Personal factors as antecedents of perceived financial well-being: evidence from Brazil

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Abstract

Purpose – The purpose of this paper is to explore the impact of consumer spending self-control (CSSC), personal saving orientation (PSO), materialism, financial knowledge (FK) and time perspective (TP) on Brazilian consumers' perceived financial well-being.

Design/methodology/approach – A conceptual framework is provided to support the research hypotheses. A survey with 1,027 respondents allowed the research hypotheses to be tested by means of regression-based models.

Findings – The findings show that the two dimensions of financial well-being – current money management stress and future financial security – are predicted by CSSC, materialism and TP; PSO also predicts future financial security. TP moderates the effect of materialism on current money management stress, and CSSC mediates this relationship.

Research limitations/implications – The role of FK in predicting financial well-being is weakened in the presence of the psychological variables investigated, which has important implications for financial education efforts. The use of survey data alone limits the research findings, as the advocated causal relationships are based solely on theory; gathering experimental data to further support the findings is a possibility for future research.

Practical implications – Banks and other financial institutions can create tools to stimulate control of their customers' day-to-day spending and try to show assertive projections to evidence the impact of their present actions on their financial future, enhancing personal awareness and promoting overall well-being.

Originality/value – The authors advance knowledge on the antecedents of financial well-being and offer two explanations involving moderating and mediating relationships that enhance the understanding of the individual differences that shape current money management stress.

Keywords Consumer behaviour, Consumer attitudes, Financial knowledge, Financial well-being

Paper type Research paper

Introduction

The financial well-being of individuals, defined by the CFPB (2017, p. 6) as "a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow them to enjoy life", is a common goal of governments, policymakers and researchers. To achieve it, financial education programmes have been launched in a number of countries, such as the National Financial Education Strategy, developed by the OECD (2015) in partnership with local governments.

In Brazil, about 70 per cent of the adult population has a bank account. This percentage is higher than the average for Latin America and the Caribbean (55 per cent) and similar to that of South Africa (69 per cent) and Turkey (69 per cent), but much lower than developed economies such as the USA, Germany, the UK, Australia and Singapore, where it exceeds 93 per cent (The World Bank, 2017). The number of Brazilians with access to the products

and services of financial institutions has been growing in recent years. In the wake of this growth and the development of the consumer market as a whole, the credit market in Brazil jumped from 25 to 50 per cent of gross domestic product (GDP) between 2004 and 2017 (Brazilian Central Bank, 2018). At the same time, at the end of 2017, some 60.2m Brazilians (out of a population of around 208m) had their names blacklisted by a national credit protection agency, representing a growth of 1.3 per cent in relation to the end of 2016 (SPC Brasil, 2018). This is partly a consequence of the high interest rates practised in the country, which, in the form of consumer credit, exceeded 200.0 per cent per annum, with the inflation of around 3.0 per cent in 2017 (Brazilian Central Bank, 2018). Brazil has one of the world's largest economies with a GDP of around 2tn dollars, but its GDP per capita was approximately $9,800 at the end of 2017, lower than the global average of approximately $10,700 (The World Bank, 2018). Also, Brazilians perform poorly on educational rankings; for example, among the 72 countries that participated in the Program for International Student Assessment, organised by the OECD in 2015, the country's averages were positioned in the last quartile in all three areas: math, reading and science. The ageing of the Brazilian population and the lack of systematic financial planning for retirement are two other characteristics that make the study of the individual antecedents of financial well-being quite timely and relevant to this society.

In this study, we build on Brüggen et al.'s (2017) framework of financial well-being by advancing knowledge on one of its elements: the influence of personal factors on financial well-being. Those authors proposed a research agenda on financial well-being, arguing, among other topics, that "personal factors are fundamental to financial well-being and need to be acknowledged in a broad manner" (p. 234). They specifically recommend the measurement and comparison of the effects of different personal factors on financial well-being. This stream of literature is relevant because the study of such factors may support the development of tools to enhance personal awareness of and responsibility for one's financial future. Considering that financial well-being means having control over everyday finances, being able to absorb financial stress, following a plan to achieve financial goals and having the financial freedom to make life-saving choices (CFPB, 2017), an understanding of how personal characteristics affect such actions becomes critical in defining more effective interventions to promote the well-being of the individual. Although our level of discussion is primarily the individual, our findings may broaden the possibilities of delineating better financial education programmes, which, in turn, have practical and societal implications.

Multiple personal factors have been identified as antecedents of financial well-being, with an emphasis on financial knowledge (FK) (Norvilitis and MacLean, 2010; Fernandes et al., 2014), materialism (Dittmar et al., 2014), time perspective (TP) and self-control (Lynch et al., 2010; Drever et al., 2015). There is vast evidence of negative associations between materialism and well-being and satisfaction with life (for further study on these issues, see Burroughs and Rindfleisch, 2002; Richins, 2013; Dittmar et al., 2014). Future orientation has been related to several positive consequences for the individual (Strathman et al., 1994). Future-oriented individuals claim to be less likely to engage in compulsive buying behaviours, more likely to responsibly use money earned and more likely to join a private pension plan (Joireman et al., 2005; Howlett et al., 2008). It is also known that lower-income consumers are more vulnerable to the loss of financial well-being due to their lower levels of financial reserves. Although the literature on consumer behaviour, behavioural finance and economic psychology contains studies with subsets of the aforementioned constructs, the topic remains relevant and has theoretical gaps that need to be filled (Brüggen et al., 2017; Netemeyer et al., 2018).

Given this scenario, the objective of this research is to investigate the impact of personal factors on Brazilian consumers' perceived financial well-being (PFWB).

Specifically, the following relationships are examined: the direct effects of consumer spending self-control (CSSC), personal saving orientation (PSO), materialism, FK and TP on the PFWB of individuals, and the moderating effect of TP (in the present-fatalistic dimension) and the mediating effect of CSSC on the relationship between materialism and financial well-being.

The theoretical contribution of this study lies in measuring and testing the collective impact of different personal factors on financial well-being. We use Netemeyer *et al.*'s (2018) recently developed measures for the present and future dimensions of PFWB and contribute to the stream of literature well-summarised by Brüggen *et al.*'s (2017) framework of financial well-being. Based on a survey with 1,027 Brazilians not restricted to students, our findings show that a cognitive factor often emphasised in financial education programmes, i.e. FK, was found to be peripheral in the presence of behavioural and attitudinal predictors of financial well-being. Researchers and practitioners can benefit from these findings in order to improve financial education programmes – for example, emphasising financial skills rather than knowledge, and focusing on cultural values and interpersonal dynamics that involve present and future financial well-being-related issues.

Three additional arguments serve to justify the relevance and contributions of this work. The first is that, to date, no studies have been found that examine, in an integrated way, the interrelationships between the aforementioned constructs and financial well-being. No study records were found that investigate the moderating effect of TP on the effect of materialism on financial well-being, or the mediating effect of CSSC on this relationship. To the extent that greater control over spending may serve to soften materialists' urge for higher standards of consumption, and TP may raise awareness of the negative financial consequences of immediacy, it seems relevant to investigate such relationships. Second, most of the research works on financial well-being have so far focused on North America, Western Europe and Australia (Santos *et al.*, 2016). Scientific research in developing economies such as Brazil's becomes relevant not only because most of the world's consumers live in these markets, but also because financial well-being-related matters of an economic, legal, political, socio-cultural, technological and market nature are specific. The established theories and the empirical generalisations derived from data extracted in developed countries are not necessarily applicable to the context of these markets (Burgess and Steenkamp, 2006). The third argument refers to a methodological contribution; the operational definitions of the constructs involved are adapted and validated in the Brazilian context.

This paper is organised as follows: next, we present the conceptual framework and the research hypotheses. Then, the data collection process and the operational definitions of the study constructs are detailed in the methodological procedures section. Finally, we present the results and the conclusion, including the study's theoretical and practical implications, its limitations and directions for future research.

Conceptual framework and research hypotheses

Brüggen *et al.*'s (2017, p. 231) financial well-being framework is comprised of five groups of elements that influence or are influenced by financial well-being: contextual factors, such as economic development, consumer protection, political stability, culture, population growth, technology and available financial solutions; interventions, such as financial education and financial counselling; financial behaviour, such as breaking financially destructive behaviours and stimulating sound financial behaviours; personal factors, such as sociodemographics, skills, values, attitudes and motivations; and consequences of financial well-being, such as quality of life and happiness, general well-being and mental health. The current paper focuses on one of these groups to empirically test the collective impact of

selected personal factors – CSSC, PSO, materialism, FK and TP – on the PFWB of individuals. Figure 1 provides a pictorial representation of these relationships, which are further explored as follows.

Financial well-being
Recent studies have proposed conceptual definitions of financial well-being considering both the present and future dimensions (Brüggen *et al.*, 2017; Netemeyer *et al.*, 2018). Based on the CFPB's definition of financial well-being, Netemeyer *et al.* (2018, p. 4) proposed the PFWB scale. This is a measure formed by two dimensions: current money management stress (present-related dimension), which "encompasses feelings of being stressed/worried about one's current financial situation, being unable to manage money effectively today to meet financial obligations, and live the life one wants to live"; and the expected future financial security (future-related dimension), which "encompasses perceptions of having a financially secure future and meeting future financial goals". The authors argue that the antecedents of each dimension are different.
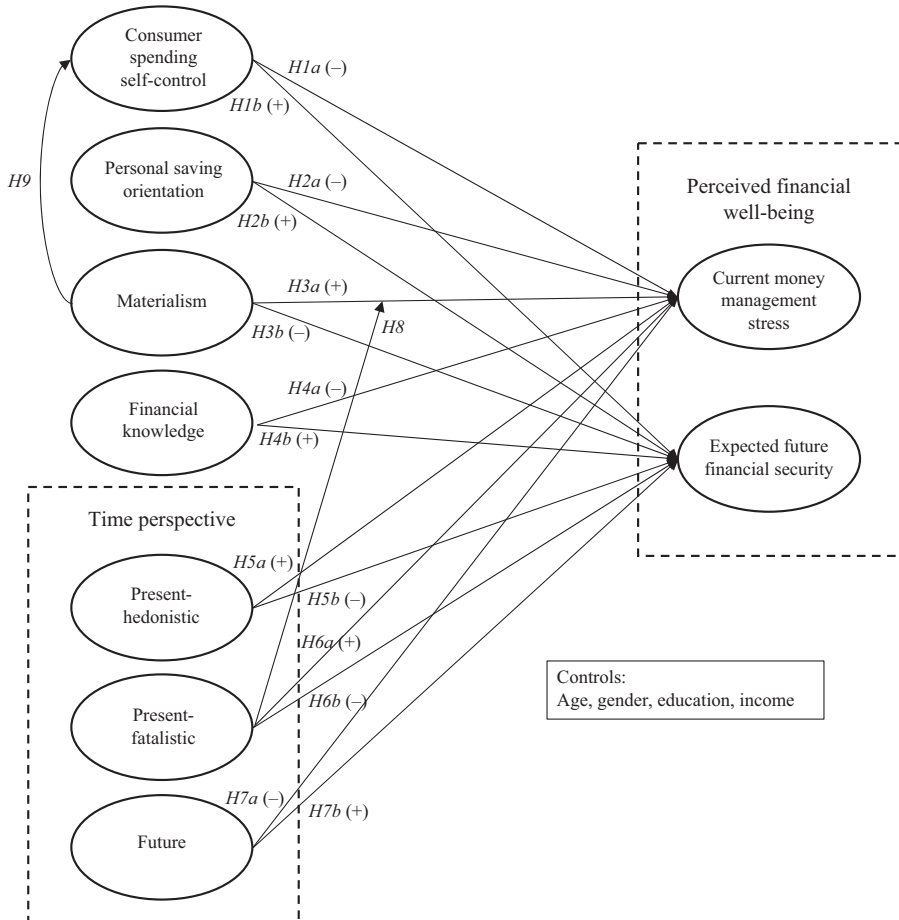

Figure 1.
Conceptual model:
personal factors
as antecedents
of perceived
financial well-being

Consumer spending self-control

Self-control represents one's ability to avoid temptation, maintain self-discipline and control behaviour (Baumeister, 2002; Kivetz and Simonson, 2002; Tangney *et al.*, 2004). In the consumer behaviour literature, most of the studies have linked a lack of self-control to negative outcomes such as compulsive buying (Achtziger *et al.*, 2015), choosing vice over virtue (Siddiqui *et al.*, 2017) and over-indebtedness (Gathergood, 2012). In the domain of financial well-being, self-control is positively associated with security in current and future financial situations (Strömbäck *et al.*, 2017).

Although self-control is a robust measure to predict many behaviours, measures for specific domains of self-control have been developed to better explain outcomes in a variety of areas. In this sense, Haws *et al.* (2012) proposed that financial decisions are better explained by CSSC than by general self-control. They defined CSSC as "the ability to monitor and regulate one's spending-related thoughts and decisions in accordance with self-imposed standards" (Haws *et al.*, 2012, p. 697). Consumers with high levels of CSSC are less prone to make unplanned purchases or to pay more for products than those low on CSSC and are more likely to save for retirement (Bearden and Haws, 2012; Haws *et al.*, 2012). Therefore, we hypothesise that:

> *H1a.* Individuals with higher (lower) CSSC will report less (more) current money management stress.

> *H1b.* Individuals with higher (lower) CSSC will report more (less) expected future financial security.

Personal saving orientation

PSO refers to "the individual difference supporting a constellation of activities to save money, some of which are habitual and routinized, while others are opportunistic and intentional, that the consumer performs consistently and incorporates into his or her lifestyle" (Dholakia *et al.*, 2016, p. 137). This construct is formed by two dimensions: day-to-day actions, related to actions that favour savings and that involve a future-oriented saving behaviour such as saving money for a rainy day and achieving personal savings goals; and a saving lifestyle, which relates saving money to a habit. Such saving behaviour is constructed through time and implies long-term behavioural strategies (Shockey and Seiling, 2004; Nenkov *et al.*, 2008).

Saving behaviour has a positive effect on subjective well-being (Shim *et al.*, 2012) as well as on financial well-being (Bagozzi and Warshaw, 1990). High-PSO individuals tend to save more for the future (e.g. for retirement) than low-PSO individuals (Dholakia *et al.*, 2016). Hence, we hypothesise that:

> *H2a.* Individuals with a higher (lower) PSO will report less (more) current money management stress.

> *H2b.* Individuals with a higher (lower) PSO will report more (less) expected future financial security.

Materialism

Materialism is defined as "the importance ascribed to the ownership and acquisition of material goods in achieving major life goals or desired states" (Richins, 2004, p. 210). More materialistic individuals are less satisfied with their lives (Górnik-Durose and Boroń, 2018), more inclined to buy products that confer status (Goldsmith and Clark, 2012) and more likely to be indebted (Nepomuceno and Laroche, 2015). Thus, materialism has been negatively associated with financial well-being (Netemeyer *et al.*, 2018).

Possible explanations are that more materialistic individuals tend to present high levels of financial worry (Garðarsdóttir and Dittmar, 2012) and/or are poor at money management (Donnelly *et al.*, 2012). Additionally, materialism is associated with credit overuse behaviour, such as being behind in making payments, as well as with financial concerns, such as worrying about paying off debts (Richins, 2011). In this sense, we hypothesise that:

H3a. Individuals with higher (lower) materialism will report more (less) current money management stress.

H3b. Individuals with higher (lower) materialism will report less (more) expected future financial security.

Financial knowledge
One cognitive aspect that impacts financial decision making is FK. Studies have shown that FK (or the lack of it) is a significant predictor of debt (Norvilitis *et al.*, 2006) and may impact individuals' evaluation and intentions related to retirement investments (Howlett *et al.*, 2008); on the other hand, there is evidence that simply promoting FK is not sufficient to change money management (Shockey and Seiling, 2004), because financial behaviour is influenced, among other aspects, by values and beliefs (Hira, 2012). Thus, evidence of the effectiveness of FK for financial well-being is mixed (Fernandes *et al.*, 2014; Hensley, 2015). We hypothesise that there is a positive and direct impact of FK on financial well-being; as we argue in the results section, this positive and direct impact becomes insignificant when other personal factors are taken into account:

H4a. FK will negatively influence current money management stress.

H4b. FK will positively influence expected future financial security.

Time perspective
According to Zimbardo and Boyd (1999, p. 1271), TP is "the often nonconscious process whereby the continual flows of personal and social experiences are assigned to temporal categories, or time frames, that help to give order, coherence, and meaning to those events". The authors state that the perception of temporal periods – past, present and future – influences how the individual makes judgements and decisions. Given our research objective, in this study we focused on the present and future dimensions.

The present dimension of the Zimbardo Time Perspective Inventory (ZTPI) is composed of two subscales: present-hedonistic, which is associated with life pleasure, excitement and indulgence; and present-fatalistic, which relates to the perception of lack of life self-control and a fatalistic, helpless and hopeless attitude towards the future and life. The future dimension is related to planning and achieving goals in the future. In general, a future orientation has been related to several positive consequences for the individual, while the predominance of an orientation towards the present is associated with risk behaviours and negative consequences (Strathman *et al.*, 1994; Wills *et al.*, 2001). Hence, we hypothesise that:

H5a. A present-hedonistic orientation will positively influence the current money management stress.

H5b. A present-hedonistic orientation will negatively influence the expected future financial security.

H6a. A present-fatalistic orientation will positively influence the current money management stress.

H6b. A present-fatalistic orientation will negatively influence the expected future financial security.

H7a. A future orientation will negatively influence the current money management stress.

H7b. A future orientation will positively influence the expected future financial security.

A present-fatalistic orientation has been related to an external locus of control (Milfont and Gouveia, 2006); the literature on locus of control tends to differentiate between an internal locus of control, in which people feel control over outcomes in their environments, and an external locus of control, in which people feel that their outcomes rest with others or are the result of luck. In the consumer behaviour literature, an external locus of control has been associated with high levels of materialism (Hunt *et al.*, 1990) and low levels of well-being (Christopher *et al.*, 2009; Becker and Birkelbach, 2018). Individuals with high levels of materialism tend to judge others and themselves based on material possessions (external cues); from those with an external locus of control, who often use external factors to explain outcomes, we expect high levels of current money management stress. An internal locus of control or causality may function as a buffer against stressful life events (Becker and Birkelbach, 2018). Thus, we hypothesise that:

H8. A present-fatalistic orientation moderates the relationship between materialism and current money management stress. The impact of materialism on current money management stress will be greater (lower) among individuals with an external (internal) locus of causality.

Materialism, CSSC and financial well-being
Materialism has a negative effect on self-control (Kim, 2013), having been linked to self-control failure in many studies (Goldberg *et al.*, 2003; Fitzmaurice, 2008; Richins, 2011). As materialists seek desired states such as happiness by means of acquisition, they are more likely to fail in controlling spending, thus struggling with current money management. Therefore, we hypothesise that:

H9. CSSC mediates the relationship between materialism and current money management stress. More (less) materialistic individuals will have less (greater) control over their spending, which, in turn, will accentuate (decrease) their present financial stress levels.

Methodological procedures
To test the formulated hypotheses, data were collected from adult individuals aged between 25 and 45 years. The age range, while subjective, is important to delineate a sample with participants who are economically active and more likely to manage their own finances. A broader age group, on the other hand, would result in greater heterogeneity in the profile of the respondents, which was avoided given the resulting need to collect a larger sample or to grant statistical power when testing the research hypotheses.

A pre-test with 90 individuals served to analyse the reliability and validity of the scales used. Following the pre-test, the main collection resulted in 1,027 questionnaires completed by consumers from the metropolitan areas of Belo Horizonte, Rio de Janeiro, Salvador and São Paulo (all four are among the largest and most important Brazilian metropolitan areas). The number of respondents in each of these areas was 234, 222, 303 and 268, respectively. These respondents were already registered in the online panel of a multinational market research company with operations in Brazil; the data collection took place in November 2017. The respondents completed a survey containing the scale items for the constructs of

CSSC; PSO; materialism; FK; TP (present-hedonistic, present-fatalistic and future dimensions); PFWB (present and future dimensions); as well as age, gender, education, income, positive and negative financial behaviours, and other items that aided in assessing the validity of the measures of interest.

With the exception of the seven FK items, the participants rated all the scale items, which are available in the Appendix, on a five-point scale ranging from 1 "strongly disagree" to 5 "strongly agree". With the exception of FK, whose score was derived by means of an item response theory (IRT) model, the scores for the other constructs were defined as the mean response to each of the scales' items. Their operational definitions are as follows.

Measures
Perceived financial well-being. The ten items of the PFWB scale proposed by Netemeyer *et al.* (2018) were submitted to confirmatory factor analysis. The parameter estimation method was that of maximum likelihood, and the two latent dimensions of present and future were allowed to be correlated; the calculations were made using the statistical package LISREL 9.2 (Jöreskog and Sörbom, 2015). In order to improve the model fit indicators (χ^2, comparative fit index (CFI), non-normed fit index (NNFI) and root mean square error of approximation (RMSEA)), two items (PFWB_03 and PFWB_04) were excluded and the analyses then repeated. Model fit statistics for each of the four regions and for the sample as a whole show that the data fit well to the theoretical model: the ratio χ^2 by degrees of freedom ranged from 2.16 to 2.83 (19 degrees of freedom); the CFI ranged from 0.946 to 0.972; the NNFI ranged from 0.920 to 0.959; and the RMSEA was below 0.08 on all models. Taken together, these indices are indicators of excellent fit (Hu and Bentler, 1999; Schreiber *et al.*, 2006).

Additional evidence of criterion validity is also available. Table I contains the means of PFWB by dimension and by answer for each of six questions associated with financial behaviours. The *p*-value column contains the statistical significance of *t*-tests for mean comparison between groups. The results of all 12 tests are in line with our theoretical expectation. The means for the future dimension are larger (indicating greater perceived financial security) in the groups that answered "yes" to questions 1, 2, 3 and 5, which represent positive financial behaviours, and are smaller for questions 4 and 6, which represent negative financial behaviours. In the case of the present dimension, the means are smaller (indicating less financial stress and consequently greater financial well-being) in the groups that answered yes to questions 1, 2, 3 and 5, and higher (indicating lower financial well-being) in questions 4 and 6.

Consumer spending self-control. Haws *et al.*'s (2012) CSSC scale is unidimensional and has ten items of a reflective nature; in that study, several data collections were reported, and the α coefficients for the scale were around 0.90. We performed a pre-test with the ten items in a sample of 90 adults. Because the results of confirmatory factor analyses to check the unidimensionality of the CSSC construct were more robust in the set of four than in the ten items, and to reduce the size of the questionnaire for the main data collection, in this study we adopted a reduced version with four items.

Personal saving orientation. This reflective construct is intended to capture the ongoing cultivation of saving actions and the adoption of a lifestyle that is congruent with saving money. The five items of the day-to-day action dimension (Dholakia *et al.*, 2016) were adopted in this study.

Materialism (MAT). The scale proposed by Richins and Dawson (1992), in the version adjusted by Richins (2004), is the most widely used in the field of consumer behaviour to measure materialism. In the study by Richins (2004), in addition to the complete scale

	Count	%	Mean	PFWB-future SD	p-Value (t-test)	Mean	PFWB-present SD	p-Value (t-test)

1. Have you set aside emergency or rainy day funds that would cover your expenses for three months, in case of sickness, job loss, economic downturn or other emergencies?

	Count	%	Mean	SD	p-Value	Mean	SD	p-Value
No	619	60.3	2.66	0.94	0.000	2.86	0.90	0.000
Yes	357	34.8	3.47	0.99		2.33	0.96	
Missing	51	5.0						

2. Have you ever tried to figure out how much you need to save for retirement?

No	704	68.5	2.82	1.01	0.000	2.70	0.95	0.000
Yes	282	27.5	3.28	1.00		2.56	0.98	
Missing	41	4.0						

3. Does your household have a budget? A household budget is used to decide what share of your household income will be used for spending, saving or paying bills

No	471	45.9	2.67	0.98	0.000	2.81	0.91	0.000
Yes	492	47.9	3.25	0.98		2.52	0.99	
Missing	64	6.2						

4. Do you usually find yourself with a negative bank balance (at least three times a year)?

No	578	56.3	3.12	1.00	0.000	2.48	0.93	0.000
Yes	390	38.0	2.71	1.01		2.91	0.95	
Missing	59	5.7						

5. Do you always pay the full amount of your credit card bills?

No	164	16.0	2.60	1.00	0.000	3.09	0.85	0.000
Yes	799	77.8	3.04	1.02		2.57	0.95	
Missing	64	6.2						

6. In the last 12 months, have you borrowed money from relatives, friends or co-workers?

No	667	64.9	3.10	1.01	0.000	2.50	0.92	0.000
Yes	331	32.2	2.66	0.97		2.98	0.94	
Missing	29	2.8						

Table I.
Associations
between perceived
financial well-being
and positive
financial behaviours

composed of 15 items, reduced versions of nine, six and three items were analysed. The nine- and six-item versions were translated and adapted for use in the Brazilian context by Ponchio and Aranha (2008). In the present study, we adopted the six-item version of this scale.

Financial knowledge. To measure the participants' FK, the scale validated by Knoll and Houts (2012) was adapted considering the Brazilian context. The instrument was divided into two blocks, the first with multiple choice questions and the second with true/false statements. The items covered the topics: interest, inflation, time value of money, investment, risk diversification, debt management and retirement savings. Issues that referred to products specific to the North American context, such as the 401 k pension plan, were excluded. After this adjustment phase for content validation, the original 20 items were reduced to 15.

Two waves of data collection were conducted for distinct purposes by the researchers in 2016 and 2017. The respective sample sizes were 801 and 378, and they contained these 15 items. From the binary answers (correct or incorrect) to each of the 15 questions about FK, a one-dimensional logistic model of IRT with two parameters (item difficulty and item discrimination level) was adjusted to estimate the latent construct of FK of each of the respondents in both available samples. The function adopted is as follows:

$$P(U_{ij} = 1|\theta_j, a_i, b_i) = \frac{e^{a_i(\theta_j - b_i)}}{1 + e^{a_i(\theta_j - b_i)}},$$

where $P(U_{ij} = 1|\theta_j, a_i, b_i)$ is the probability that individual j with ability θ_j correctly responds to item i; b_i is the item i difficulty parameter, measured on the same ability scale; a_i is the item i discrimination parameter. The model was generated with the R software irtoys package (Partchev, 2010).

The parameters of discrimination and difficulty were taken into account to reduce the scale from 15 to 7 items; the use of IRT has been popular for evaluating educational tools, and its use to assess the quality of measures in the field of psychometrics has grown (Edelen and Reeve, 2007; Knoll and Houts, 2012; Asgeirsdottir *et al.*, 2016). The process of reducing the items prioritised keeping those that helped better discriminate between respondents with less and more FK. In this study, the FK score of the 1,027 participants was obtained using the same IRT model previously presented.

Time perspective. The ZTPI, developed by Zimbardo and Boyd (1999), is the most widely used instrument in surveys that measure the TP construct. Leite (2014) adapted and validated the ZTPI to the Brazilian context. In this study, the subscales of present-hedonistic, present-fatalistic and future were applied. The final number of items in each of these constructs was 4, 5 and 4, respectively.

Results

Sample characteristics

The average age of the 1,027 participants was 32.5 years (SD $=$ 5.6; min. $=$ 25, max. $=$ 45) and the sample was predominantly made up of female respondents (692 or 67.4 per cent). Compared to the Brazilian population, our research sample is well-educated, probably a reflection of the data collection having been conducted online: only 49 (4.8 per cent) respondents did not complete high school, and 535 (52.1 per cent) have a college degree. Also, the average income of the respondents is roughly two times the average income in the metropolitan areas studied; however, the percentage of respondents with a very high income (among the 1 per cent richest in Brazil) was low at 0.7 per cent (seven respondents).

Construct reliability and validity

The methodological procedures used to access construct reliability and validity follow recommendations in the measurement literature (MacKenzie *et al.*, 2011; DeVellis, 2012). Three experts analysed the content validity of the Portuguese version of the scale items; then, a pre-test with 90 respondents was conducted to evaluate the ease of comprehension of the wording of the items and the dimensionality of the constructs. After a few adjustments, the main collection was carried out.

Because the scores for FK were obtained using IRT, this construct was left out of part of the convergent and discriminant validity analyses reported herein. Tables II and III present information about the constructs' reliability and validity.

Factor loadings and convergent validity of items. After the removal of two items (PFWB_03 and PFWB_04) from the PFWB-future scale, none of the variables had factor loadings with values below 0.65. The average variance extracted (AVE) of each construct was calculated; these were in accordance with Fornell and Larcker's (1981) recommendation that the AVE should be equal to or greater than 0.50.

Reliability tests. Cronbach's α: none of the research constructs displayed a value below the reference value of 0.70 (Kline, 2011).

Discriminant validity. The discriminant validity test was performed by comparing the average AVE with the square of the correlation coefficients between constructs (Fornell and Larcker, 1981). Discriminant validity was satisfactory in all cases.

Common method variance (Harman's test; common marker variable). A one-factor Harman's test was applied (Podsakoff and Organ, 1986). No problems of common variance

Construct/dimension	Item code	Scale item			Construct			
		Mean	SD	Factor loading	Mean	SD	AVE	Coeff. α
Perceived financial well-being								
Expected future financial security	PFWB_01	3.05	1.16	0.87	2.96	1.03	0.72	0.803
	PFWB_02	2.99	1.21	0.91				
	PFWB_05	2.82	1.28	0.77				
Current money management stress	PFWB_06	2.54	1.27	0.73	2.66	0.96	0.55	0.792
	PFWB_07	2.86	1.42	0.68				
	PFWB_08	2.54	1.22	0.75				
	PFWB_09	2.98	1.32	0.77				
	PFWB_10	2.36	1.28	0.76				
Consumer spending self-control	CSSC_01	3.31	1.22	0.76	3.60	0.96	0.67	0.833
	CSSC_02	3.69	1.18	0.83				
	CSSC_03	3.53	1.18	0.84				
	CSSC_04	3.85	1.15	0.83				
Personal saving orientation	PSO_01	3.63	1.19	0.76	3.29	1.00	0.62	0.840
	PSO_02	3.43	1.22	0.84				
	PSO_03	2.88	1.41	0.79				
	PSO_04	3.54	1.16	0.81				
	PSO_05	2.97	1.39	0.73				
Materialism	MAT_01	3.10	1.48	0.69	2.68	0.98	0.55	0.832
	MAT_02	1.91	1.19	0.73				
	MAT_03	3.25	1.28	0.71				
	MAT_04	1.93	1.19	0.74				
	MAT_05	2.66	1.40	0.78				
	MAT_06	3.23	1.42	0.80				
Time perspective								
Present-hedonistic	TP_PH_01	2.42	1.29	0.83	2.24	0.99	0.66	0.824
	TP_PH_02	2.35	1.23	0.85				
	TP_PH_03	2.27	1.22	0.79				
	TP_PH_04	1.91	1.14	0.77				
Present-fatalistic	TP_PF_01	2.53	1.28	0.74	2.46	0.96	0.58	0.816
	TP_PF_02	2.81	1.35	0.79				
	TP_PF_03	2.74	1.31	0.75				
	TP_PF_04	2.32	1.23	0.79				
	TP_PF_05	1.88	1.16	0.72				
Future	TP_F_01	3.66	1.13	0.71	3.58	0.84	0.54	0.719
	TP_F_02	3.60	1.16	0.70				
	TP_F_03	3.49	1.11	0.76				
	TP_F_04	3.58	1.14	0.78				

Table II.
Items' summary
statistics and
construct
reliability indicators

Construct	1	2	3	4	5	6	7	8
1. Consumer spending self-control	–							
2. Personal saving orientation	0.754	–						
3. Materialism	−0.106	−0.017 (ns)	–					
4. Financial knowledge	0.075*	0.109	−0.076*	–				
5. Time perspective – present-hedonistic	−0.348	−0.298	0.395	−0.125	–			
6. Time perspective – present-fatalistic	−0.099	−0.055 (ns)	0.305	−0.298	0.432	–		
7. Time perspective – future	0.376	0.367	0.055 (ns)	0.104	−0.089	0.058 (ns)	–	
8. Current money management stress	−0.209	−0.138	0.438	−0.105	0.376	0.382	−0.076*	–
9. Expected future financial security	0.470	0.589	0.091	0.133	−0.075*	−0.050 (ns)	0.293	−0.129

Notes: *$0.01 < p$-value < 0.05; (ns) not significant at the 0.05 level

Table III.
Correlation
coefficients
between constructs

were identified, but, aware of the weakness of the Harman's test in a context with many scale items, an additional test was conducted. We used the common marker variable technique, which involves selecting a variable (called a "marker") with no expected theoretical relationship with the substantive variables of the study. Bivariate correlation coefficients are calculated between the substantive variables of the study, and then partial correlation coefficients between the same variables are calculated, deducing the effect of the marker variable. If the partial correlation coefficients remain close to the values obtained in the previous step, then there is no evidence of the presence of common variance in the method (Lindell and Whitney, 2001). We adopted the construct of socially desirable responses for this analysis, since there is no theoretical expectation that it should correlate with the constructs of PFWB (in its two dimensions), CSSC, PSO, MAT, FK and TP (in its three dimensions). When respondents, as in this study, fill out the questionnaires anonymously and online, the negative effect of socially desirable responses is expected to be insignificant. Indeed, our analyses indicate that there is no significant correlation between this construct and the others.

Personal factors as antecedents of PFWB

Multiple linear regression models were used to test *H1a–H7b*. Table IV shows the outputs of four models: two baseline models, which include only age, gender, education and income as predictors, and two models that, in addition to these socio-demographic predictors, include this study's constructs.

In the case of the current money management stress dimension, the model shows that greater spending self-control reduces the perceived financial stress (supporting *H1a*), and more materialistic individuals will experience greater financial stress (supporting *H3a*). The temporal dimensions of present-hedonistic, present-fatalistic and future orientation are also significant, supporting *H5a–H7a*, respectively: individuals who are more oriented to the present have external locus of causality and are less oriented to the future tend to experience more current financial stress. The constructs of PSO and FK are not statistically significant in the complete model. To better investigate *H2a* and *H4a*, hierarchical multiple

| Predictor variables | Current money management stress | | | | Expected future financial security | | | |
| | Baseline model | | Complete model | | Baseline model | | Complete model | |
	β (*p*-value)[a]	VIF	β (*p*-value)[a]	VIF	β (*p*-value)[a]	VIF	β (*p*-value)[a]	VIF
Consumer spending self-control			−0.107 (0.018)	2.57			0.138 (0.001)	2.57
Personal saving orientation			0.024 (0.592)	2.51			0.475 (0.000)	2.51
Materialism			0.300 (0.000)	1.25			0.088 (0.003)	1.25
Financial knowledge			0.022 (0.483)	1.26			0.011 (0.699)	1.26
Time perspective – present-hedonistic			0.133 (0.000)	1.63			0.129 (0.000)	1.63
Time perspective – present-fatalistic			0.230 (0.000)	1.45			−0.070 (0.026)	1.45
Time perspective – future			−0.096 (0.002)	1.23			0.067 (0.020)	1.23
Age	0.051 (0.141)	1.09	0.096 (0.001)	1.12	−0.061 (0.073)	1.09	−0.036 (0.193)	1.12
Gender	0.010 (0.776)	1.07	0.014 (0.630)	1.12	0.052 (0.127)	1.07	0.020 (0.475)	1.12
Education	−0.076 (0.033)	1.14	−0.012 (0.692)	1.22	0.011 (0.745)	1.14	0.045 (0.119)	1.22
Income	−0.115 (0.002)	1.24	−0.088 (0.007)	1.32	0.253 (0.000)	1.24	0.131 (0.000)	1.32
R^2 (%)	2.4		31.8		6.9		41.1	

Note: [a]Values are standardised β estimates with *p*-values in parentheses

regression analyses were conducted, and these constructs were statistically significant to explain PFWB-present when left alone with the control variables. This represents support for *H2a* (s.t. β coeff. = −0.088, *p*-value = 0.014) and *H4a* (s.t. β coeff. = −0.151, *p*-value < 0.001), although it seems relevant to emphasise their diminished relative importance (in the presence of the other personal factors) to explain PFWB-present.

In the case of the expected future financial security dimension, more spending self-control, more PSO, less present-fatalistic orientation and greater orientation towards the future are associated with greater financial well-being. This evidence supports the research *H1b–H7b*, respectively. There was a weak but positive influence of materialism and present-hedonistic orientation on this financial well-being dimension, contrary to what was postulated in *H3b* and *H5b*; these issues should be further addressed in future research. There is no evidence to support *H4b*, since the FK construct is statistically insignificant in explaining PFWB-future in the context of the complete model (FK is also statistically insignificant when left alone with the control variables of the baseline model).

Moderation and mediation hypotheses (H8 and H9)
To test the moderation *H8*, we used model 1 of the PROCESS macro (Hayes, 2017). In this simple moderation model, present-fatalistic orientation was the moderating variable, materialism was the predictor variable and current money management stress was the response variable. Age and income served as covariates. The product term variables were mean centred for this analysis.

The interaction term between materialism and present-fatalistic orientation was found to be statistically significant (*p*-value = 0.016; R^2 change due to interaction term of approximately 1 per cent). The Johnson–Neyman technique was applied to probe the present-fatalistic moderating effect on the relationship between materialism and current financial management stress. The moderating effect was found to be statistically significant throughout the observed data range; there were no statistically significant transition points. At three different levels of the moderator (−1 SD, mean, +1 SD), the conditional effects of materialism on current money management stress are 0.2690 (95% confidence interval (CI): 0.1879, 0.3502), 0.3323 (95% CI: 0.2736, 0.3910) and 0.3955 (95% CI: 0.3207, 0.4703), respectively. The substantial meaning of these relationships is that the effect of materialism on individuals' current money management stress gets larger as the individual perception of fatalism and an attitude of lack of hope about life and the future increase, supporting our research hypothesis.

The mediation *H9* was tested with model 4 of the PROCESS macro (Hayes, 2017). In this simple mediation model, CSSC was the mediating variable, materialism was the predictor variable and current money management stress was the response variable. Age and income served as covariates.

An analysis of the mediation model reveals that the direct effect of materialism on current money management stress is positive (β coeff. = 0.40, *p*-value < 0.01). Yet the higher the materialism, the lower the CSSC (β coeff. = −0.13, *p*-value < 0.01) and the greater the CSSC, the lower the current money management stress (β coeff. = −0.19, *p*-value < 0.01). The indirect effect (mediated by CSSC) of materialism on current money management stress is positive and significant, indicating an effect of mediation in line with our theoretical expectation. The 95% CI for the indirect effect, generated by the bootstrapping procedure with 10,000 bootstrap samples, was 0.010, 0.042. The completely standardised indirect effect was 0.025 (95% CI: 0.011, 0.043). These results strongly support our prediction that more (less) materialistic individuals will have less (greater) control over their spending, which, in turn, will accentuate (decrease) their present financial stress levels. This finding suggests that consumers' spending control provides a necessary behavioural ingredient to prevent their material desires from affecting their financial health.

Conclusion

Based on Brüggen *et al.*'s (2017) conceptual framework and previous research, relationships between personal factors and financial well-being were hypothesised and tested. The results, summarised in Table V, contribute towards advancing the existing knowledge on the topic; specifically, the following findings deserve attention:

(1) We demonstrated that greater spending self-control reduces current money management stress and that those who are more materialistic, more present-hedonistic, more present-fatalistic and less future-oriented tend to experience more current money management stress. Also, more spending self-control, more PSO, less present-fatalistic and greater orientation towards the future are associated with greater expected future financial security. Contrary to expectations, there was a weak but positive influence of materialism and of the present-hedonistic dimension on the latter PFWB dimension; it may be that more immediatist people have more difficulty accessing the consequences of their present behaviours on their future. Nevertheless, this interpretation should be further addressed in future research.

(2) FK only influenced the individuals' current money management stress and not their expected future financial security. Moreover, when other personal factors were jointly analysed, the incremental importance of FK on the understanding of financial well-being was insignificant. This finding has important implications for practitioners, policymakers and researchers, since it means that behavioural and attitudinal predictors are more relevant than the often-emphasised cognitive factor of FK in understanding financial well-being. Financial education initiatives may stress financial skills, cultural values and interpersonal dynamics rather than, or in addition to, knowledge.

Hypothesis	Personal factor	Perceived financial well-being dimension	Expected relationship	Result
H1a	Cons. spending self-control	Current money management stress	−	Supported
H2a	Personal saving orientation		−	[a]
H3a	Materialism		+	Supported
H4a	Financial knowledge		−	[a]
H5a	TP. Present-hedonistic		+	Supported
H6a	TP. Present-fatalistic		+	Supported
H7a	TP. Future		−	Supported
H1b	Cons. spending self-control	Expected future financial security	+	Supported
H2b	Personal saving orientation		+	Supported
H3b	Materialism		−	[b]
H4b	Financial knowledge		+	Not supported
H5b	TP. Present-hedonistic		−	[b]
H6b	TP. Present-fatalistic		−	Supported
H7b	TP. Future		+	Supported
H8	MAT and TP_PF	Current money management stress	moderation	Supported
H9	MAT and CSSC		mediation	Supported

Notes: [a]The relationships between PSO and PFWB-present and between FK and PFWB-present were only statistically significant when these constructs were first entered to the baseline model presented in Table IV. In the presence of other personal factors as regression predictors, they were not significant. [b]There was a weak but positive influence of materialism and of present-hedonistic on expected future financial security, contrary to what was postulated

Table V.
Summary of results –
research hypotheses

(3) TP moderates the effect of materialism on current money management stress, and CSSC mediates this relationship. To the best of our knowledge, these two mechanisms have not been previously reported. These findings constitute novelties that contribute towards uncovering and further understanding the mechanisms that shape individual differences in financial well-being. Measuring and comparing the effects of different personal factors on financial well-being are relevant to support the development of tools to enhance personal awareness and responsibility over one's financial future. Personal factors may serve as a basis for client segmentation, so that financial advisors can implement targeted marketing efforts.

Taken together, the results showed that financial behaviours and personal characteristics affect the financial well-being of individuals. The weak role of FK in predicting financial well-being in the presence of the psychological variables investigated has important implications for financial education efforts. In accordance with Dholakia *et al.* (2016, p. 152), "simply teaching factual knowledge about how personal finance works as is done in conventional financial literacy programs may not be enough; it may be necessary to teach people habits that encourage consistent saving and ways to create and maintain a saving-oriented lifestyle". Though materialism is a value likely internalised early in life (Richins, 2004, 2011), there is evidence that some traits and skills could be trained in order to improve financial behaviour (Nenkov *et al.*, 2008; Meier and Sprenger, 2013; Dholakia *et al.*, 2016). Put another way, financial education programmes that are focused on the development of interpersonal skills may be more effective than acquiring content knowledge about interest rates, inflation and the like (Fernandes *et al.*, 2014).

From a practical perspective, this study also offers contributions to financial service providers. Banks and other financial institutions can create tools to stimulate control of their customers' day-to-day spending and try to show assertive projections to evidence the impact of their present actions on their financial future, enhancing personal awareness and responsibility. Such initiatives are critical for reducing the potential negative effects of consumption, increasing customer satisfaction with the service provided and promoting overall well-being.

Finally, there is a methodological contribution regarding the operational definitions of the constructs involved, which were adapted and validated in the Brazilian context. The availability of the PFWB scale for use in other contexts allows comparative international surveys to be conducted.

Limitations and future research
Two limitations of this study deserve attention. First, the use of survey data alone limits our research findings. The cross-sectional nature of the study design does not allow for causal inferences to be made. The advocated causal relationships are solely based on theory; gathering experimental data to further support our findings is a possibility for future research. Second, the survey sample is restricted to adult Brazilians who possess internet access and were already registered in the online panel of a multinational market research company with operations in Brazil. Thus, the study findings are not generalisable to the entire Brazilian population. Further data collection waves are encouraged to help overcome this limitation.

Future studies should also consider objectively measuring individuals' financial indicators, for example, the level of financial reserves and the existence of overdue debts and incorporate such measures in the analyses reported herein. Differences between the Brazilian setting, other developing countries and developed countries could also shed light on how personal factors interact with contextual factors in shaping financial well-being.

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Appendix. Scale items

Original scale items selected for this research and their versions in Portuguese.

Netemeyer *et al.*'s (2018) perceived financial well-being scale

PFWB_01. I am becoming financially secure./*Estou me tornando financeiramente seguro.*

PFWB_02. I am securing my financial future./*Estou garantindo meu futuro financeiro.*

PFWB_03. I will achieve the financial goals that I have set for myself./*Eu alcançarei os objetivos financeiros que estabeleci para mim.*

PFWB_04. I have saved (or will be able to save) enough money to last me to the end of my life./*Eu economizei (ou serei capaz de economizar) dinheiro suficiente para durar até o final da minha vida.*

PFWB_05. I will be financially secure until the end of my life./*Eu serei financeiramente seguro (protegido) até o final da minha vida.*

PFWB_06. Because of my money situation, I feel I will never have the things I want in life./*Por causa da minha situação financeira, sinto que nunca terei as coisas que quero na vida.*

PFWB_07. I am behind with my finances./*Não estou em dia com minha vida financeira.*

PFWB_08. My finances control my life./*Minhas finanças controlam minha vida.*
PFWB_09. Whenever I feel in control of my finances, something happens that sets me back./*Sempre que sinto possuir controle sobre minha vida financeira, acontece algo que atrapalha esse controle.*
PFWB_10. I am unable to enjoy life because I obsess too much about money./*Não consigo aproveitar a vida porque me preocupo demais com dinheiro.*

Haws *et al.*'s (2012) consumer spending self-control scale
CSSC_01. I am able to work effectively towards long-term financial goals./*Consigo seguir metas financeiras de longo prazo.*
CSSC_02. I often delay taking action until I have carefully considered the consequences of my purchase decisions./*Considero cuidadosamente as consequências das minhas decisões de compra antes de gastar.*
CSSC_03. I am able to resist temptation in order to achieve my budget goals./*Consigo resistir a tentações para alcançar meus objetivos orçamentários.*
CSSC_04. I know when to say when regarding how much I spend./*Eu sei quando "dizer chega" em relação aos meus gastos.*

Dholakia *et al.*'s (2016) personal saving orientation scale
PSO_01. I keep a careful watch over my spending on a daily basis./*No dia a dia, monitoro com cuidado os meus gastos.*
PSO_02. I do not spend money thoughtlessly, I would rather save it for a rainy day./*Não gasto dinheiro sem pensar, prefiro economizar para um imprevisto.*
PSO_03. Putting money into personal savings is a habit for me./*Tenho o hábito de poupar e aplicar dinheiro.*
PSO_04. I actively consider the steps I need to take to achieve my personal savings goals./*Eu penso com frequência sobre o que é preciso para atingir meus objetivos de poupar dinheiro.*
PSO_05. I like to discuss the topic of saving money with my family and friends. / *Eu gosto de discutir o tópico "poupar dinheiro" com minha família e meus amigos.*

Richins (2004) materialism scale and items adapted to the Brazilian context by Ponchio and Aranha (2008)
MAT_01. I admire people who own expensive homes, cars and clothes./*Eu admiro pessoas que possuem casas, carros e roupas caras.*
MAT_02. The things I own say a lot about how well I'm doing in life./*Gastar muito dinheiro está entre as coisas mais importantes da vida.*
MAT_03. Buying things gives me a lot of pleasure./*Comprar coisas me dá muito prazer.*
MAT_04. I like a lot of luxury in my life./*Gosto de comprar coisas para mostrar minha conquista.*
MAT_05. My life would be better if I owned certain things I don't have./*Minha vida seria melhor se eu tivesse muitas coisas que não tenho.*
MAT_06. I'd be happier if I could afford to buy more things./*Eu ficaria muito mais feliz se pudesse comprar mais coisas.*

Knoll and Houts' (2012) financial knowledge scale
FK_01. Suppose you had $100 in a savings account and the interest rate was 2 per cent per year. After five years how much do you think you would have in the account if you left the money to grow?/*Suponha que você tenha R$ 100 em uma conta de poupança e a taxa de juros seja de 6% ao ano. Caso você mantenha o dinheiro nessa conta, após 5 anos quanto você acha que será o saldo: [mais que R$ 112; menos que R$ 112; R$ 106; não sei]*
FK_02. Imagine that interest rate on your saving account was 1 per cent per year and inflation was 2 per cent per year. After one year, how much would you be able to buy with the money in this account?/*Imagine que a taxa de juros em sua conta poupança seja de 6% ao ano e a inflação seja de 8% ao ano. Após 1 ano, quanto você seria capaz de comprar com o dinheiro nesta conta? [exatamente o que consigo comprar hoje; mais do que compro hoje; menos do que compro hoje; não sei]*
FK_03. Assume a friend inherits $10,000 today and his sibling inherits $10,000 three years from now. Who is richer because of the inheritance?/*Suponha que um amigo herde R$ 10.000 hoje e o irmão dele*

herde R$ 10.000 daqui a três anos. Quem é mais rico por causa da herança? [há empate; o irmão dele; seu amigo; não sei]

FK_04. Normally, which asset displays the highest fluctuations over time?/*Normalmente, qual ativo exibe as maiores flutuações de valor ao longo do tempo? [poupança; renda fixa; ações; não sei]*

FK_05. When an investor spreads his money among different assets, does the risk of losing money:/*Quando um investidor distribui seu dinheiro entre diferentes ativos, faz o risco de perder dinheiro: [diminuir; aumentar; não sei]*

FK_06. Suppose you owe $3,000 on your credit card. You pay a minimum payment of $30 each month. At an Annual Percentage Rate of 12 per cent (or 1 per cent per month), how many years would it take to eliminate your credit card debt if you made no additional new charges?/*Suponha que você deve R$ 3.300 em seu cartão de crédito. Você paga uma parcela mínima de R$ 300 cada mês. A uma taxa de juros de 10% ao mês, quantos anos levaria para eliminar essa dívida? [menos de um ano; cerca de dois anos; a dívida nunca será paga; não sei]*

FK_07. Buying a company stock usually provides a safer return than a stock mutual fund./*"Comprar ações de uma companhia é normalmente menos arriscado que investir num fundo de ações" [verdadeira; falsa; não sei]*

Zimbardo and Boyd's (1999) time perspective inventory
TP_PH_01. I do things impulsively./*Faço as coisas impulsivamente.*
TP_PH_02. I make decisions on the spur of the moment./*Tomo minhas decisões no impulso do momento.*
TP_PH_03. Taking risks keeps my life from becoming boring./*Assumir riscos evita que minha vida seja entediante.*
TP_PH_04. I take risks to put excitement in my life./*Eu me arrisco para ter excitação na minha vida.*
TP_PF_01. Fate determines much in my life./*Acredito que o destino determina a maior parte da minha vida.*
TP_PF_02. Since whatever will be will be, it does not really matter what I do./*Não importa o que eu faça, o que tiver de acontecer vai acontecer.*
TP_PF_03. You cannot really plan for the future because things change so much./*Não podemos de fato planejar o futuro porque as coisas estão sempre mudando.*
TP_PF_04. My life path is controlled by forces I cannot influence./*A trajetória da minha vida é controlada por forças que eu não posso controlar.*
TP_PF_05. It does not make sense to worry about the future, since there is nothing that I can do about it anyway./*Não faz sentido se preocupar com o futuro, já que não há nada a fazer.*
TP_F_01. When I want to achieve something, I set goals and consider specific means for reaching those goals./*Quando eu quero algo, determino metas e utilizo meios específicos para alcançar esses objetivos.*
TP_F_02. Meeting tomorrow's deadlines and doing other necessary work comes before tonight's play./*As tarefas para o dia seguinte e outros trabalhos necessários devem vir antes da diversão de hoje à noite.*
TP_F_03. I complete projects on time by making steady progress./*Termino meus projetos no tempo certo, avançando e progredindo em ritmo constante.*
TP_F_04. I am able to resist temptations when I know that there is work to be done./*Resisto às tentações quando sei que há trabalho a fazer.*

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