Antecedents of indebtedness for low-income consumers: the mediating role of materialism

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Abstract

Purpose – The purpose of this is to propose a model in which materialism is a mediator of the effects of self-esteem, impulsiveness, attitude toward debt, attitude toward credit card and economic vulnerability on consumer indebtedness. The effects of financial knowledge, financial ability, credit card use and demographic variables are also taken into account.

Design/methodology/approach – Survey data from a sample of 1,245 low-income consumers from Brazil were used to test the hypotheses using structural equation modeling.

Findings – First, materialism has a significant effect on consumer indebtedness; at the same time, it is influenced by self-esteem, impulsiveness and attitude toward debt. Second, materialism acts as a mediator, e.g. higher impulsiveness triggers materialism, which influences debt level. Third, indebtedness is higher for women and those who use a higher number of credit cards and are more educated.

Social implications – Financial education programs should work to increase individual's perceived ability to manage money, as the individuals who feel less able to manage their personal finances alone (i.e. lower financial ability) presented higher indebtedness.

Originality/value – This study investigates consumer indebtedness by addressing factors that have been analyzed independently in the literature. The research combines psychological, financial and economic factors with credit card use and demographic variables to explain consumer indebtedness. Moreover, the study supports the mediating role of materialism for the antecedents of consumer indebtedness, e.g. impulsiveness and attitude toward debt.

Keywords Low-income, Materialism, Financial knowledge, Indebtedness, Financial ability

Paper type Research paper

1. Introduction

Research has suggested serious health effects to be associated with indebtedness, such as stress, depression and suicidal behavior (Shen *et al.*, 2014; Turunen and Hiilamo, 2014). Moreover, there is a negative association between health outcomes and having long-term unsecured debt and mortgage debt (Clayton *et al.*, 2015).

Scientific research in the debt field has revealed the roles of several variables that explain debt, such as materialism (Ponchio and Aranha, 2008), gender, income, number of cards and self-esteem (Lunt and Livingstone, 1991), attitude (Lea *et al.*, 1993; Livingstone and Lunt, 1992; O'Loughlin and Szmigin, 2006; Durvasula and Lysonski, 2010) and impulsiveness (Anderloni *et al.*, 2012). However, in reviewing the literature, three main gaps were identified. First, most studies focus on specific factors to explain indebtedness. For example, previous research has investigated psychological factors (e.g. impulsiveness), personality trait factors (e.g. impulsiveness and agreeableness), emotional factors (e.g. stress, anxiety and sadness), economic factors (e.g. income, earlier debt and number of credit cards) and behavioral factors (e.g. purchasing) in an isolated way. These studies do not consider intercorrelated and mixed elements that can influence together the level of indebtedness.

Second, most studies have focused on the main predictors of indebtedness, but do not suggest mediating factors that can help in explaining indirect effects. One potential mediator mechanism used in psychology and consumption studies is materialism (Rose, 2007; Gentina *et al.*, 2016; Liang *et al.*, 2016). Materialism can link the indirect effect of all economic, psychological and emotional factors on the level of indebtedness.

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Third, previous studies have investigated consumption, materialism and indebtedness considering the context of high-income consumers (Hudders and Pandelaere, 2012). Research investigating low-income individuals who live with minimal wages is scarce. Thus, our study aims to fill these gaps by proposing and testing a conceptual framework that combines the main antecedents of consumer indebtedness, using materialism as a mediator. Our theoretical framework includes psychological factors (e.g. materialism, self-esteem and attitude toward debt and credit card), personality trait factors (e.g. impulsiveness), financial factors (e.g. financial knowledge and financial ability to use the money), economic factors (e.g. economic vulnerability) and credit card use variables (e.g. number of credit cards). More specifically, this paper demonstrates that materialism plays a mediator role on the effects of self-esteem, impulsiveness and attitude toward debt on consumer indebtedness.

To test the theoretical framework, the study focused on low-income consumers from an emerging economy based on four main reasons. First, low-income individuals are the base of the pyramid and have gained access to consumption in recent years. Second, low-income respondents are more vulnerable to financial hardships, such as income loss (Gesthuizen and Scheepers, 2010). Third, although their level of indebtedness is low compared to international standards (43 per cent of annual income), their commitment of income to debt service is high, i.e. 22 per cent of monthly income (Access Latin America, 2017; IPEA, 2016). Fourth, after several years of relative stability following the implementation of the inflation control plan in 1994, the Brazilian economy has been experiencing a downturn (The Economist, 2016). In this context, Brazilian consumers have become more concerned and less confident.

After this introduction, the remainder of this paper presents the theoretical background in Section 2, which presents the conceptual framework and hypotheses. Next, Section 3 describes the procedures for the survey with low-income consumers in Brazil. Then, Section 4 analyzes the main findings and tests the proposed model, using structural equation modeling. Finally, Section 5 presents the main implications for theory and practice.

2. Theoretical background

This study draws on the financial, economic, emotional and psychological literature to propose a model that summarizes the main factors associated with indebtedness (Figure 1). In this study, debt corresponds to payables in modalities such as overdraft, personal loans, vehicle financing, real estate/home appliances and credit cards. In that sense, indebtedness is our dependent variable. Materialism is an individual value that reproduces the importance a consumer places on the acquisition and possession of material things (Richins, 2010).

In our framework, materialism is a mediator, linking the antecedents to the main consequence. Even though the mediating role of materialism has been discussed in different fields, research in the field of consumer behavior is lacking. Table I presents some examples of relationships in which materialism is tested as mediator. The current paper extends these previous studies by demonstrating the mediating role of materialism for the antecedents of consumer indebtedness.

2.1 Materialism

Materialism is defined as the importance of the acquisition and ownership of material goods by an individual (Richins and Dawson, 1992; Richins, 2004). Materialism can be considered a personal value, which influences how individuals interpret their environment. According to Segev *et al.* (2015, p. 86):

> Materialists often become overly focused on purchases and direct their energy and resources to acquire possessions, hoping that they will lead to happiness, satisfaction with life and a generalized well-being.

It is suggested that a higher level of materialism increases the tendency to indebtedness because consumers who are more materialistic feel they need to buy more material goods to achieve happiness (Garðarsdóttir and Dittmar, 2012; Gutiérrez-Nieto *et al.*, 2016; Ponchio and Aranha, 2008; Watson, 2003). Because of the increased purchases, consumers might engage in more obligations, interests and fees and as consequence, increase their level of indebtedness (Lachance, 2012). Therefore, the authors propose:

Figure 1 Conceptual model

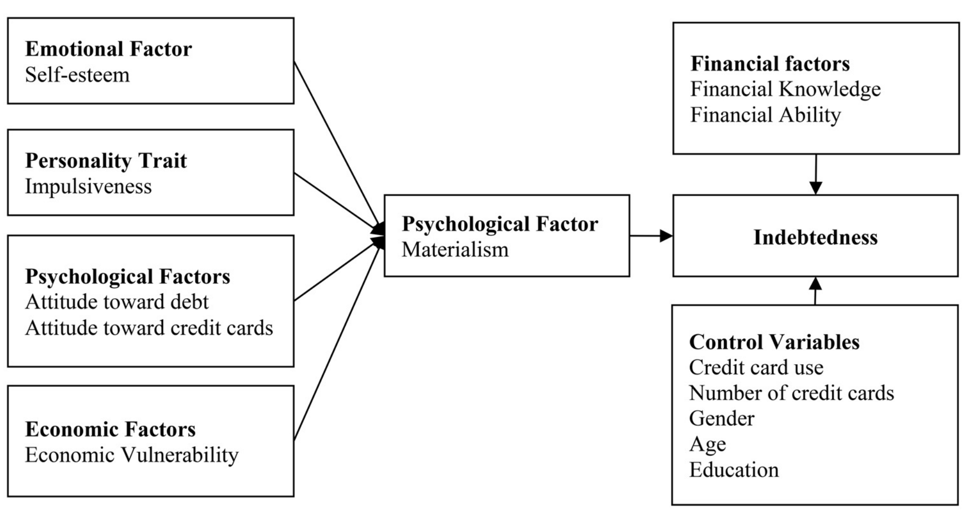

Table I Mediating role of materialism according to previous literature

Predictor	Mediator	Endogenous construct	Source
Wanting more	Materialism	Well-being	Norris and Larsen (2011)
Self-esteem	Materialism	Corrupt intention	Liang *et al.* (2016)
Brand jealousy	Materialism	Willingness to pay premium	Bıçakcıoğlu *et al.* (2017)
Neuroticism	Materialism	Compulsive clothing buying	Johnson and Attmann (2009)
Gratitude	Materialism	Well-being	Jiang *et al.* (2016)
Values	Materialism	Consumption	Sevgili and Cesur (2014)
Narcissism	Materialism	Compulsive buying	Rose (2007)
Parental and peer support	Materialism	Consumer ethical beliefs	Gentina *et al.* (2016)
Agreeableness, openness and extraversion personality traits	Materialism	Excessive buying	Otero-López and Villardefrancos (2013)
Impulsivity, attitude toward debt and self-esteem	Materialism	Indebtedness	This research

H1. The higher the consumers' materialism, the higher their indebtedness.

2.2 Self-esteem

According to Davis-Kean and Sandler (2001, p. 888), self-esteem has been defined "as the positive or negative attitude about the self, the degree of liking of or satisfaction with the self and one's feeling of perceived worth as compared with others." Studies by D'astous *et al.* (1990) and Tokunaga (1993) have supported the argument that consumers with lower self-esteem are more likely to make purchases because the materialistic orientation is used to improve satisfaction with the self. Consumers with lower self-esteem need to improve their self-image and one way for changing self-image is by buying clothes, accessories and innovative objects (Faber *et al.*, 1987). Thus, the study proposes:

H2. The lower the consumers' self-esteem, the higher their materialism.

2.3 Impulsiveness

Impulsiveness is a personality trait that reveals an individual's tendency to make decisions quickly, without careful analysis (Rook and Fisher, 1995), thus affecting "behavior in many life domains, from recreational activities to important decision making" (Sharma, Markon and Clark, 2014, p. 374). Impulsive buying usually occurs during emotional states (Hirschman and Stern, 1999). For example, when consumers are stressed, anxious or depressed, they can impulsively behave to change their negative emotional state. In changing the negative emotional state, consumers give more focus on the acquisition and ownership of material goods (Richins and Dawson, 1992). Because consumers focus on buying products in an unplanned way and unconsciously (Faber *et al.*, 1987; Ottaviani and Vandone, 2011), impulsive buying should increase their level of materialism. Hence, the study proposes:

H3. The greater the consumers' impulsiveness, the higher their materialism.

2.4 Attitude toward debt

Attitude is a learned predisposition "to respond in a consistently favorable or unfavorable manner with respect to a given object" (Fishbein and Ajzen, 1975, p. 6). Attitude toward debt refers to the judgment that an individual makes about the possibility of engaging in debt and refers to the predisposition to respond favorably to a debt behavior (Davies and Lea, 1995; Ponchio and Aranha, 2008). It is expected that the predisposition to respond in a steadily favorable manner toward buying behavior increases the level of materialism because consumers have more positive attitude toward the materials for one's identity, goals and purpose in life (Durvasula and Lysonski, 2010). Therefore, it is hypothesized that:

H4. The more favorable the consumers' attitudes toward debt, the higher their materialism.

2.5 Attitude toward credit card

Because of their convenience, credit cards are part of the lives of many consumers, allowing for small purchases in the day-to-day routine (e.g. a coffee) and purchases of durable goods, e.g. appliances (Gathergood, 2012; Ranyard and Craig, 1995). In addition, the debt generated by credit cards has become socially acceptable (Warwick and Mansfield, 2000). The more positive the low-income consumers' attitude toward credit card, the higher the possibility of buying products without having money for satisfying short-term happiness (Bridges and Disney, 2004; Segev *et al.*, 2015). Thus, attitude toward credit card should affect materialism (Lachance, 2012) because low-income consumers need to have material goods to enhance their self-image and possessions (Garðarsdóttir and Dittmar, 2012; Gutiérrez-Nieto *et al.*, 2016) and credit cards give such access to purchases. Therefore, it is hypothesized that:

H5. The more positive the consumers' attitude toward credit cards, the higher their materialism.

2.6 Economic vulnerability

Economic vulnerability is an individual's ability to generate enough income to cover his/her expenses and to respond to unforeseen events (Filgueira and Peri, 2004; Gesthuizen and Scheepers, 2010). Consumers with higher economic vulnerability:

> Are particularly exposed to adverse shock – such as job loss, reduction in working hours, death, illness – that can eliminate or reduce an income source and/or determine unexpected liabilities and negatively impact their financial situation (Anderloni *et al.*, 2012, p. 286).

The authors propose that the greater the perceived economic vulnerability, the higher the materialism because economic vulnerability is usually associated with low education (Anderloni *et al.*, 2012; Gesthuizen and Scheepers, 2010) and less educated consumers can buy products to achieve "life goals or desired states" (Richins, 2004, p. 210) by the "possession of things" (Csikszentmihalyi and Rochberg-Halton, 1978, p. 8). Thus, the authors propose:

H6. The greater the perceived economic vulnerability, the higher their materialism.

2.7 Financial knowledge

Financial knowledge is the "stock of knowledge acquired through education and/or experience specifically related to essential personal finance concepts and products" (Huston, 2010, p. 307). Financial knowledge is part of a broader concept, which includes the ability and confidence to effectively apply or use one's knowledge (Robb, 2011; Huston, 2010). Huston (2012) argues that individuals with greater financial knowledge are about twice as likely to obtain lower costs of borrowing for credit cards and mortgage loans. However, research with college students indicates that limited financial knowledge and easy access to credit cards are associated with the inability to control purchasing behavior (Brougham *et al.*, 2011). Because low-income consumers have less ability to control their behavior using credit cards (Huston, 2010), the consumers' financial knowledge about money management should reduce consumers' indebtedness by regulating his/her expenses. Thus, the study proposes:

H7. The greater the consumers' financial knowledge, the lower their indebtedness.

2.8 Perceived financial ability

Perceived ability to understand and apply financial knowledge tends to reduce consumers' volume of debt (Braun Santos *et al.*, 2016; Remund, 2010). Perceived financial ability is "the capacity and confidence to effectively apply or use knowledge related to personal finance concepts and products in everyday life" aiming to reduce the debt (Huston, 2010, p. 307). The higher the level of education, the greater the understanding of the problems that may be caused by debt and insolvency in the future (Sevim *et al.*, 2012). Thus, it is expected that the perceived ability to apply financial knowledge reduces debt volume.

H8. The greater the perceived ability of the consumers to manage their personal finances, the lower their indebtedness.

3. Method

3.1 Procedures

To survey a random sample of low-income consumers, a professional market research firm was contracted, which conducted the fieldwork under the supervision of the researchers. Face-to-face interviews were used in the main capitals of Brazil, looking for low-income consumers. Four state capitals with the most relevant contributions to the Brazilian GDP were considered as target. As a first criterion for selecting participants, individuals were asked whether they had any personal income and, if so, in which range. Brazil was selected because the relatively easy access to credit for low-income individuals over the past few years is closely associated with the increase in levels of indebtedness and commitment to debts (Hill and Kozup, 2007; van Raaij, 2016). Individuals with household incomes up to four times the Brazilian minimum salary (~US$1.260 per month) were surveyed. After checking for missing data and outliers, a final sample of 1,245 was used in the subsequent analysis.

3.2 Measurement

Most of the scales were measured using the Likert format, ranging from 1 = completely disagree to 5 = completely agree. One exception included perceived economic vulnerability, which varied from 1 = living comfortably with the current income to 5 = great difficulty living with the current income.

Self-esteem was measured with four items adapted from Rosenberg (1965) and D'astous *et al.* (1990), namely, "Overall, I am satisfied with myself"; "I feel that I have a number of good qualities"; "I feel that I am able to do things just as other people do"; and "I have a positive attitude toward myself."

Materialism was measured using three items from Richins (2004), namely, "I admire people who own expensive homes, cars and clothes"; "I'd be happier if I could afford to buy more things"; and "Some of the most important achievements in life include acquiring material possessions."

Impulsiveness was measured with three items (Rook and Fisher, 1995), namely, "I often buy things spontaneously, without much thinking"; "I have felt regret for buying things that I do not need"; and "I buy things according to how I feel at the moment."

Attitude toward debt was assessed with four items adapted from Davies and Lea (1995), namely, "It is OK that people become indebted to own their stuff"; "It is better to have something now and pay for it later"; "It is OK to have debt if you know you can pay it off"; and "I prefer to pay in installments even if the total is more expensive."

Attitude toward credit cards was measured by four items from Roberts and Jones (2001), namely, "I use all the available credit limit of my credit card"; "I care less about the price of things when I use a credit card"; "I spend more when using a credit card"; and "I usually pay the minimum value of the credit card bill."

Financial knowledge was measured using four items, namely, "In a country where inflation is high, prices do not change much over time"; "It is likely that a higher return on investment has increased risk"; "One should invest in different alternatives to reduce risks (e.g. savings, stocks, real estate, etc.)"; and "Whenever someone pays the minimum amount of his credit card bill he is subject to interest." These items were based on Atkinson and Messy (2012) and Huston (2010).

Financial ability to manage money was measured using four items adapted from previous studies (Atkinson and Messy, 2012; Huston, 2010), namely, "Generally speaking, I feel able to manage my personal finances alone"; "I pay my bills on time"; "I keep my financial life under control"; and "I find it difficult to make ends meet at the end of the month."

Consumer indebtedness was measured by four indicators. The first question measures debt commitment, i.e. "Considering the total of your monthly income, could you tell me about what percentage of this income is committed to monthly debts such as credit cards or personal loans?" The answer was spontaneous and was classified by interviewer into one of the six options: up to 10 per cent, 11-20 per cent, 21-30 per cent, 31-40 per cent, 41-50 per cent and more than 50 per cent. Interviewees could also respond as follows: "my income is not committed to this type of debt"; "do not know/do not remember"; or "refusal." The second question was "Until when are you committed to these debts?" and the options were "up to three months"; "from three to six months"; "from six months to one year"; "over one year"; and "do not know/do not remember" or "refusal." The third question measured the volume of debts by asking if the respondent had financed any of the goods displayed in a list in the past six months (e.g. home, car, motorcycle, household appliances, mobile phone, computer/notebook, general furniture, clothing, apparel and other). Finally, respondents were asked if any of these accounts were overdue. In the data analysis, these questions were recorded as number of accounts payable and number of overdue bills. All these variables involving counts were normalized via *Z* scores.

Credit card use was measured by the following three questions: whether the respondent had a credit card in his name, whether he/she used a card (even if not in her/his name) and how many credit cards he/she used.

Finally, demographic questions were presented at the end of the interview, including gender, age and education.

4. Results

The sample was balanced in relation to gender (51 per cent female). In terms of age, the range of 25-34 years was the most frequent (32.5 per cent), followed by 35-44 years (20 per cent) and 18-24 years (19.9 per cent). Most respondents had completed secondary education (42 per cent), followed by those who had not attended school or had studied to complete primary school (20.3 per cent).

Regarding personal income, 88 per cent of the respondents earned between one and three minimum wages (MW) (US $315-945 per month), followed by 12 per cent who earned between three and five MW (US$946-1,575 per month). Family income was the highest in the range between one and three MW (54.4 per cent), followed by those between three and five MW (39 per cent).

Regarding employment status, most individuals were working with a formal contract (58 per cent), followed by those working without a formal contract (21 per cent), unemployed (2 per cent), homemakers (2 per cent) and retired (4 per cent) and others (13 per cent). Most of the respondents (83 per cent) were responsible for the financial decisions of the home, either alone (41 per cent), with their spouse (33 per cent) or with another family member (9 per cent). Most of the respondents (82 per cent) had at least one credit card in their name. Regarding credit cards in use, 53 per cent use one card, 34.5 per cent use two cards, 8 per cent use three cards, 3 per cent use four cards and 1.5 per cent use five or more cards.

Before testing the structural model, the measured model was analyzed in terms of internal consistency, convergent and discriminant validity. Cronbach's alphas were greater than 0.60 for all the analyzed constructs. Composite reliabilities were greater than 0.70 for four of the eight constructs and greater than 0.61 for the other four constructs. Correlation matrix (Table II) shows that the highest correlation was between attitude toward debt and attitude toward credit cards (r = 0.60), suggesting no problem of discriminant validity. Nevertheless, a specific test was performed (Fornell and Larcker, 1981) and found support for the discriminant validity.

4.1 Model test

Mardia test showed lack of multivariate normality (kurtosis = 134.9; c.r. = 49.5). As a result, the proposed model was tested using asymptotically distribution free (ADF) estimation, assuming that ADF is more robust when data is not normally distributed (Randles *et al.*, 1980; Garson, 2015). The following fit indexes were found: χ^2/df = 8.76; GFI = 0.99; CFI = 0.53; TLI = 0.48, AIC = 4,388 and RMSEA = 0.079 (Model 1) and χ^2/df = 8.44; GFI = 0.99; CFI = 0.55; TLI = 0.51 AIC = 4,201 and RMSEA = 0.077 (Model 2). Overall, these findings are consistent with the limits suggested by the SEM literature (Bagozzi and Yi, 2012; Kline, 2015). The explained variance (R^2) was 21 per cent for materialism and 30 per cent for consumer indebtedness. Table III shows the main effects and the mediating results.

As expected, materialism had a positive and significant impact on consumer indebtedness (β = 0.16; p < 0.001),

Table II Descriptive statistics, alphas and inter-correlations

Constructs	M	SD	α	CR	1	2	3	4	5	6	7	8
1. Self-esteem	4.14	0.62	0.72	0.72	1.00							
2. Materialism	3.00	0.95	0.69	0.69	0.04	1.00						
3. Impulsivity	3.01	0.98	0.62	0.65	0.09	0.38	1.00					
4. Attitude toward debt	2.79	0.93	0.76	0.76	−0.07	0.39	0.56	1.00				
5. Financial ability	3.82	0.84	0.78	0.79	0.45	0.01	−0.16	−0.22	1.00			
6. Financial knowledge	3.98	0.75	0.60	0.61	0.35	0.20	0.11	−0.01	0.27	1.00		
7. Attitude to credit cards	2.86	1.02	0.73	0.74	−0.05	0.27	0.55	0.60	−0.37	−0.03	1.00	
8. Vulnerability	3.14	1.06	[a]	[a]	0.17	0.08	−0.02	0.15	−0.36	−0.09	0.11	1.00
9. Indebtedness	2.11	0.78	0.60	0.62	−0.34	0.16	0.15	0.32	−0.51	−0.05	0.37	0.38

Notes: M = mean; SD = standard deviation; α = Cronbach's alpha; CR = composite reliability; n = 1245; [a]measured with single item. Correlations greater than 0.08 are significant at 5% level

Table III Test of direct and indirect effects

	Relationship			Model 1: Direct effects Coefficient	Z	Significance	Model 2: Direct and indirect effects Coefficient	Z	Significance
H1	Materialism	→	Indebtedness	0.19	6.19	0.001	0.16	4.62	0.001
H2	Self-esteem	→	Materialism				−0.08	−2.83	0.005
H3	Impulsiveness	→	Materialism				0.24	6.68	0.001
H4	Attitude toward debt	→	Materialism				0.28	6.59	0.001
H5	Attitude toward credit card	→	Materialism				0.04	1.07	0.284
H6	Vulnerability	→	Materialism				0.03	1.19	0.233
H7	Financial knowledge	→	Indebtedness	0.03	1.12	0.263	0.02	0.60	0.55
H8	Financial ability	→	Indebtedness	−0.27	−6.27	0.001	−0.28	−6.24	0.001
	Impulsiveness	→	Indebtedness	0.08	2.75	0.006	0.02	0.53	0.595
	Self-esteem	→	Indebtedness	−0.14	−4.33	0.001	−0.13	−3.88	0.001
	Attitude toward debt	→	Indebtedness	0.11	3.55	0.001	0.01	0.21	0.834
	Attitude toward credit card	→	Indebtedness	0.19	5.59	0.001	0.18	4.91	0.001
	Vulnerability	→	Indebtedness	0.09	3.56	0.001	0.07	2.64	0.008
	Control Variables								
	Own credit card (dummy)	→	Indebtedness	−0.10	−4.23	0.001	−0.06	−2.68	0.007
	Number of credit card in use	→	Indebtedness	0.23	7.93	0.001	0.25	8.43	0.001
	Female (dummy)	→	Indebtedness	0.11	4.82	0.001	0.11	4.80	0.001
	Age	→	Indebtedness	0.05	1.88	0.061	0.04	1.60	0.11
	Education	→	Indebtedness	0.08	2.84	0.005	0.08	2.77	0.006

Note: Coefficient = Standardized coefficient

supporting *H1* (see Table III, Model 2). Individuals with higher materialistic values presented higher levels of debts. As hypothesized, self-esteem presented a significant negative effect on materialism ($\beta = -0.08$; $p < 0.005$), supporting *H2*. Individuals with lower self-esteem presented higher levels of materialism. Impulsivity was the second most important antecedent of materialism ($\beta = 0.24$; $p < 0.001$), with a positive coefficient indicating that more impulsive individuals were more materialistic, supporting *H3*. This is consistent with the idea that individuals with greater impulsivity traits are those more short-term oriented and valuing possessions and purchase experiences are a key issue for those people (Luengo *et al.*, 1994).

Attitude toward debt presented the strongest effect on materialism ($\beta = 0.28$; $p < 0.001$). The positive coefficient indicates that low-income individuals with more favorable attitude toward debt were more materialistic, supporting *H4*. Consumers who demonstrate a more positive attitude toward debt, such as considering debt "normal", have higher materialism. These results reinforce the findings of previous studies (Davies and Lea, 1995; Ponchio and Aranha, 2008). Attitude toward credit card and economic vulnerability did not affect materialism, not supporting *H5* ($\beta = 0.04$; $p < 0.284$) and *H6* ($\beta = 0.03$; $p < 0.233$).

Regarding the direct effects on indebtedness, financial knowledge related to personal monetary issues was not significantly associated with indebtedness ($\beta = 0.02$; $p < 0.55$), rejecting *H7*. Previous research has argued that the effect of financial knowledge is usually overestimated in the literature (Fernandes *et al.*, 2014). On the other hand, financial ability presented a negative and significant influence ($\beta = -0.28$; $p < 0.001$), supporting *H8*. Financial ability magnitude was among the highest effect-sizes of the model, with financial ability explaining about 26 per cent of indebtedness (squared correlation coefficient), meaning that individuals who are more confident in managing their money present lower levels of indebtedness.

4.2 Control variables

When analyzing the control variables, two questions related to credit card were significant. Those respondents who own a credit card in their name presented lower levels of debt ($\beta = -0.06$; $p < 0.007$), but at the same time, the number of credit cards in use has a significant and positive effect on indebtedness ($\beta = 0.25$; $p < 0.001$). The reason for this is that low-income consumers use credit cards from relatives and close friends. Hence, those who own a credit card have lower indebtedness, but those who do not have a credit card usually borrow from relatives/friends and, hence, the higher the number of credit cards borrowed in use, the higher the reported indebtedness.

Demographic variables were also related to debt. For instance, gender had a significant effect ($\beta = 0.11$; $p < 0.001$), suggesting that women presented relatively higher indebtedness. ANOVA results suggested there was a difference in one of the four items of the indebtedness factor, related to the number of financed goods, with greater mean for women ($M_{women} = 1.9$ vs $M_{men} = 1.6$; $t = 4.04$; $p < 0.001$). Individuals with higher education level also presented higher indebtedness ($\beta = 0.08$; $p < 0.006$). On the other hand, there was no influence of age on indebtedness level ($\beta = 0.04$; $p < 0.11$).

4.3 Mediation test

In Model 1, authors posit all constructs pointing to the indebtedness factor, testing only the direct effects. Then, in Model 2, authors add materialism as mediator (i.e. indirect effects). The procedure of comparing the models to test mediation effect follows the literature (Garson, 2015). Full mediation is found when direct effect becomes non-significant after inclusion of the indirect effect and partial mediation is achieved when the direct effect remains significant but reduces the impact (Zhao *et al.*, 2010).

Two situations of full mediation were found. The first was the direct effect of impulsivity on indebtedness, which reduced from $\beta = 0.08$ ($p < 0.01$) without the mediator to $\beta = 0.02$ ($p = 0.595$) after including the mediator. Hence, the influence of impulsivity on indebtedness is fully mediated by materialism. The mediation path suggests that impulsivity has an effect on materialism ($\beta = 0.24$) and materialism affects indebtedness ($\beta = 0.16$), with indirect effect of $\beta = 0.04$ (i.e. $\beta = 0.24 \times \beta = 0.16$).

The second situation of full mediation was on attitude toward debt. More specifically, the significant direct effect changed to non-significance after inclusion of materialism as a mediator (from $\beta = 0.11, p < 0.001$ to $\beta = 0.01, p < 0.834$). In this case, attitude toward debt influences materialism, which in turn affects indebtedness with indirect effect of $\beta = 0.05$ ($\beta = 0.28 \times \beta = 0.16$).

Partial mediation was found for the effect of self-esteem on indebtedness. Data indicated that the coefficient of the direct effect changed from $\beta = -0.14$ ($p < 0.001$), to $\beta = -0.13$ ($p < 0.001$), remaining significant after inclusion of the mediator. This result extended previous studies showing that consumers with lower self-esteem are more likely to engage in a materialistic orientation, especially because possessions and the purchase experience *per se* might work to improve one's self-image (D'astous *et al.*, 1990; Tokunaga, 1993).

5. Discussion and conclusions

5.1 Theoretical contribution

This study seeks to contribute to the consumer behavior literature and especially to study about indebtedness (Durvasula and Lysonski, 2010; Wilkie and Moore, 2012), low-income consumers (Gesthuizen and Scheepers, 2010) and materialism (Richins and Dawson, 1992; Durvasula and Lysonski, 2010). This study draws on the extant literature to propose and test a conceptual framework in which materialism is a mediator in the effects of self-esteem, impulsiveness, attitude toward debt, attitude toward credit cards and economic vulnerability on consumer indebtedness.

Results from a survey with low-income consumers suggested three main theoretical contributions. First, materialism had a significant effect on indebtedness. This is consistent with previous studies suggesting a positive association between materialism and amount of debt (Garðarsdóttir and Dittmar, 2012; Ponchio and Aranha, 2008). However, the current study extends previous findings by analyzing a low-income sample of consumers and by measuring consumer indebtedness using an overall index based on the volume of debts, the number of accounts payable and the number of overdue bills. The rationality behind the main effect of materialism on indebtedness is the consumer orientation toward looking for happiness, satisfaction, self-image and the centrality of acquisition and possessions in one's life (Richins, 2010).

Second, our findings demonstrated that materialism works as a mediator in different relationships. The associations between impulsiveness and indebtedness and between attitude toward debt and indebtedness were fully mediated by materialism. The relationship between self-esteem and indebtedness was partially mediated by materialism. These results advance previous studies (Norris and Larsen, 2011; Liang *et al.*, 2016; Bıçakcıoğlu *et al.*, 2017; Johnson and Attmann, 2009; Jiang *et al.*, 2016) by suggesting the main mechanism that links personality traits, emotional factor and psychological factor on indebtedness in low-income consumers is materialism.

Third, findings allowed the comparison of different predictors when explaining our dependent variable. Comparing psychological, emotional, economic and financial factors, our study shows that attitude toward debt and impulsiveness not only had the greatest main effects on materialism but also the greatest indirect effect on indebtedness.

Among the limitations, this study was based on self-reported information from consumers. Hence, future studies could investigate the issue of indebtedness using objective measures, which would require access to consumer information from financial institutions (e.g. banks or credit card companies). In addition, this study is based on a cross-sectional survey and future studies could monitor consumer financial decisions using a longitudinal approach. Finally, new studies can further investigate the influence of emotions (e.g. sadness, joy) on consumer decision-making regarding debt accumulation.

5.2 Contributions for financial education programs

From a managerial viewpoint, public policy can use the results found here for organizing financial educational programs in three different perspectives. First, even though recent studies in Brazil have discussed the importance of financial education programs (Braun Santos *et al.*, 2016), rarely have they related this concept to the debt levels of individuals. Based on this concern, financial educational programs should form their content to be more effective in changing low-income consumer behavior to diminish indebtedness. According to Kozup and Hogarth (2008, p. 127):

> [...] a worthwhile financial education program starts with having the participants set a goal – whether it is to be a homeowner, save for retirement, reduce debt, increase human capital through education or start a business.

Second, individuals who felt less able to manage their personal finances alone (i.e. lower perceived financial ability) presented higher indebtedness. These results reinforce the importance of consumer confidence (Braun Santos *et al.*, 2016; Tokunaga, 1993). Therefore, financial education programs must work to increase the individual's feeling of ability, also known as the financial self-efficacy of the consumer (Lown, 2011). Financial ability refers to consumers' capacity of managing personal finances alone, keeping financial life under control and confidence in organizing accounts at the end of the month. Educational programs can focus on these three elements of financial ability to reduce indebtedness.

Third, another topic for public policy and financial education programs is related to credit card use. Our findings show that the number of credit cards in use is positively and significantly associated with debt levels, in agreement with previous studies (Di Giulio and Milani, 2013; Erasmus and Mathunjwa, 2011; Shen *et al.*, 2014). At the same time, those owing a credit card in their name present relatively lower debt levels. The reason for this is that low-income individuals use credit cards from relatives and close friends. Borrowing credit cards has been shown to be damaging for consumers (Bridges and Disney, 2004). This is especially true in Brazil, where borrowing a credit card will produce debt in the future. Because of high-interest rates, which reached 220 per cent in 2017 (Reuters, 2018), the most expensive form of credit in Brazil, this debt will "snowball" if the consumer does not pay his monthly bill in full.

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