSARDI; MITCHELL, 2014). The fourth hypothesis, which deals with the sociodemographic variable age, is based on previous studies that indicate that the older the individuals, the greater their perception of financial well-being. Regardless of previous research, this hypothesis makes sense, once it is expected that older individuals, given their greater professional development, receive higher salaries. The same reasoning applies to the fifth hypothesis, which states that higher income levels imply less financial vulnerable situations, such as running out of food or out of cash income.

According to the sixth hypothesis, women are expected to run out of food or out of cash income more frequently than men. Lusardi (2019) states that there is evidence of a lack of confidence when it comes to making financial decisions, particularly among women. At last, the reasoning behind the seventh hypothesis is that people with higher number of children, given their higher family expenses, consider it important to teach children how to save money and goods in order for their children to be better prepared to avoid financial vulnerable situations in the future.

### 3. METHOD

#### 3.1 Data source and collection instruments

In order to accomplish its main objective, the present research used secondary data from the sixth edition of the World Values Survey (WVS) database. At the time data was extracted from the WVS dataset, in 2020, the sixth edition was the most recent one, once the seventh edition had not been released yet. The WVS is a survey that has been conducted since 1981 by a group of social scientists at leading universities around the world, and each edition present data collected over a four-year period. It is a worldwide investigation on changes in the political and socio-cultural views of individuals. The questionnaires used in the WVS contain a large set of questions about social, economic, and political values, in addition to socioeconomic and demographic data, and follow rigorous scientific sampling procedures (WVS, 2021).

The WVS seeks to help scientists and policy makers understand changes in the beliefs, values, and motivations of individuals around the world. Thousands of political scientists, sociologists, administrators, social psychologists, anthropologists, and economists have used this data to analyze topics, such as economic development, democratization, religion, gender equality, social capital, and subjective well-being (e.g., ATHAYDE; COURA; DIAS, 2019). The main method of data collection in the WVS is the application of face-to-face questionnaires at the respondents' house, with anonymity guaranteed. The responses are registered in a traditional paper-and-pen questionnaire or through a Computer-Assisted Personal Interview – CAPI (WVS, 2021).



## 3.2 Sample and study variables

In the WVS edition taken as data source in the present study, the Brazilian sample was comprised of 1,486 participants, and the American sample was comprised of 2,232 participants. The following personal-finance-related variables were chosen: (a) valuing in children the quality of saving money and goods; (b) importance given to being rich; (c) satisfaction with household financial situation; (d) how wealth is accumulated; (e) frequency out of food; (f) and frequency out of cash income. In addition, the following sociodemographic characteristics were chosen: age, sex, number of children, income level, and education level.

## 3.3 Data analysis

The statistical analyses carried out in the present study were performed by using the IBM® SPSS® 20.0 software – Statistical Package for the Social Sciences. Following recommendations by Tabachnick and Fidell (2013) and Miles and Shevlin (2001), the variables chosen for analysis were checked for their normal distribution. The normality of data distribution was verified by carrying out the Kolmogorov-Smirnov test and the Shapiro-Wilk test (FIELD, 2013). The normality tests showed that data from the Brazilian sample and from the American sample presented a non-normal distribution, a result that, beforehand, pointed to the need of applying a non-parametric correlation test that, in the present study, was the Spearman correlation test ( $\rho$ ). Once correlations do not necessarily mean causality, multiple linear regressions (stepwise) were performed in order to statistically test the influence of individuals' sociodemographic characteristics on their personal finance. Recommendations by Field (2013) were followed when analyzing regression results, by double-checking assumptions for regression analysis, such as linear relationship between the variables, absence of multicollinearity, minimum sample size considering the number of predictors, and residuals normally distributed. The results were, then, discussed in the light of theory and previous empirical investigations.

## 4. RESULTS AND DISCUSSION

### 4.1 Sample characterization

First, with respect to sociodemographic variables, the Brazilian sample (1,486 participants) and the American sample (2,232 participants) were comprised of a balanced number of men and women, with a slight superiority of female participants both in Brazil (52.3%) and in the United States (51.5%). Regarding age, the majority of participants fit in the age range 30-49 years, in Brazil (38.8%), and in the age range above 50 years, in the United States (44.7%). Moreover, most respondents had one or two children, both in Brazil (43.8%) and in the United States (41.8%).

Concerning education level, most respondents, in Brazil, had not completed elementary school (31.9%), followed by participants who had completed high school (25.9%). In contrast, in the United States, most respondents had completed higher education (36.1%). Regarding income level, most respondents, both in Brazil (25.3%) and in the United States

(20.8%), fell into the intermediate range (5), among the ten income ranges presented in the questionnaire.

With respect to the variables chosen in the present study to represent individuals' personal finance, participants were first presented with a list of qualities that children can learn at home. Among these qualities, respondents should choose up to five qualities that they considered the most important ones to stimulate and teach children. Both in Brazil (73.4%) and in the United States (68.4%), the majority of participants did not choose the alternative of saving money and goods as one of the most important qualities to be taught to children. This result is according to Lusardi (2019), for whom financial literacy is low across the world and higher national income levels do not equate to a more financially literate population. As mentioned, both in Brazil and in the United States, regardless of their economic development, the majority of participants did not consider teaching children basic financial principles as one of the most important things to be taught to children.

Regarding the importance given by respondents to being rich, it was described to them a person for whom it is important to be rich and to have a lot of money and expensive things. Respondents should indicate their similarity in relation to the person described on a scale of six points, ranging from 1 = "does not look anything like me" to 6 = "looks a lot like me". Most Brazilians (41%) and Americans (39%) considered that the person described did not look like them, indicating low importance given to being rich. Based on previous cross-cultural studies, such as Hofstede (2011), countries with high scores in the cultural dimension "Power Distance", such as Brazil, consider symbols of status and power as very important to indicate social position and to "communicate" respect. In this sense, given Brazil's higher score in this dimension, compared to the United States, identified by Hofstede (2011), it could be expected that Brazilians would value being rich more than Americans, considering money as a possible symbol to "communicate" status and respect. However, as mentioned, both Brazilians and Americans in the present research indicated low importance given to being rich.

As for respondents' satisfaction with their household financial situation, on a 10-point scale, where 1 represented extreme dissatisfaction and 10, extreme satisfaction, most Brazilians showed intermediate satisfaction, represented by range 5 (18.3%). On the other hand, most Americans showed a high level of satisfaction, represented by range 8 (18.4%). This result is supported by the findings of Maia and Sakamoto (2015), according to whom Americans have, on average, a higher educational level than Brazilians, as well as better occupations in the labor market, which implies higher wages.

Moreover, with respect to the variable wealth accumulation, respondents were asked to indicate their agreement regarding the way in which wealth accumulation occurs. Respondents were presented with a ten-point scale, where 1 was represented by the statement "people can only get rich at the expense of others", and 10 by the statement "wealth can grow, so there is enough for everyone". Brazil presented results that indicate a more collectivist profile, compared to the United States, once the majority of Brazilian respondents (40.6%) believe that wealth can grow, so people get rich, not necessarily at the expense of others. In the United States, the agreement with the referred view was much lower (12%), indicating a more individualistic profile. This result is supported by previous cross-cultural studies, such as Hofstede (2011), who points out that the United States presents a higher score on the cultural dimension "Individualism", compared to Brazil. In fact, cross-cultural research has indicated that the American culture is considered one of the most individualistic cultures in the world.

Respondents were also asked to indicate how often they or their families had run out of food in the past 12 months. In Brazil, most participants answered “never” (80.7%), followed by “sometimes” (9.5%). In the United States, the majority answered “never” (72.8%), followed by “rarely” (14.5%). At last, respondents were asked to indicate how often they or their families had run out of cash income in the past 12 months. In Brazil, most participants answered “never” (67.7%), followed by “sometimes” (17.2%). In the United States, the majority answered “never” (61.2%), followed by “rarely” (15.6%).

Having described the characteristics of the Brazilian and American samples, the results concerning correlations will be highlighted hereafter, namely the statistically significant correlations between personal-finance-related variables and sociodemographic variables, starting with the specific results for the Brazilian sample.

## 4.2 Correlations in Brazil

Before presenting the correlation coefficients, it is important to explain that the interpretation of correlation coefficient signs, in the present study, took into account the fact that scales, in some WVS questionnaire items, were originally inverted, that is, a lower scale value, in some cases, indicated a greater intensity of the feature in question. As an example, in the scale concerning the importance given to being rich, the lower values were associated with a greater importance given to being rich and vice versa. Table 1 summarizes the results for correlation tests in the Brazilian sample.

Table 1 - Correlation coefficients (Brazil)

		Save	Satisfaction	Rich	Wealth	Food	Cash
Age	Coefficient	-.023	.012	.099**	.070**	.050	.073**
	Sig	.375	.633	.000	.008	.057	.005
Sex	Coefficient	.013	.003	.093**	.054*	-.047	-.067**
	Sig	.614	.921	.000	.040	.073	.010
Children	Coefficient	-.060*	-.049	.093**	.044	-.029	-.016
	Sig	.021	.062	.000	.097	.267	.530
Income	Coefficient	.058*	.303**	-.024	-.045	.147**	.223**
	Sig	.028	.000	.370	.094	.000	.000
Education	Coefficient	.075**	.095**	-.073**	.032	.093**	.136**
	Sig	.004	.000	.005	.224	.000	.000

Note. \*p<.05; \*\*p<.01

Source: Elaborated by the authors

In the Brazilian sample, the variable referring to saving money and goods as one of the most important qualities to be taught to children (Save) showed a statistically significant correlation with the following sociodemographic variables: number of children ( $p < .05$ ), income ( $p < .05$ ), and education ( $p < .01$ ). These results allow the inference that, in Brazil, individuals with higher number of children, with lower income level, and with lower education level are the ones who more strongly consider saving money and goods as one of the most important qualities to be taught to children. This may be due to the fact that individuals with

higher number of children, lower income level, and lower education levels tend to face financial vulnerable situations more frequently, which may lead them to value teaching children how to save money and goods, aiming at avoiding financial vulnerable situations in the future.

The variable referring to satisfaction with financial situation (Satisfaction) showed a statistically significant correlation with the sociodemographic variables income ( $p < .01$ ) and education ( $p < .01$ ), indicating that, in Brazil, individuals with higher income level and higher education level are the ones who are more satisfied with their financial situation. This result was expected, once higher education levels tend to imply higher income levels, and, as a consequence, higher satisfaction with financial situation.

The variable referring to the importance given to being rich (Rich) showed a statistically significant correlation with the following sociodemographic variables: age ( $p < .01$ ), sex ( $p < .01$ ), number of children ( $p < .01$ ), and education ( $p < .01$ ). These results allow the inference that, in Brazil, younger male individuals with lower number of children and with higher education level are the ones who more strongly consider being rich as important.

With respect to the variable “wealth accumulation” (Wealth), which indicates respondents’ agreement with the phrase “people can only get rich at the expense of others”, it showed a statistically significant correlation with the variables age ( $p < .01$ ) and sex ( $p < .05$ ), indicating that, in Brazil, younger male individuals are the ones who more strongly consider that people can only get rich at the expense of others, which reflects a more individualistic profile. In parallel, it can be inferred that, in Brazil, older female individuals are the ones who more strongly agree with the fact that there is enough for everyone, which reflects a more collectivist profile.

The variable “frequency in which you or your family ran out of food” (Food) showed a statistically significant correlation with the variables income ( $p < .01$ ) and education ( $p < .01$ ), indicating that, in Brazil, individuals with lower income level and lower education level are the ones who run out of food more frequently.

At last, the variable “frequency in which you or your family ran out of cash income” (Cash) showed a statistically significant correlation with the following sociodemographic variables: age ( $p < .01$ ), sex ( $p < .01$ ), income ( $p < .01$ ), and education ( $p < .01$ ). These results indicate that, in Brazil, younger female individuals with lower income level and lower education level are the ones who run out of cash income more frequently.

## 4.3 Correlations in the United States

Table 2 summarizes the results for correlation tests in the American sample.

Table 2 - Correlation coefficients (United States of America)

		Save	Satisfaction	Rich	Wealth	Food	Cash
Age	Coefficient	-.112**	.209**	.171**	.107**	.204**	.170**
	Sig	.000	.000	.000	.000	.000	.000
Sex	Coefficient	.045*	.037	.152**	.006	-.005	.001
	Sig	.034	.085	.000	.793	.799	.967
Children	Coefficient	-.040	.082**	.112**	.123**	-.013	-.016
	Sig	.060	.000	.000	.000	.552	.456
Income	Coefficient	.004	.500**	-.134**	.138**	.286**	.330**
	Sig	.837	.000	.000	.000	.000	.000
Education	Coefficient	.026	.128**	-.047*	-.001	.273**	.266**
	Sig	.222	.000	.029	.974	.000	.000

Note: \*p<.05; \*\*p<.01

Source: Elaborated by the authors

In the American sample, the variable referring to saving money and goods as one of the most important qualities to be taught to children (Save) showed a statistically significant correlation with the variables age ( $p < .01$ ) and sex ( $p < .05$ ). These results allow the inference that, in the United States, older male individuals are the ones who more strongly consider saving money and goods as one of the most important qualities to be taught to children. This result suggests that male Americans value teaching children financial principles more than female Americans.

The variable referring to satisfaction with financial situation (Satisfaction) showed a statistically significant correlation with the sociodemographic variables age ( $p < .01$ ), number of children ( $p < .01$ ), education ( $p < .01$ ), and income ( $p < .01$ ), indicating that, in the United States, older individuals with higher number of children, with higher education level, and with higher income level are the ones who are more satisfied with their financial situation. Out of these results, only the positive correlation between number of children and financial satisfaction was not expected. Actually, a negative correlation was expected, once a higher number of children implies higher family expenses and, as a consequence, a lower level of satisfaction with financial situation.

The variable referring to the importance given to being rich (Rich) showed a statistically significant correlation with all five sociodemographic variables, some positively and others negatively. These results allow the inference that, in the United States, younger male individuals with lower number of children, higher education level, and higher income level are the ones who more strongly consider being rich as important.

With respect to the variable “wealth accumulation” (Wealth), which indicates respondents’ agreement with the phrase “people can only get rich at the expense of others”, it showed a statistically significant correlation with the variables age ( $p < .01$ ), number of children ( $p < .01$ ), and income ( $p < .01$ ), indicating that, in the United States, younger individuals with lower number of children and lower income level are the ones who more strongly consider that



people can only get rich at the expense of others, which reflects a more individualistic profile. In parallel, it can be inferred that, in the United States, older individuals with higher number of children and higher income level are the ones who more strongly agree with the fact that there is enough for everyone, which reflects a more collectivist profile. Comparing the results of the variable wealth accumulation between the Brazilian and American samples, age was the only sociodemographic variable in common, indicating that, in both countries, younger individuals are more likely to agree that people can only get rich at the expense of others.

At last, concerning the variables “frequency in which you or your family ran out of food” (Food) and “frequency in which you or your family ran out of cash income” (Cash), both showed a statistically significant correlation with the variables age ( $p < .01$ ), education ( $p < .01$ ), and income ( $p < .01$ ), indicating that, in the United States, younger individuals with lower education level and lower income level are the ones who run out of food and out of cash income more frequently.

#### 4.4 Prediction analysis in Brazil

Once correlations do not necessarily mean causality, multiple linear regressions (stepwise) were performed in order to accomplish the main objective of the present investigation: to statistically test the influence of individuals’ sociodemographic characteristics on their personal finance. Table 3 summarizes the significant predictions found in Brazil.

Table 3 - Personal finance predicted by sociodemographic characteristics – Brazil

Personal-finance-related variable	Sociodemographic predictor variable	Sig	$\beta$	t	R <sup>2</sup>
Save	Education	0.008**	0.069	6.641	0.005
	Age		0.118	4.518	
Rich	Sex	0.000***	0.097	3.706	0.022
	Income		0.324	13.058	
Satisfaction	Age	0.005**	0.082	2.887	0.007
Wealth	Education		0.067	2.371	
	Income		0.118	4.358	
Food	Education	0.000***	0.100	3.468	0.030
	Age		0.075	2.716	
	Income		0.194	7.287	
Cash	Age	0.000***	0.124	4.588	0.076
	Education		0.132	4.675	
	Sex		-0.59	-2.315	

Note. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ;  $\beta$ : Standardized coefficient.

Source: Elaborated by the authors

The results indicate that, in Brazil, the importance given by individuals to teaching children how to save money and goods is predicted by lower education levels, however, this sociodemographic characteristic is able to explain only 0.5% ( $R^2 = 0.005$ ) of variability in this specific personal-finance-related variable. It is reasonable to assume that individuals with lower education levels might not adopt financial education tools and that, possibly, they have already gone through vulnerable financial situations, which, as a consequence, lead them, today, to value more the development of this quality in their children, protecting them from financial problems in the future. However, the magnitude of this influence is not very representative.

The importance given by Brazilians to being rich is predicted by lower age and by sex (being a man). These sociodemographic characteristics, jointly, are able to explain 2.2% ( $R^2 = 0.022$ ) of variability in this specific personal-finance-related variable. Such result concerning age is supported by Vieira *et al.* (2013) and Melo and Silva (2010), who found that younger people take more financial risks, which can be assumed as ultimate and greater importance given to being rich. The result related to sex is supported by Scheresberg (2013), according to whom women have less basic financial knowledge compared to men, which can be inferred as a possible lesser interest in becoming rich.

Brazilians' satisfaction with household financial situation is predicted by higher income levels, and this sociodemographic characteristic is able to explain 10.5% ( $R^2 = 0.105$ ) of variability in this specific personal-finance-related variable. This result is in accordance with Joo and Grable (2004), who identified factors that positively correlate with financial satisfaction, such as income level. The magnitude of this prediction is very representative, even though it was an expected result, once it makes sense that higher income levels lead to higher levels of satisfaction with household financial situation.

Brazilians' opinion about how wealth is accumulated is predicted by age and education level. This means that individuals' opinion that people can only get rich at the expense of others is predicted by lower age and lower education levels. This also means that individuals' opinion that wealth can grow and there is enough for everyone is predicted by higher age and higher education levels. However, these sociodemographic characteristics, jointly, are able to explain only 0.7% ( $R^2 = 0.007$ ) of variability in this personal-finance-related variable, which is not a very representative explanatory power.

The frequency in which Brazilians or their family run out of food is predicted by lower income levels, lower education levels, and lower age. These sociodemographic characteristics, jointly, explain 3% ( $R^2 = 0.030$ ) of variability in this personal-finance-related variable. This may be due to the fact that the highest salaries are normally concentrated on those with higher education levels. According to findings by Campara *et al.* (2016), families with lower income levels are more prone to indebtedness, which can lead them to run out of food. Maniçoba (2017), in turn, identified, statistically, that education level is positively correlated with personal financial behavior. The aforementioned author noted that higher education levels provided better behaviors in terms of purchases and in terms of managing personal resources. Additionally, Scheresberg (2013) found that individuals with lower education levels are those with lower knowledge level about finance, which can impact the family's management of financial resources and culminate in lack of food.

At last, the frequency in which Brazilians or their family run out of cash income is predicted by lower income levels, lower age, lower education levels, and sex (being a woman). These sociodemographic characteristics, jointly, are able to explain 7.6% ( $R^2 = 0.076$ ) of variability in this personal-finance-related variable. This result is in line with Campara *et al.* (2016), according to whom the less money families have at their disposal, the greater their chances of getting into debt. Silva *et al.* (2015) add that low education levels are also correlated with low financial education, which, in turn, has a direct influence on indebtedness. Another research compatible with these results was carried out by Vieira *et al.* (2013), whose conclusion points out that younger, single, and less educated individuals tend to be more prone to risk. Such a fact can imply greater losses and, consequently, higher frequency of running out of cash income.

The result regarding sex is supported by Santana *et al.* (2016), according to whom married women present increase in self-esteem as one of the main reasons for consumption. Additionally, as pointed out by Souza and Gomes (2015) and by Maia *et al.* (2018), women in Brazil receive lower salaries than men, which can possibly influence the fact that women run out of money more often than men.

## 4.5 Prediction analysis in the United States

Table 4 summarizes the predictions found in the United States.

Table 4 - Personal finance predicted by sociodemographic characteristics – USA

Personal-finance-related variable	Sociodemographic predictor variable	Sig	$\beta$	t	R <sup>2</sup>
Save	Age	0.000***	-0.114	-5.353	0.015
	Sex		0.044	2.052	
Rich	Age	0.000***	0.187	8.967	0.069
	Sex		0.137	6.594	
	Income		-0.141	-6.512	
	Education		0.044	2.056	
Satisfaction	Income	0.000***	0.494	26.946	0.281
	Age		0.160	8.721	
	Sex		0.040	2.198	
Wealth	Income	0.000***	0.147	6.874	0.039
	Children		0.089	3.892	
	Age		0.061	2.637	
Food	Education	0.000***	0.226	10.915	0.166
	Income		0.205	9.999	
	Age		0.210	9.984	
	Children		-0.81	-3.773	
Cash	Income	0.000***	0.277	13.578	0.176
	Education		0.188	9.130	
	Age		0.174	8.188	
	Children		-0.070	-3.270	

Note. \* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ ;  $\beta$ : Standardized coefficient.

Source: Elaborated by the authors

The results indicate that, in the United States, the importance given by individuals to teaching children how to save money is predicted by higher age and sex (being a man). These sociodemographic characteristics, jointly, are able to explain 1.5% ( $R^2 = 0.015$ ) of variability in this specific personal-finance-related variable. These results are in line with Scheresberg (2013), whose conclusions point to a greater involvement of men in the topic of finance compared to women, which may be a factor that contributes to men valuing this quality more than women. Also according to the referred study, age is positively correlated with knowledge about finance. It was observed that older people have greater knowledge about finance and this greater knowledge may be one of the factors that contribute to making them value more the stimulation of this quality in children. Wlodarska-Zola (2018) states that the understanding of the principles of financial instruments is a prerequisite for effective management of personal finances, which highlights how much personal education and personal finance are interconnected.

The importance given by Americans to being rich is predicted by lower age, sex (being a man), higher income levels, and lower education levels. These sociodemographic characteristics, jointly, are able to explain 6.9% ( $R^2 = 0.069$ ) of variability in this specific personal-finance-related variable. Such result concerning age is supported by Vieira *et al.* (2013) and Melo and Silva (2010), who found that younger people take more financial risks, which can be assumed as ultimate and greater importance given to being rich. The result related to sex is supported by Scheresberg (2013), according to whom women have less basic financial knowledge compared to men, which can be inferred as a possible lesser interest in becoming rich. Still regarding the sociodemographic variable sex, it is important to emphasize that “Masculinity” is one of the most used cultural dimensions in cross-cultural research (e.g., HOFSTEDE, 2011) and is considered to be highly connected to money, success, and professional achievements.

The result concerning income level seems compatible to Vieira *et al.* (2013), who found that individuals with higher income levels are those who have better perception of risks. Nevertheless, the result regarding education level was not expected. Fiori *et al.* (2017) studied variables related to financial education and found that the higher the individuals’ education level, the greater their interest in researching about financial education and, in some way, in trying to apply the knowledge acquired. Hence, it would make more sense if the importance given to being rich was predicted by higher education level and not by lower education level as found in the present investigation. This constitutes an opportunity for deeper investigations on this specific prediction, which can be carried out in future studies.

Americans’ satisfaction with household financial situation is predicted by higher income levels, higher age, and by sex (being a man). These sociodemographic characteristics, jointly, are able to explain 28.1% ( $R^2 = 0.281$ ) of variability in this specific personal-finance-related variable, which is a very representative explanatory power. The capacity of higher income levels to predict satisfaction with financial situation is in accordance with Joo and Grable (2004), who identified income levels as a factor that positively correlates with financial satisfaction, however, in the referred study, the variable age did not correlate with financial satisfaction, as identified in the present study. With respect to the variable income, Grable *et al.* (2012) also concluded, similarly to the present research, that individuals with lower income levels are less financially satisfied. At last, the result regarding sex may be due to the fact that women receive lower salaries than men, which can possibly influence the fact that women are not as much financially satisfied as men, as found in studies by Souza and Gomes (2015) and by Maia *et al.* (2018) in the Brazilian scenario.

Americans’ opinion about how wealth is accumulated is predicted by income level, number of children, and age. This means that Americans’ opinion that people can only get rich at the expense of others is predicted by lower income levels, lower number of children, and lower age. In parallel, this also means that Americans’ opinion that wealth can grow and there is enough for everyone is predicted by higher income levels, higher number of children, and higher age. These sociodemographic characteristics, jointly, are able to explain 3.9% ( $R^2 = 0.039$ ) of variability in this specific personal-finance-related variable. This means that Americans with higher income levels, higher number of children, and higher age tend to present a more collectivist opinion when it comes to the way wealth should be accumulated.

At last, the frequency in which Americans or their family run out of food or out of cash income is predicted by lower education levels, lower income levels, lower age, and higher number of children. These sociodemographic characteristics, jointly, are able to explain 16.6%

( $R^2 = 0.166$ ) of variability in the frequency out of food and 17.6% ( $R^2 = 0.176$ ) in the frequency out of cash income, which comprise a very representative explanatory power. Robb and Woodyard (2011) and Grable *et al.* (2012) indirectly support these results, in the sense that factors such as age, income, and education, according to the referred authors, are positively correlated to individuals' financial satisfaction. Hence, it is assumed that people satisfied with their financial situation, probably, do not face problems related to the lack of food or cash income very frequently. With respect to the number of children, it makes sense that the higher the number of dependents in the household, the higher the probability of running out of food or cash income.

## 4.6 Hypothesis test results

Having presented and discussed statistically significant correlations and predictions between personal-finance-related variables and sociodemographic characteristics in Brazil and in the United States, Chart 2 summarizes the results for the study hypotheses that were empirically tested.

Chart 2 - Hypothesis test results

Hypotheses	Description	Results
Hypothesis 1 (H-1)	Individuals' education level is able to predict the importance given by them to teaching children how to save money and goods.	Supported (Brazil) Rejected (USA)
Hypothesis 2 (H-2)	Individuals' education level is able to predict their satisfaction with household financial situation.	Rejected
Hypothesis 3 (H-3)	Individuals' education level is able to predict the frequency they run out of food or out of cash income.	Supported
Hypothesis 4 (H-4)	Individuals' age is able to predict their satisfaction with household financial situation.	Rejected (Brazil) Supported (USA)
Hypothesis 5 (H-5)	Individuals' income level is able to predict the frequency they run out of food or out of cash income.	Supported
Hypothesis 6 (H-6)	Individuals' sex is able to predict the frequency they run out of food or out of cash income.	Supported for frequency out of cash income (Brazil) Rejected (USA)
Hypothesis 7 (H-7)	Individuals' number of children is able to predict the importance given by them to teaching children how to save money and goods.	Rejected

Source: Elaborated by the authors.

As shown in Chart 2, some hypotheses were accepted, others were rejected, and, in some cases, results were different between Brazil and the United States, which highlights specificities of each country. This is one of the main advantages of investigating personal finance through a cross-cultural perspective, once it is possible to identify country wise contextualized results.



## 5 CONCLUSION

The main objective of the present study was successfully achieved: to statistically test the influence of individuals' sociodemographic characteristics on their personal finance in Brazil and in the United States. In addition, the specific objective of raising study hypotheses based on theory and on previous empirical studies was also achieved. The referred hypotheses were empirically tested and showed important differences between the countries compared.

The study of personal finance has been an increasingly frequent topic of discussion, which highlights its academic and professional relevance, however, few studies explore and discuss it with a cross-cultural approach, as was done in the present investigation between Brazil and the United States. Discussions focused on the specificities of each country can generate more accurate and contextualized results, once personal financial behavior and other personal-finance-related variables are not standardized globally, in the sense that they vary, among other factors, according to national sociodemographic characteristics, as demonstrated in the present study.

By analyzing the similarities and differences between these two countries, an emerging one and the largest economy in the world, it is possible to reflect about important implications raised by this study. First, in Brazil, even with a low explanatory power, education level proved to be a predictor of how much individuals value teaching their children an important financial behavior, namely to save money and goods, which points out that education is able to lead population to be more conscious about personal finance. In addition, education level proved to be a good predictor of the frequency individuals and their families run out of food or cash income, which points out that higher education levels are, indeed, able to reduce social vulnerable situations in Brazil, an important finding to be considered by education and economy public policy makers. Sex also proved to be a good predictor of the frequency individuals run out of cash income, which points out that, in Brazil, women tend to run out of cash more than man. This constitutes a relevant reflection about gender inequality in the country when it comes to personal finance.

In the United States, similarly to Brazil, education level also proved to be a good predictor of the frequency Americans and their families run out of food or cash income, which suggests that education public policies should be fostered aiming at reducing social vulnerable situations in the United States. On the other hand, some differences between the countries compared are worth highlighting. First, the role of sociodemographic characteristics on the importance given by individuals to teaching children how to save money and goods is more representative in the United States (explanatory power: 6.9%) than in Brazil (explanatory power: 2.2%). Moreover, the role of sociodemographic characteristics on individuals' satisfaction with household financial situation is greater in the United States (explanatory power: 28.1%) than in Brazil (explanatory power: 10.5%). A similar result stands out: the influence of sociodemographic characteristics on the frequency individuals run out of food and out of cash income is much more relevant in the United States (explanatory power: 16.6% for food and 17.6% for cash income) than in Brazil (explanatory power: 3% for food and 7.6% for cash income). These results suggest that, in a developed country, national sociodemographic characteristics are able to better explain personal finance of its citizens, compared to a developing country. This hypothesis, of course, demand confirmation from further and broader studies.

It is important to emphasize that the explanatory power magnitudes for some of the predictions identified in the present study, although apparently low, are considered significant in the field of social sciences and in studies of human behavior, given its natural complexity (BAKKER *et al.*, 2019). As a practical managerial implication, in the public sphere, these results raise specificities of each country when it comes to personal finance and constitute strategic information for social public policy formulation and management. The rationale is that a country should prioritize public policies that enhance sociodemographic characteristics capable of improving financial values, financial behaviors, and financial situation of its citizens. The results of the present investigation, of course, are not able, by themselves, to justify specific changes in public policies, but must be viewed as a study that provides important inputs for future research that attempt to construct and propose a more complete explanatory model for financial behavior, including other predictor variables besides sociodemographic ones. As a theoretical implication, these results suggest which of the analyzed sociodemographic characteristics are more relevant to be included in future proposals of personal behavior explanatory models. Given the relevance of the topic, it is also suggested that future studies compare Brazil with countries of even greater reference in financial education, such as Estonia, Canada, Finland, and Poland (OECD, 2018), identifying contextual factors able to influence personal finance and financial behavior.

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