FINANCIAL SERVICES REVIEW

Financial Services Review 26 (2017) 55–85

# Personality and borrowing behavior: An examination of the role of need for material resources and need for arousal traits on household's borrowing decisions

Atefeh Yazdanparast[a], Yasser Alhenawi[b,*]

[a]*Assistant Professor of Marketing, Mead Johnson Endowed Chair in Business, University of Evansville, Schroeder Family School of Business Administration, Evansville, IN 47722, USA*

[b]*Associate Professor of Finance, Director of the Institute of Banking and Finance, University of Evansville, Schroeder Family School of Business Administration, Evansville, IN 47722, USA*

**Abstract**

This research is an empirical examination of the role of psychological characteristics of household decision makers in their borrowing decisions. Using a unique household survey data that ties together relevant concepts from the Survey of Consumer Finances (SCF) and psychological and attitudinal literature, we obtain direct measures of each surveyed household's personality scores, relevant attitudes, and financial profiles. Following regression analysis, we examine the relationship between attitude towards borrowing and intentions to apply for specific borrowing options and inspect the role of personality traits in such decisions. Specifically, we focus on tow personality traits, the need for material resources and the need for arousal, which have been largely ignored in extant household finance literature. Our findings indicate that the attitude toward borrowing and the intention to borrow are not always consistent and, more interestingly, the discrepancies between the two vary across personalities, highlighting the role of personality traits in borrowing decisions. Specifically, while the positive relationship between attitude towards borrowing and intention to borrow is intuitive, we show that this relationship is trivial for individuals who score low on need for material resources and individuals with low degrees of need for arousal. In contrast, for individuals with higher levels of need for material resources and need for arousal, the positive association between attitude towards borrowing and the intention to borrow is significantly intensified. Further, our results suggest that borrowing options are not homogenous and are motivated differently. Consistent with the view that individuals with greater need for material resources consider quantity and quality of possessions as the criteria to judge personal success, we find that these individuals have stronger intentions for mortgages, home improvement loans, business loans, personal loans, and payday loans. Similarly, con-

* Corresponding author. Tel.: +1-504-208-7749; fax: +1-812-488-2872.

*E-mail address:* ya22@evansville.edu (A. Yazdanparast)

sistent with the view that individuals with greater need for arousal favor stimulation and excitement that is often associated with more spending, we find that the borrowing decisions of these individual are marked with stronger intentions for home improvement loans, business loans, student loans, personal loans, and payday loans. The intentions for credits cards and automotive loans seem to be independent from the borrower's personality. Finally, we report strong evidence that personal attitudinal biases towards money, risk, financial planning, and borrowing as well as certain demographic characteristics influence household's borrowing behavior. Our work contributes to the literature on household finance in several ways. First, we focus on two under-researched personality traits to examine their roles in household borrowing decisions. Second, this research recognizes the distinction between the attitude towards borrowing and the intention to borrow and examines the inconsistencies between them. Third, we consider a wide spectrum of borrowing options that differ in terms of risk, motivation, and loan maturity. 

*JEL classification:* D03; D14

*Keywords:* Personality; Household finance; Financial decision; Borrowing attitude; Borrowing intention

## 1. Introduction

Household finance is an emerging field of research (Brown & Taylor, 2011; Campbell, 2006) that has attracted scholars from finance, economics, management, communication, and marketing (e.g., Besharat et al., 2014, 2015; Duclos, 2015; Lynch, 2011; and Shefrin & Nicols, 2014). This growing and diverse interest is perhaps attributed to the far-reaching impacts of household's financial decisions on consumer welfare, marketing practices, financial service providers' strategies, and the stability and reliability of the financial system (Lynch, 2011; Priog & Roberts, 2007). Moreover, extant research has recognized the fact that financial decisions are influenced not only by household's financial profile but also by decision makers' personality, habits, and other individual characteristics (Lynch, 2011). Not surprisingly, a growing area of household finance research examines psychological factors impacting household financial decisions (see Guiso et al., 2002 for a comprehensive review). Our work belongs to this area of literature and focuses on how individual characteristics impact household's borrowing choices.

Since borrowing behavior presents a specific context of consumer decision making, it is important to study the factors that impact borrowing decisions. Theory of planned behavior, a well-known theory in psychology (e.g., Ajzen & Fishbein 1980) maintains that behaviors are influenced by attitudes and intentions. In fact, attitudes can influence behavior directly, as well as indirectly through intentions (e.g., Bentler & Speckart, 1981, Hurst & Mendoza, 2016). Attitudes are generally defined as the lasting (favorable or unfavorable) evaluations toward an object, action, and so forth, while an intention is a particular type of volition that transforms the psychological state into guided bodily responses (Bagozzi, Baumgartner, & Yi, 1989; Fishbein & Ajzen, 1975, 1980). Therefore, the more favorable the attitudes, the higher the intentions for the behavior. However, extant research provides evidence for inconsistency between attitude and intention (see Jonas, Diehl, & Bromer, 1997). After all, we may have a positive attitude toward performing some act but fail to form an intention or

intend to refrain from doing the action because of some non-attitudinal reason (Bagozzi et al., 1989). The extant literature on household finance does not make a clear a distinction between the attitude towards borrowing and the intention to borrow and possible inconsistencies between them as related to decision making. We argue that individuals' attitudes may not be congruent with the actual intentions to take certain borrowing actions. Specifically, we theorize that the relationship between the attitude toward borrowing and the intention to borrow, and the mechanism thereof, is influenced by personality characteristics of the decision maker.

The relationship between household finances and personality traits is in fact an understudied area despite the fact that personality traits can influence financial decision-making at the individual and household level (Brown & Taylor, 2011). Previous research has mainly used the well-known Big Five model of personality (McCrae & Costa, 1987) and examined the influence of one, or a combination, of the five personality traits (i.e., openness to experience, conscientiousness, extroversion, agreeableness, and neuroticism) on financial decisions. We extend the extant research by examining the role of two additional personality traits, the need for material resources and the need for arousal, that have been largely ignored by extant literature on household finance. Recent research indicates that individuals with greater need for material resources are relatively more concerned with their social image (Christopher, Marek, & Carroll, 2004) and view possessions as means of achieving utilitarian and social status (Richins & Dawson, 1992). Also, individuals who score higher on the need for arousal trait have been shown to have a chronic need for impulse purchases (D'Astous, Maltais, & Roberge, 1990; Rook, 1987). Therefore, we theorize that these two traits are related to individuals' financial preferences and, consequently, borrowing choices.[1]

Finally, extant literature often defines borrowing either too broadly or too narrowly. The former approach overlooks the possibility that borrowing options are not homogenous (as in Brandstatter, 1996; Davey & George, 2011; and Nyhus & Webley, 2001). The latter approach focuses on a single borrowing option (e.g., credit card usage as in Norvilitis et al., 2006 and Lee & Kwon, 2002) and, therefore, does not offer a side-by-side comparison of different categories of borrowing in a unified framework. Unlike extant literature, we consider a wide spectrum of borrowing options that differ in purpose and weigh differently on the risk and maturity scales. This research uses a representative sample of primary decision makers in U.S. households (the final sample includes 849 responses corresponding to 85% response rate) and measures respondents' attitudes toward financial issues as well as their intentions to apply for eight different categories of loans including credit cards, mortgage, home improvement, business loans, car loans, student loans, personal loans, and payday loans. Respondents' financial knowledge, risk tolerance, and personality characteristics are also measured.[2]

Our findings suggest that the attitude towards borrowing and the intention to borrow do not necessarily accord, highlighting the role of personality characteristics in such behaviors. We also report strong evidence that different borrowing options are motivated differently. Individuals with different personalities demonstrate borrowing patterns that reflect their psychological needs. Individuals with greater need for material resources have stronger intention to borrow in certain categories that lead to possessing materials. Similarly, individuals with greater need for arousal have a higher tendency to use borrowing options

associated with spending. Finally, the results show that attitudinal biases and predispositions (e.g., attitude toward planning and borrowing) as well as past borrowing behaviors play a significant role in household's borrowing decisions.

Our work contributes to the extant research in several ways. First, our results suggest that the attitude toward borrowing and the intention to borrow should not be used interchangeably. Second, our work indicates that the need for material resources and the need for arousal significantly influence the way in which attitudinal biases translate into intentions to borrow. Third, our findings suggest that the aggregation of borrowing behaviors may lead to distorted conclusions, because borrowing options are not homogenous. Theoretically, our work provides general support to the behavioral approach to explaining financial decision making, suggesting that psychological factors and individual biases can swerve financial decisions in a systematic manner.

## 2. Literature review and hypotheses development

### *2.1. Personality traits*

According to Lin (2010), personality traits are the dynamic organization of psycho physiological systems that make up a person's characteristic behavior, thoughts, and feelings. One of the recent approaches in understanding the impact of personality traits on behavior is the Meta-theoretic Model of Motivation and personality (i.e., the 3M model).[3] This model accounts for how personality traits interact with the situation to influence consumer attitudes and actions (Mowen, 2000). The model incorporates a hierarchical theory of personality and stipulates that personality traits are at one of four levels (i.e., elemental, compound, situational, and surface). Elemental traits are the focus of the present study because of their fundamental nature in individual differences (Mowen & Carlson, 2003). These traits are basic predispositions that arise from genetic endowment and early learning. At the elemental level, the 3M model contains five traits from the big five personality model (i.e., openness to experience, conscientiousness, extroversion, agreeableness, and neuroticism[5]) as well as three additional traits namely, need for material resources, need for arousal, and body resource needs (Mowen et al., 2007). These traits are used as screening tools, because they can explain the variance in performance, are stable over time, and generalize across groups and settings (Mowen & Carlson, 2003).

### *2.2. Personality traits and borrowing behavior*

The extant literature on the relationship between borrowing behavior and personality traits defines borrowing broadly as any behavior that constitutes using others' wealth to satisfy current consumption needs. For instance, Davey and George (2011) found that individuals who score higher on openness have a tendency to try different or new products and services, which implies stronger intentions to borrow money to satisfy this desire. Moreover, they might be less hesitant to take on a loan as they see it as a new experience. Harley and Wilhelm (1992) showed that highly conscientious individuals are self-disciplined and, thus,

are more likely to regularly save compared to carefree people. As a result, these individuals make planned decisions and are less likely in need of borrowing. The work of Sadi, Ghalibaf, Rostami, Gholipour, and Gholipour (2011) showed that extroverts focus on external elements, decide easily, and live in present time. Further, extroversion is related to the need for stimulation and social contact which affects spending behavior and consequently, increases the dependency to borrow (Davey & George, 2011). Similarly, extraversion is negatively related to the percentage of income that is saved and positively with likelihood of being in debt and relying on credit cards (Davey & George, 2011). Nyhus and Webley (2001) argued that highly agreeable people have fewer investments and need to borrow more. Finally, and since shopping and spending are considered as means of temporary mood repair, lack of emotional stability (i.e., high neuroticism) may lead individuals to engage in behaviors such as impulse buying that could bring them short-term gratification (Youn & Faber, 2000). Lack of self-control has been associated with a variety of personal and social problems, including overspending (Mansfield, Pinto, & Parente, 2003), impulsive spending (Baumeister & Exline 2000; Strayhorn, 2002), and compulsive buying (Mowen, 2000). Consequently, individuals scoring high on neuroticism are less likely to exhibit self-control and save less (Brandstatter, 1996; Davey & George, 2011). Moreover, Brown and Taylor's (2011) used individual level data drawn from the British Household Panel Survey and analyzed the influence of big five personality traits on financial decisions regarding unsecured debt acquisition and financial assets and found that personality traits have different effects across the various types of debt and assets held.

Even though, these findings provide invaluable insights regarding the impact of personality traits on financial behaviors of individuals, there is a gap in extant literature focusing on the impact of personality traits on specific borrowing behaviors. As such, a more recent stream of research, to which this study belongs, has emerged which recognizes that borrowing actions are not similarly motivated and provides more specificity with regards to various borrowing behaviors.

### *2.3. Hypothesis development*

Overall, the review of extant literature identifies three major research gaps. First, the extant research overlooks the fact that borrowing options differ vastly in terms of borrowing horizon and purpose of borrowing and, thus, they may be motivated differently. The works of Besharat et al. (2014, 2015) and Brown and Taylor's (2011) present a significant attempt to overcome this shortcoming but lack comprehensiveness, as they focus on a single aspect of borrowing such as credit cards and unsecured debt acquisition. In contrast, the present research analyzes a wide spectrum of borrowing options and considers long-term borrowing (i.e., borrowing for big-ticket items that often require financing such as mortgage), intermediate-term borrowing (e.g., automobile and student loans), and short-term repeated borrowing decisions associated with smaller purchases (e.g., the use of payday loans, credit cards, and store cards). The study also encompasses borrowing behaviors induced by asset acquisition (e.g., home and car), consumptions (e.g., credit cards), educational needs (e.g., student loans), and investment (e.g., business loans). We also examine contrasting borrowing options that imply varying levels of sophistication in financial behavior and knowledge (e.g.,

the process of granting business loans is more rigorous than the ad-hoc process of granting payday loans). The work of Duclos (2015) indicates that the significance of a financial decision is attributed not only to the size of the deal (e.g., mortgage) but also to the accumulated effects of repeated decisions (e.g., credit card usage). Accordingly, we explore a wide range of borrowing options that are inherently different in risk, commitment level, term, and purpose.

Second, the extant literature does not consider the additional traits that have been recently added to the 3M model (i.e., the need for material resources and the need for arousal).[5] The need for material resources is the general need for possessing material and accumulating wealth. This trait stems from the importance one attaches to worldly possessions (Belk, 1984). For individuals with greater need for material resources, happiness is associated with possessions. Therefore, they have a more positive attitude toward debt (Pinto, Parente, & Palmer, 2000; Pirog & Roberts, 2007), and they are more willing to take on greater debts (Ponchio & Aranha, 2008). This personal urge could make a materialistic individual more willing to carry the burden of a loan to satisfy his/her psychological needs. Therefore, controlling for income and wealth, we anticipate to find that those who score higher on this trait exhibit a stronger intention to borrow compared to those who score lower.

Furthermore, the need for arousal is the general need or desire for stimulation and excitement and countering fear (Licata, Mowen, Harris, & Brown, 2003; Mehrabian & Russell, 1974). Individuals who score higher on this trait have a chronic need for stimulation and instant gratification. Because purchase is frequently cited as a stimulating behavior because of its power to satisfy urges for goods, services, experiences, and status (D'Astous et al., 1990; Rook, 1987), we anticipate that the need for arousal trait is associated with stronger intention to borrow (after controlling for income and wealth). As such, it is hypothesized that:

*Hypothesis 1a:* Greater need for material resources is associated with a stronger intention to borrow.

*Hypothesis 1b:* Greater need for arousal is associated with a stronger intention to borrow.

Third, the extant literature does not make a clear distinction between attitudes and intentions. This may lead to dubious conclusions because a person's attitude toward an action may not be consistent with his intention to take an action (Ajzen & Fishbein, 1977). More specifically, attitude toward a behavior is defined as the lasting evaluations of the action, but the ultimate behavior is best captured by behavioral intentions which are in turn influenced by many factors including the attitude toward the behavior (Fishbein & Ajzen, 1975, 1980). Further, attitudes are individual factors mainly associated with the amount of affect or feeling for or against something while intentions are influenced by situational, individual, and elements of marketing stimuli communicated with consumers. Therefore, the distinction between the two is theoretically and empirically important when investigating behaviors (Fishbein & Ajzen, 1975; Sheppard, Hartwich, & Warshaw, 1988). In the context of this research, we hypothesize that:

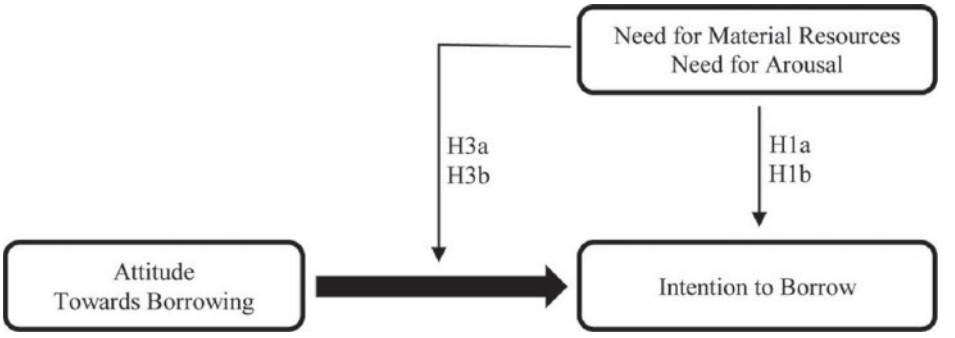
*Hypothesis 2:* The intention to borrow is not always consistent with the borrower's attitude towards borrowing.

Furthermore, research has indicated that personality characteristics predict enduring tendencies to engage in general classes of behavior (Mowen, 2000). Therefore, we anticipate that the relationship between attitude towards borrowing and the intention to borrow is moderated by personality traits. Accordingly, we test the following hypotheses:

*Hypothesis 3a:* The relationship between attitude towards borrowing and the intention to borrow is stronger for individuals with greater need for material resources.

*Hypothesis 3b:* The relationship between attitude towards borrowing and the intention to borrow is stronger for individuals with greater need for arousal.

The following graph illustrates the connections between the hypotheses:




## 3. Data collection and methods

### *3.1. Procedure*

Data were collected through an online survey administrated by Qualtrics on Amazon's Mechanical Turk (MTurk; Buhrmester et al., 2011; Rand, 2012). MTurk provides behavioral researchers with representative consumer samples because MTurk samples tap more diverse populations and yield greater generalizability (Buhrmester et al., 2011; Goodman et al., 2013; Mason & Suri 2012).

Participation was restricted to U.S. citizens or permanent residents who were at least 18 years old and declared to be one of the primary financial decision makers in their household to ensure reliability of responses (see Campbell, 2006 and Alhenawi & Elkhal, 2013). Upon qualification, participants responded to four questions that measured enduring involvement in personal finance matters (Bloch, Sherrell, & Ridgway, 1986) followed by questions about attitude toward money Christopher et al. (2004) and financial knowledge (Knoll & Houts, 2012). Next, risk tolerance was measured using items from the well-known investment risk tolerance quiz (Grable & Lytton, 1999). This quiz is shown to be a reliable and valid measure of risk tolerance (e.g., Gilliam, Chatterjee, & Grable, 2010; Larkin, Lucey, & Mulholland, 2013) to demonstrate the maximum amount of uncertainty that individuals are willing to accept when making financial decisions (Grable, 2000).

Personality traits were measured using measures from Licata, Mowen, Harris, and Brown (2003) that were first developed by Mowen (2000). Respondents were presented with short

phrases and asked "how often do you feel/act this way" (responses were taken on 5-point scales anchored by 1 = never to 5 = always). Attitude towards planning was also measured to control for respondents' perceptions of financial planning (Yamauchi & Templer, 1982).

Borrowing behavior was captured using questions from the Survey of Consumer Finances (SCF) administered by the Federal Reserve—a reliable resource that is largely overlooked in academic research (Campbell, 2006). This instrument does not only gauge overall borrowing intentions, but also allows for differential analyses of several types of borrowing options. The SCF identifies eight categories of borrowing avenues: credit cards, mortgage, home improvement, business loans, car loans, student loans, personal loans, and payday loans.

Attitude toward borrowing was measured using seven items adapted from the Financial Consumer Agency of Canada. These items measure individuals' overall views about borrowing using the 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). The last sections of the questionnaire contained questions related to financial profile. Previous research has shown that financial profile measures are important in the study of household financial behavior. For instance, Johnson and Li (2010) found that a household with a high debt service ratio is significantly more likely to be turned down for credit than other households. Similarly, the work of Alhenawi and Elkhal (2013) indicated that self-assessment of one's financial aptitude greatly influences financial behavior. Accordingly, financial profile questions included questions on major events with dramatic changes on household financial behavior over that past two years,[6] home ownership status, credit score category, having or not having a professional financial planner, confidence in making the best choices in managing money, and respondents' description of their financial situation (i.e., living comfortably, meeting basic expenses with a little left over for extras, etc.). Demographic questions included standard controls such as gender, age, income level, marital status, zip code of the residence, household size, ethnicity, education, and so forth.

### *3.2. Sample*

Overall, we collected 1,000 responses, out of which 849 were used in the analyses after eliminating respondents who did not have the required qualifications, had incomplete responses, or did not pass the instructional manipulation check question included to gauge whether participants paid sufficient attention to the instructions (Goodman et al., 2013). Table 1 provides characteristics of the sample.

Panel A of Table 1 shows respondents' scores on personality dimensions. Panel B shows responses to attitudinal tests, self-assessments, and other personal factors quizzes. Respondents were highly involved in personal finance matters, had relatively favorable attitudes toward money and financial planning (79%), and had an average attitude toward borrowing. The average percentage score on the risk tolerance was 49.40% which is comparable to other U.S.-based studies (e.g., Ryack, 2011).[8] The mean percentage score on the financial knowledge quiz was 59.57% indicating an overall deficiency in financial knowledge at the household level which is consistent with the major belief in the literature (see, e.g., Campbell, 2006). Similarly, the sample mean on the financial planning quiz was 60.13%, indicating poor financial planning. This is in line with previous research findings (see, e.g., Lusardi & Mitchell, 2008).

Table 1 Sample characteristics

| | Cronbach's α | Min | Max | Mean | Dev. | Obs. | % |
|---|---|---|---|---|---|---|---|
| Panel A: Personality traits | | | | | | | |
| Introversion | .89 | 1.00 | 5.00 | 3.00 | 0.94 | 849 | |
| Materialism | .90 | 1.00 | 5.00 | 2.53 | 0.93 | 849 | |
| Openness | .87 | 1.00 | 5.00 | 3.41 | 0.80 | 849 | |
| Neuroticism | .92 | 1.00 | 5.00 | 2.47 | 0.96 | 849 | |
| Agreeableness | .90 | 1.00 | 5.00 | 3.72 | 0.71 | 849 | |
| Conscientiousness | .87 | 1.25 | 5.00 | 3.61 | 0.78 | 849 | |
| Need for arousal | .88 | 1.00 | 5.00 | 2.52 | 0.86 | 849 | |
| Panel B: Attitudes, self-evaluations, and quiz scores | | | | | | | |
| Involvement in personal finance | .79 | 1.00 | 5.00 | 4.09 | 0.76 | 849 | |
| Attitude towards money | .60 | 3.00 | 7.00 | 4.91 | 0.63 | 849 | |
| Attitude towards financial planning | .87 | 0.20 | 1.00 | 0.79 | 0.13 | 849 | |
| Attitude towards borrowing | .73 | 0.20 | 0.89 | 0.45 | 0.14 | 849 | |
| Risk tolerance quiz % | | 26.53% | 81.63% | 49.40% | 9.99% | 849 | |
| Financial knowledge quiz % | | 0.00% | 100.00% | 59.57% | 21.69% | 849 | |
| Financial planning quiz % | | 20.00% | 100.00% | 60.13% | 17.74% | 849 | |
| Self-assessment of financial situation | | | | | | | |
| Don't know | | | | | | 6 | 0.71% |
| Comfortable | | | | | | 142 | 16.73% |
| Make little more than needed | | | | | | 366 | 43.11% |
| Make just enough | | | | | | 249 | 29.33% |
| Make less than needed | | | | | | 86 | 10.13% |
| Confidence in making financial decisions | | | | | | | |
| Don't know | | | | | | 14 | 1.65% |
| Very | | | | | | 111 | 13.07% |
| Somewhat | | | | | | 379 | 44.64% |
| Not too much | | | | | | 226 | 26.62% |
| Not confident at all | | | | | | 119 | 14.02% |
| Panel C: Borrowing behavior | | | | | | | |
| Have credit card and pay on time | | | | | | 361 | 42.52% |
| Have credit card and carry balance | | | | | | 299 | 35.22% |
| Have mortgage account | | | | | | 250 | 29.45% |
| Refinanced home | | | | | | 97 | 11.43% |
| Obtained home-equity loan | | | | | | 41 | 4.83% |
| Obtained home-improvement loan | | | | | | 33 | 3.89% |
| Have business loan | | | | | | 14 | 1.65% |
| Have car loan | | | | | | 261 | 30.74% |
| Have student loan | | | | | | 342 | 40.28% |
| Have personal loan | | | | | | 139 | 16.37% |
| Have pay-day loan | | | | | | 21 | 2.47% |
| Applied for credit in past five years | | | | | | 454 | 53.47% |
| Filed for bankruptcy | | | | | | 67 | 7.89% |
| Make payments on time | | | | | | 631 | 74.32% |
| Likely to default in the future | | | | | | 56 | 6.60% |
| Likely to file bankruptcy in the future | | | | | | 35 | 4.12% |
| Panel D: Borrowing intentions | | | | | | | |
| Credit card | | 1.00 | 5.00 | 2.18 | 1.30 | 849 | |
| Mortgage | | 1.00 | 5.00 | 2.05 | 1.29 | 849 | |
| Home improvement loan | | 1.00 | 5.00 | 1.60 | 0.94 | 849 | |
| Business loan | | 1.00 | 5.00 | 1.58 | 0.95 | 849 | |
| Car loan | | 1.00 | 5.00 | 2.45 | 1.32 | 849 | |
| Student loan | | 1.00 | 5.00 | 1.81 | 1.25 | 849 | |
| Personal Loan | | 1.00 | 5.00 | 1.59 | 0.96 | 849 | |
| Payday Loan | | 1.00 | 5.00 | 1.30 | 0.75 | 849 | |
| Panel E: Household financial profile | | | | | | | |
| Dramatic event last 2 years? Yes/no | | | | | | 326 | 38.40% |
| Own house | | | | | | 412 | 48.53% |
| Income | | | | | | | |
| Income Category 1 | | | | | | 10 | 1.18% |
| Income Category 2 | | | | | | 56 | 6.60% |
| Income Category 3 | | | | | | 197 | 23.20% |
| Income Category 4 | | | | | | 228 | 26.86% |
| Income Category 5 | | | | | | 135 | 15.90% |
| Income Category 6 | | | | | | 108 | 12.72% |

*(continued on next page)*

Table 1 (Continued)

| | Cronbach's α | Min | Max | Mean | Dev. | Obs. | % |
|---|---|---|---|---|---|---|---|
| Income Category 7 | | | | | | 60 | 7.07% |
| Income Category 8 | | | | | | 38 | 4.48% |
| Income Category 9 | | | | | | 6 | 0.71% |
| Income Category 10 | | | | | | 11 | 1.30% |
| Credit score | | | | | | | |
| Don't know | | | | | | 139 | 16.37% |
| Poor | | | | | | 130 | 15.31% |
| Fair | | | | | | 261 | 30.74% |
| Good | | | | | | 319 | 37.57% |
| Panel F: Demographics | | | | | | | |
| Age | | 18.00 | 82.00 | 34.04 | 11.51 | 849 | 100.00% |
| Gender | | 0.00 | 1.00 | 0.45 | 0.50 | 849 | 100.00% |
| Family size | | 1.00 | 6.00 | 2.55 | 1.27 | 849 | 100.00% |
| Financial education | | | | | | 157 | 18.49% |
| Working in the financial sector | | | | | | 85 | 10.01% |
| Marital status | | | | | | | |
| Married | | | | | | 280 | 32.98% |
| Single | | | | | | 350 | 41.22% |
| Divorced | | | | | | 56 | 6.60% |
| Widowed | | | | | | 6 | 0.71% |
| Live with partner | | | | | | 157 | 18.49% |
| Ethnicity | | | | | | | |
| White | | | | | | 652 | 76.80% |
| African American | | | | | | 65 | 7.66% |
| Hispanic | | | | | | 49 | 5.77% |
| American Indian | | | | | | 5 | 0.59% |
| Asian | | | | | | 58 | 6.83% |
| Other | | | | | | 9 | 1.06% |
| Prefer not to answer | | | | | | 11 | 1.30% |
| Education | | | | | | | |
| Less than high school | | | | | | 4 | 0.47% |
| High school | | | | | | 105 | 12.37% |
| Some college | | | | | | 239 | 28.15% |
| Associate degree | | | | | | 81 | 9.54% |
| Bachelor degree | | | | | | 314 | 36.98% |
| Masters | | | | | | 86 | 10.13% |
| Doctorate | | | | | | 20 | 2.36% |

*Notes:* Data were collected through an online survey administrated by Qualtrics on Amazon's Mechanical Turk (MTurk). Participation is restricted to U. S. citizens or permanent residents who are at least 18 and who reported that they were one of the primary financial decision makers in their households. Qualified participants responded to quizzes on enduring financial involvement (Bloch, Sherrell, & Ridgway, 1986); attitude toward money (Christopher, Marek, & Carroll, 2004); financial knowledge (Knoll & Houts, 2012); attitude towards financial planning (Yamauchi & Templer, 1982); attitude towards borrowing (Financial Consumer Agency of Canada) and risk tolerance (Grable & Lytton, 1999). Each participant was assigned a percentage score based on each of the quizzes. This score represents the ratio of his/her total score in the quiz to the highest possible score. Personality traits were measured using short quizzes adapted from Licata, Mowen, Harris, and Brown (2003). Borrowing behavior questions were adapted from the Survey of Consumer Finances (SCF) administered by the Federal Reserve. The SCF identifies eight categories of borrowing avenues: credit cards, mortgage, home improvement, business loans, car loans, student loans, personal loans, and payday loans. This classification is appropriate because it captures a great deal of the variations within the numerous borrowing options available to households (see Instrument section for more explanation). The questionnaire also includes sections that explored the financial profile and demographic characteristics of the participants. The final sample includes 849 cases.

The last two parts of Panel B list respondents' self-evaluations of their financial situation and ability to make financial decisions (adapted from a survey used by the Consumer Federation of America (2013). An interestingly find was that 57.73% (13.07% + 44.64%) of participants had average to high confidence in their ability to make financial decisions while

the scores in financial knowledge and planning quizzes were below average. This indicates that raising financial literacy may require not only education, but also changing financial perceptions and attitudes (see Alhenawi & Elkhal, 2013 for similar argument).

Panel C captures actual borrowing behaviors. As indicated in the table, 42.52% of respondents owned a credit card and paid on time (i.e., they did not have credit card debt). In contrast, 35.22% were indebted to credit card companies (i.e., they carried a monthly balance). The percentages in the table indicate that the most common types of borrowing (excluding credit cards) were student loans (40.28%), car loans (30.74%), mortgage loans (29.45%), and personal loans (16.37%). Other types of loans such as home equity loans, home improvement loans, payday loans, and business loans were much less popular (less than 5%).

To control for borrowing ability, we also included additional five questions on credit applications and bankruptcy (adopted from the SCF). We found that 53.47% of respondents had applied for credit in the past five years, 74.32% paid their loan payments on time, and only 6.6% anticipated defaulting in the future. Also, 7.89% of respondents had filed for bankruptcy in the past, and 4.12% anticipated filing for bankruptcy in the future.

Panel D demonstrates participants' intentions to use different types of borrowing options (on a scale of 1 to 5, where 1 = very unlikely and 5= very likely). The demand for car loans was the highest (2.45), followed by credit cards (2.18), and homes (2.05). Personal loans (1.59), business loans (1.58), and payday loans (1.30) had lower scores.

Panels E and F demonstrate the financial and non-financial characteristics of the sample. About 38.40% of respondents reported that they endured a significant event in the past two years that had changed their financial behavior and attitudes. The sample was reasonably balanced across various income categories, credit scores classes, marital status, ethnicity, and education levels. Average respondents' age was 34.04 years with a minimum of 18 and a maximum of 82 years. About 45% of respondents were males. Average family size was 2.55 with a minimum of one (single) and a maximum of six. About 18.49% of respondents had formal financial education, and about 10% indicated that they worked in the financial sector. Overall, the sample was balanced and consistent with previous studies (e.g., zharvAlhenawi & Elkhal, 2013; Hilgert, Hogarth, & Beverly, 2003; and Johnson & Li, 2010).

### *3.3. Regression analysis*

We used multivariate regression models where the regressors are explanatory variables—including personality traits—theorized to influence the regressand. Table 2 provides the results of the regression analyses. The regressand in regression one is the attitude toward borrowing while the regressands in regressions two to nine are the intentions to use eight different types of borrowing. In each borrowing intention regression, we included binary variables that indicate historical borrowing behavior in the same category (e.g., in the mortgage regression model, we include three variables that indicate relevant historical borrowing behaviors such as having an existing mortgage loan, refinanced mortgage, or home equity loan). The models also include standard controls such as financial profile and demographics. We first estimated full models with all possible regressors, then we ran concise models with significant coefficients only for better parsimony. We found negligible

Table 2 Regression analysis–Borrowing intention

| | (1) Attitude | (2) Credit card | (3) Mortgage | (4) Home improvement loan | (5) Business loan | (6) Automobile | (7) Student loan | (8) Personal loan | (9) Payday loan |
|---|---|---|---|---|---|---|---|---|---|
| Constant | 57.739*** | 0.501 | 0.251 | 1.991*** | 2.010*** | 1.140* | 2.434*** | 1.575*** | 2.592*** |
| Introversion | 0.112 | 0.099** | 0.070 | −0.024 | −0.007 | 0.001 | 0.052 | 0.012 | 0.008 |
| Materialism | 2.213*** | 0.136*** | 0.162*** | 0.123*** | 0.105*** | 0.103* | 0.162*** | 0.053 | 0.034 |
| Openness | −0.385 | −0.005 | −0.088 | 0.007 | 0.036 | 0.007 | −0.065 | 0.029 | 0.007 |
| Neuroticism | 0.558 | −0.026 | −0.024 | 0.028 | 0.019 | 0.070 | 0.154*** | 0.063* | 0.038 |
| Agreeableness | −1.319* | 0.048 | 0.151** | −0.014 | 0.032 | 0.057 | 0.024 | 0.027 | −0.102*** |
| Conscientiousness | −1.137* | −0.035 | 0.053 | −0.065 | −0.065 | 0.025 | −0.089 | −0.012 | 0.000 |
| Need for arousal | 1.300** | 0.175*** | 0.178*** | 0.082** | 0.127*** | 0.105* | 0.193*** | 0.085** | 0.054* |
| $Borr_{Stat_{Apld}}$ | 3.520*** | 0.151 | 0.236** | −0.028 | −0.123* | −0.028 | −0.050 | −0.062 | −0.126*** |
| $Borr_{Stat_{BnkRpt}}$ | 0.906 | −0.059 | 0.411** | 0.033 | −0.017 | −0.186 | −0.204 | 0.131 | 0.122 |
| $Borr_{Stat_{Ontime}}$ | −2.670** | −0.222* | −0.059 | −0.215** | −0.307*** | −0.088 | −0.184 | −0.328*** | −0.304*** |
| $Borr_{Stat_{Defit}}$ | 0.720 | −0.138 | 0.074 | −0.225 | −0.011 | −0.217 | −0.217 | −0.054 | 0.042 |
| $Borr_{Stat_{BnkRptFuture}}$ | −3.966 | 0.003 | 0.071 | −0.298* | −0.054 | −0.029 | −0.185 | −0.064 | 0.098 |
| $Att_{Plng}$ | −0.199*** | 0.006 | 0.004 | 0.000 | −0.002 | 0.008** | −0.001 | −0.002 | −0.003* |
| *FinQuiz* | 0.016 | −0.002 | −0.002 | −0.005*** | −0.005*** | 0.001 | −0.007*** | −0.004** | −0.007*** |
| *OwnHouse* | 0.106 | −0.114 | −0.572*** | 0.005 | −0.131** | −0.147 | −0.227** | −0.155** | −0.031 |
| Income | 0.469 | −0.049 | 0.040 | 0.007 | −0.001 | −0.041 | 0.004 | −0.021 | −0.019 |
| $Crdt_{Score}$ | 0.021 | −0.041 | −0.027 | 0.007 | −0.030 | −0.090* | −0.021 | −0.043 | −0.029 |
| *FinAdvisor* | −2.017 | 0.032 | −0.113 | −0.239*** | −0.221** | −0.001 | −0.148 | −0.223** | −0.251*** |
| *SelfEval* | −1.694*** | −0.039 | −0.037 | −0.037 | −0.043 | −0.071 | −0.005 | −0.046 | −0.047 |
| *Conf* | 0.368 | −0.125** | −0.037 | −0.076* | −0.077* | −0.030 | −0.139*** | −0.036 | −0.086*** |
| *Edu* | 1.038*** | −0.073** | 0.057* | −0.023 | −0.019 | −0.066* | −0.103*** | −0.044* | −0.018 |
| $Att_{Borrow}$ | | 0.029*** | 0.006* | 0.007*** | 0.009*** | 0.013*** | 0.001 | 0.016*** | 0.009*** |
| $Borr_{Hist}$ | | 0.343*** | | | | | | | |
| $Borr_{Hist}$ | | 0.029 | | | | | | | |
| $Borr_{Hist}$ | | | 0.017 | | | | | | |
| $Borr_{Hist}$ | | | 0.069 | | | | | | |
| $Borr_{Hist}$ | | | −0.161 | | | | | | |
| $Borr_{Hist}$ | | | | 0.386** | | | | | |
| $Borr_{Hist}$ | | | | | 0.521** | | | | |
| $Borr_{Hist}$ | | | | | | 0.265*** | | | |
| $Borr_{Hist}$ | | | | | | | 0.316*** | | |
| $Borr_{Hist}$ | | | | | | | | 0.334*** | |
| $Borr_{Hist}$ | | | | | | | | | 1.328*** |
| $R^2$ | 0.179 | 0.191 | 0.127 | 0.121 | 0.147 | 0.070 | 0.154 | 0.192 | 0.301 |
| Adj. $R^2$ | 0.158 | 0.168 | 0.100 | 0.096 | 0.123 | 0.044 | 0.130 | 0.169 | 0.282 |
| df. Regression | 848 | 848 | 848 | 848 | 848 | 848 | 848 | 848 | 848 |

*(continued on next page)*

Table 2 (Continued)

| | (1) Attitude | (2) Credit card | (3) Mortgage | (4) Home improvement loan | (5) Business loan | (6) Automobile | (7) Student loan | (8) Personal loan | (9) Payday loan |
|---|---|---|---|---|---|---|---|---|---|
| df. Residual | 827 | 824 | 823 | 825 | 825 | 825 | 825 | 825 | 825 |
| F-state | 8.580 | 8.118 | 4.781 | 4.929 | 6.174 | 2.704 | 6.510 | 8.509 | 15.481 |
| Sig. | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

*Notes:* The table shows the results of eight regressions that correspond to the eight different borrowing options employed in this study (regressions 2 through 9). It also shows a regression where the dependent variable is the attitude toward borrowing (regression 1). We first estimate full models that include all possible explanatory variables. Then, we shorten the models to include significant variables only. We found the differences between the expanded models and the concise models to be trivial. Therefore, we only report the finding of the concise models which have the following general form:

$$BorrIntn = C + Intrv + Matr + Opns + Neuro + Agree + Cons + Arous + Borr_{Stat_{Apld}} + Borr_{Stat_{BnkRpt}} + Borr_{Stat_{Ontime}} + Borr_{Stat_{Deflt}} + Borr_{Stat_{BnkRptFuture}} + Att_{Plng} + FinQuiz + OwnHouse + Income + Crdt_{Score} + FinAdvisor + SelfEval + Conf + Edu + Att_{Borrow} + Borr_{Hist}$$

*BorrIntn* is the borrowing intention variable that captures the respondents' intention to use a certain type of borrowing. *Intrv*, *Matr*, *Opns*, *Neuro*, *Agree*, *Cons*, *Arous* represent seven personality traits. $Borr_{Stat_{Apld}}$, $Borr_{Stat_{BnkRpt}}$, $Borr_{Stat_{Ontime}}$, $Borr_{Stat_{Deflt}}$, and $Borr_{Stat_{BnkRptFuture}}$ capture whether or not the respondent applied for credit in the past five years, whether or not they filed for bankruptcy in the past, whether or not they make payments on time, whether or not they are likely to default on a loan in the future, and whether or not they are likely to file for bankruptcy in the future. $Att_{Plng}$ captures respondents' attitude towards planning. *FinQuiz* represents the score on the knowledge quiz. *Ownhouse* is a dichotomous that equals 1 if the respondent owns a home; 0 otherwise. *Income* is a hieratical variable representing nine levels of household income (reference group is "no income"). $Crdt_{Score}$ represents three levels of credit score quality (good, fair, and poor). *FinAdvisor* is a dichotomous that equals 1 if the household uses the service of a professional financial advisor; 0 otherwise. *SelfEval* represents respondents' self-evaluation of their financial situation (financially comfortable, make a little more than needs, meet basic needs, and make a little less than needs) where the reference category is "poor." *Conf* represents respondents' confidence in making financial decisions (very confident, somehow confident, a little confident and the reference group is "not confident"). *Edu*, captures education level (doctorate, master, bachelor, associate degree, some college, high school, and the reference group is "none"). $Att_{Borrow}$ measures respondents' attitude towards borrowing. $Borr_{Hist}$ controls for past behavior in the same borrowing category as the dependent variable (e.g., in the automobile regression, $Borr_{Hist}$ indicates that the respondent have had a car loan in the past). In the credit card regression, the first $Borr_{Hist}$ indicates that the respondent had had credit card(s) in the past but they pay on time. The second $Borr_{Hist}$ indicated carrying monthly balance. In the mortgage regression, the first $Borr_{Hist}$ indicates having a mortgage account, the second $Borr_{Hist}$ indicates having refinanced a home in the past, and the third $Borr_{Hist}$ indicates having a home equity loan in the past. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level. For each regression we report raw and adjusted $R^2$[a], degrees of freedom and F-stat[b].

[a]Our study design necessitates the use of numerous inter-correlated variables (numerical responses to survey questions) to characterize an underlying latent factor (personality trait). Exploratory Factor Analysis (EFA) has been invented specifically for this kind of complicated studies. EFA reduces the dimensionality of the original space and accounts for potential co-variance in the observed variables (Stevens, 1992; Wooldridge, 2006]. We ran an Exploratory Factor Analysis (EFA) with principal component extraction and Varimax rotation and a correlation analysis. The EFA analysis provided further support for unidimensionality of personality dimensions as all measurement items showed high loadings under their corresponding actor. The correlation analysis reveals that the pair-wise correlation between personality traits ranges between −0.250 (between conscientiousness and neuroticism) and 0.258 (between openness and agreeableness). We conclude that correlation among independent variables is not too high.

[b]A low adjusted $R^2$ is very common in multivariate analysis and a seemingly low $R^2$ does not necessarily mean that an OLS regression equation is useless. Whether or not a regression model is a good estimate of the ceteris paribus relationship between the dependent the independent variables does not depend directly on the size of $R^2$ (Wooldridge, 2006, pp. 43–44).

differences between the full models and the concise models and, consequently, we only present the results with the concise models. The results for the full models are available upon request from the authors.

The findings in Table 2 generally support our first set of hypotheses. Those individuals with higher levels of need for material resources had stronger intentions to borrow in all categories except for personal loans and payday loans. This is consistent with Hypothesis 1a. Similarly, higher levels of need for arousal was associated with a stronger intention to borrow in all categories that lends support to Hypothesis 1b.

As expected, the coefficients on the attitude towards borrowing ($Att_{Borrow}$) were positive and significant across all borrowing types (except for student loans). This indicates that a positive attitude towards borrowing is positively associated with intentions to borrow. However, when the coefficients of attitudes and intentions across personalities are considered, the results provided evidence supporting Hypothesis 2 (i.e., intention to borrow and the attitude towards borrowing may not always accord). Specifically, the results indicate that despite high levels of intention to use certain types of borrowing (student loans and personal loans), neurotic individuals have a neutral attitude toward borrowing (i.e., their attitudes towards borrowing is not favorable in general). Moreover, individuals who score high on introversion exhibit stronger intentions to open new credit card accounts although despite having neutral attitudes towards borrowing. Also, those with higher levels of agreeableness and conscientiousness show negative attitudes towards borrowing, but this neither strengthens nor weakens their intentions to borrow in almost all categories (except for mortgage and payday loans).

The coefficients of $Borr_{Hist}$ are positive, significant, and statistically distinctive from zero within each borrowing category (except mortgage). Therefore, previous borrowing behavior is positively related to future borrowing behavior. This implies that borrowing could be a repetitive or an addictive behavior that makes future borrowing more probable. In other words, it could be argued that borrowers somehow create a level of comfort zone in borrowing, since those who have borrowed in a certain manner in the past have relatively stronger intentions to borrow in a similar manner in the future. The finding that attitude towards borrowing is relatively more favorable for those who have applied for credit in the past 5 years (see $Borr_{Stat_{Apld}}$)) also supports this view. The intention to borrow is relatively weaker for those who pay their bills on time ($Borr_{Stat_{Ontime}}$). This could be related to the fact that for responsible borrowers who make timely payments, more loans would result in inability to make timely payments in the future.

In addition, Table 2 unveils several attributes of the relationship between financial behavior and personalities. More specifically, the results in Table 2 do not provide support for the findings of Davey and George (2011) who provided evidence indicating that openness to experience is associated with higher intentions to borrow. Our results do not support the findings of Harley and Wilhelm (1992) reporting that highly conscientious individuals are less likely in need of borrowing. Our findings indicate that openness to experience and conscientiousness are personality traits that do not weaken, nor do they intensify borrowing intentions.

Moreover, our results indicate that neuroticism is positively associated with certain types of borrowings such as student loans and personal loans. This is consistent with the view that

neuroticism is associated with overspending (Mansfield, Pinto, & Parente, 2003), impulsive spending (Baumeister and Exline 2000; Strayhorn, 2002; Youn & Faber, 2000), compulsive buying (Mowen, 2000), and poor financial planning (Brandstatter, 1996; Davey and George, 2011). It is clear that these types of this financial behavior would eventually lead to immediate need for money that is often satisfied with borrowing in the form of personal loans. Poor financial planning (another behavior related to this personality trait) could result in higher needs for student loans as well (please note that we have controlled for the effect of income).

Our results also indicate that introversion is not associated with any change in the intention to borrow across seven different borrowing options except for credit cards. The positive association between this trait and intentions to credit card borrowing is indeed interesting and in line with an earlier finding by Davey and George (2011), supplying additional support for our argument that borrowing options are not homogenous. However, our findings do not support those of Sadi et al. (2011) who found that extroversion (i.e., the opposite of introversion) increases the tendency to borrow.

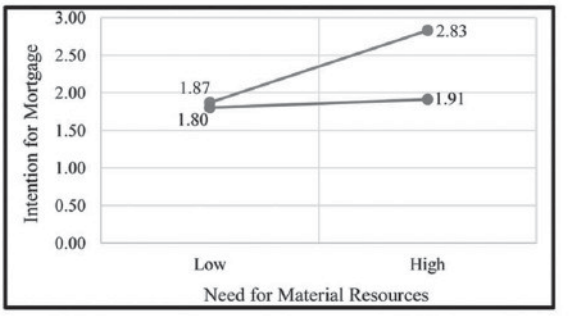
Finally, we found that agreeableness is positively related to the intention to use mortgages and negatively to the intention to use payday loans. Nyhus and Webley (2001) showed that highly agreeable people have higher needs to borrow more. Our results indicates that this conclusions extends only to mortgages.

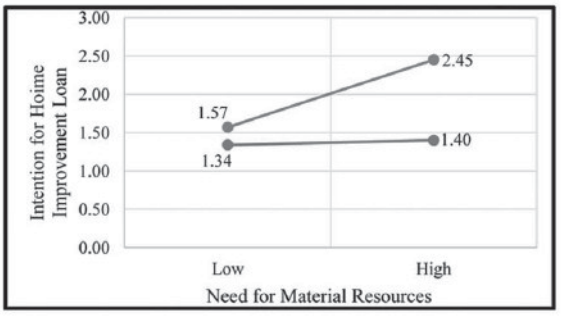
Contemplating the differences between our findings and the findings of earlier research, we argue that these differences are attributed to several factors. First, we take a more meticulous approach to borrowing by considering a wide range of borrowing options and adding more specificity to understanding borrowing decisions. Second, we use a comprehensive personality profiling approach by examining the two understudied personality traits in addition to the traditionally studied Big Five traits while specifically focusing on effects of the need for material resources and the need for arousal traits. Overall, our results support the main argument that borrowing options are not homogenous and they vary across personalities.

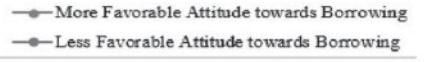
### *3.4. Interaction plots*

Interaction plots are widely used in the literature to display interaction effects. An interaction effect is witnessed when the joint effects of two variables is the focus of attention so that the outcome variable would show significant differences for different levels of the independent variable at different levels of the moderator variable (Hair et al., 2006). In the context of this article, we are interested in finding how a certain personality trait affects the relationship between the attitude towards borrowing and the intention to borrow. While the connection between the attitude towards borrowing and the intention to borrow is intuitive, hypotheses Hypothesis 3a and Hypothesis 3b postulate that the strength of this connection is a function of the borrower's personality. Specifically, the two hypotheses suggest that the impact of attitude toward borrowing on intention to borrow is intensified for individuals with greater need for material resources (H3a) and/or greater need for arousal (H3b). To test these hypotheses, we use the mode probe analysis approach using PROCESS model 1 (Hayes, 2012) where personality trait is the moderator, the attitude toward borrowing is the independent variable and the borrowing intention is the dependent variable. Figure 1

Figure 1 Interaction plots–The need for material resources

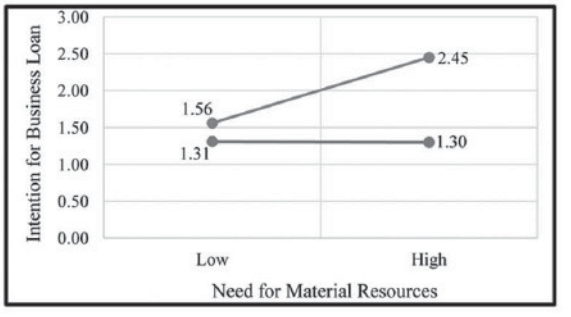


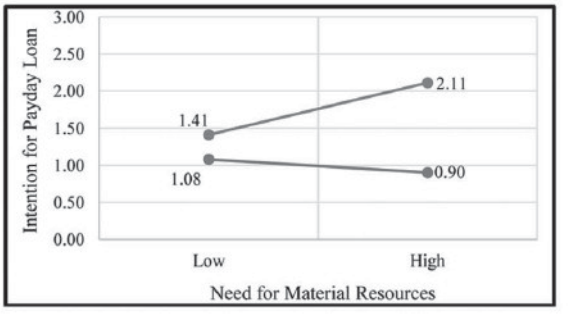



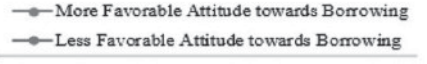




| Attitude towards Borrowing | Need for Material Resources | | |
|---|---|---|---|
| | | Low | High |
| | More favorable | 1.87 | 2.83 |
| | Less favorable | 1.80 | 1.91 |
| | Diff. | 0.07 | 0.92** |
| | *p-value* | *.814* | *.018* |

| Attitude towards Borrowing | Need for Material Resources | | |
|---|---|---|---|
| | | Low | High |
| | More favorable | 1.57 | 2.45 |
| | Less favorable | 1.34 | 1.40 |
| | Diff. | 0.23 | 1.05*** |
| | *p-value* | *.281* | *.000* |



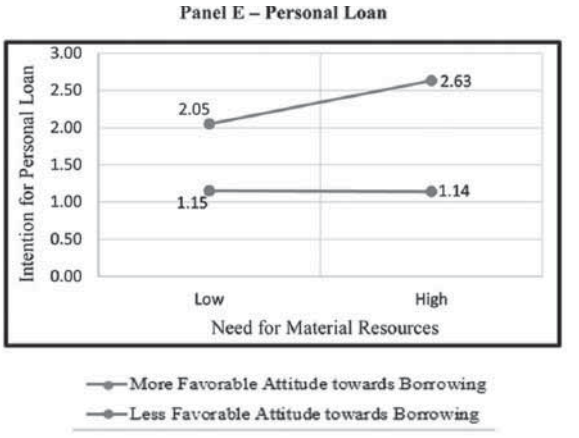




| Attitude towards Borrowing | Need for Material Resources | | |
|---|---|---|---|
| | | Low | High |
| | More favorable | 1.56 | 2.45 |
| | Less favorable | 1.31 | 1.30 |
| | Diff. | 0.25 | 1.15*** |
| | *p-value* | *.239* | *.000* |

| Attitude towards Borrowing | Need for Material Resources | | |
|---|---|---|---|
| | | Low | High |
| | More favorable | 1.41 | 2.11 |
| | Less favorable | 1.08 | 0.90 |
| | Diff. | 0.33* | 1.21*** |
| | *p-value* | *.058* | *.000* |

Figure 1 (Continued)



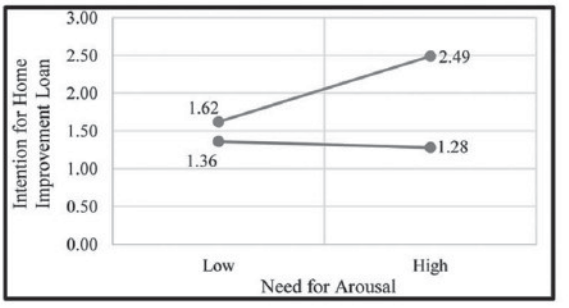

| Attitude towards Borrowing | Need for Material Resources: Low | Need for Material Resources: High |
|---|---|---|
| More favorable | 2.05 | 2.63 |
| Less favorable | 1.15 | 1.14 |
| Diff. | 0.90*** | 1.49*** |
| *p-value* | *.000* | *.000* |

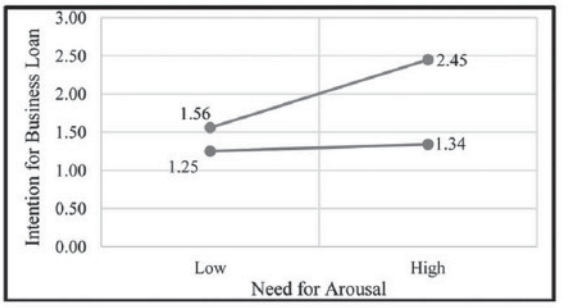
*Notes:* The figure shows the results of running interaction plots to discern how the need for material resources trait moderates the relationship between the attitude towards borrowing and the intentions to borrow. To run the test, we classify participants into two classes using the mean of scores and the standard deviation of the scores on the need for material resources test. Specifically, respondents with a need for material resources scores higher (lower) than one standard deviation above (below) the mean are classified as individuals with greater (lesser) need for material resources. Analogically, respondents with an attitude towards borrowing scores higher (lower) than one standard deviation above (below) the mean are classified as individuals with more (less) favorable attitude towards borrowing. We run the model with all eight borrowing options but we report only the findings with significant interaction effects. Under each chart, we report the averages scores on the corresponding intention to borrow. We also report the difference and statistical significance (*p*-value) for the difference in average scores between the more favorable attitude and the less favorable attitude subgroups. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

is devoted for the need for material resources trait and Figure 2 is devoted for the need for arousal trait.

The top two charts in Figure 1 indicate that the need for material resources trait significantly moderates the relationship between attitude towards borrowing and the intention on to borrow. In other words, the relationship between attitude towards borrowing and the intention to apply for mortgages and home improvement loans shows significantly different patterns at different levels of this personality trait. The results in Panel A indicate that at lower levels of the need for material resources (i.e., for those individuals who do not score high on this trait as indicated by one standard deviation below the mean in our analyses), high or low levels of attitudes toward borrowing (i.e., more or less favorable attitudes toward borrowing) do not significantly impact intentions to apply for a mortgage. The average score on the intention to open a new mortgage account for those who have a more favorable attitude towards borrowing is 1.87. The corresponding average score for those who have a less favorable attitude towards borrowing is 1.80. The difference, 0.07, is trivial and is not

Figure 2 Interaction plots–The need for arousal

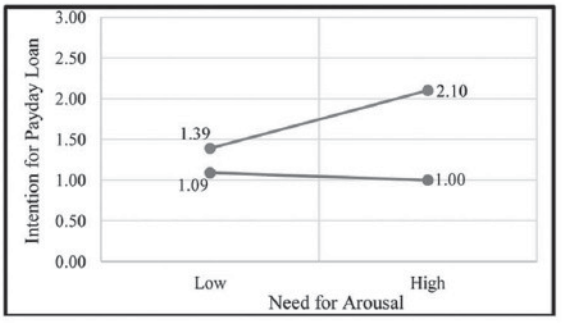


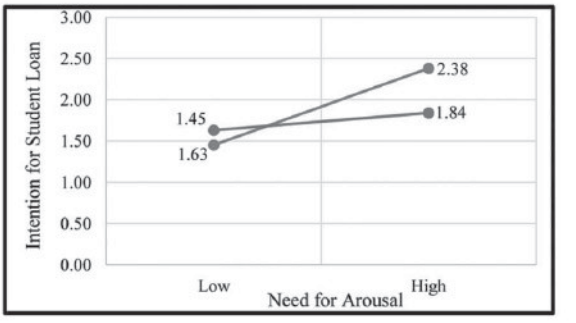




More Favorable Attitude towards Borrowing
Less Favorable Attitude towards Borrowing

| Attitude towards Borrowing | Need for Arousal | | |
|---|---|---|---|
| | | Low | High |
| | More favorable | 1.62 | 2.49 |
| | Less favorable | 1.36 | 1.28 |
| | Diff. | 0.26 | 1.21*** |
| | *p-value* | *.220* | *.000* |

| Attitude towards Borrowing | Need for Arousal | | |
|---|---|---|---|
| | | Low | High |
| | More favorable | 1.56 | 2.45 |
| | Less favorable | 1.25 | 1.34 |
| | Diff. | 0.31* | 1.11*** |
| | *p-value* | *.081* | *.000* |



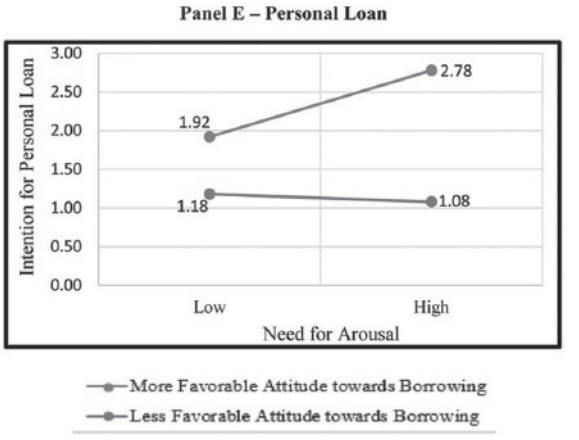




More Favorable Attitude towards Borrowing
Less Favorable Attitude towards Borrowing

| Attitude towards Borrowing | Need for Arousal | | |
|---|---|---|---|
| | | Low | High |
| | More favorable | 1.39 | 2.10 |
| | Less favorable | 1.09 | 1.00 |
| | Diff. | 0.30* | 1.10*** |
| | *p-value* | *.067* | *.000* |

| Attitude towards Borrowing | Need for Arousal | | |
|---|---|---|---|
| | | Low | High |
| | More favorable | 1.45 | 2.38 |
| | Less favorable | 1.63 | 1.84 |
| | Diff. | -0.18 | 0.54* |
| | *p-value* | *.548* | *.066* |

Figure 2 (Continued)




| Attitude towards Borrowing | Need for Arousal | | |
|---|---|---|---|
| | | Low | High |
| | More favorable | 1.92 | 2.78 |
| | Less favorable | 1.18 | 1.08 |
| | Diff. | 0.74 | 1.70 |
| | *p-value* | *0.000* | *0.000* |

*Notes:* The figure shows the results of running interaction plots to discern how the need for arousal trait moderates the relationship between the attitude towards borrowing and the intentions to borrow. To run the test, we classify participants into two classes using the mean of scores and the standard deviation of the scores on the need for arousal test. Specifically, respondents with a need for arousal scores higher (lower) than one standard deviation above (below) the mean are classified as individuals with greater (lesser) need for arousal. Analogically, respondents with an attitude towards borrowing scores higher (lower) than one standard deviation above (below) the mean are classified as individuals with more (less) favorable attitude towards borrowing. We run the model with all eight borrowing options but we report only the findings with significant interaction effects. Under each chart, we report the averages scores on the corresponding intention to borrow. We also report the difference and statistical significance ($p$-value) for the difference in average scores between the more favorable attitude and the less favorable attitude subgroups. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

statistically different from zero ($p = 0.814$). In contrast, when the need for material resources is higher (i.e., in case of individuals who score high on this trait as indicated by one standard deviation above the mean in our analyses), intention to apply for a mortgage is significantly different at different levels of attitude towards borrowing. More specifically, for those with greater need for material resources, when attitude toward borrowing is more favorable, intention to apply for mortgage loans in significantly higher compared to those with less favorable attitudes towards borrowing. The average score on the intention to open a new mortgage account for those who have a more favorable attitude towards borrowing is 2.83 that is 0.92 point higher than the corresponding score for those who have a less favorable attitude (1.91). It is noteworthy that the difference in intentions is almost one scale unit (on a scale of 1 to 5) indicating 18.4% increase in intentions to apply for mortgage that is statistically significant at the 5% level ($p = 0.018$).

The same observations extend to Panel B. When the need for material resources is low, the average score on the intention to obtain a home improvement loan for those who have a more favorable attitude towards borrowing is not significantly different from those who

have a less favorable attitude ($p = 0.281$). In contrast, when the need for material resources is greater, a more favorable attitude towards borrowing is associated with a significantly higher intention to draw a home improvement loan (mean difference is 1.05 points and is statistically significant at the 1% level; $p < 0.001$).

Panel C reveals similar findings with the intention to draw a business loan. When the need for material resources is low, the average score for those who have a more favorable attitude towards borrowing is 1.56 while it is 1.31 for those with a less favorable attitude towards borrowing. The difference is 0.25 scale points which is statistically insignificant ($p = 0.239$). When the need for material resources is higher, the average score for those who have a more favorable attitude towards borrowing is 2.45 while the corresponding score for those who have a less favorable attitude towards borrowing is 1.30. The difference is an impressive 1.15 points and is statistically significant ($p$-value is less than 0.001).

The findings also extend to Panel D with one exception. When the need for material resources is low, the attitude towards borrowing there is no significant difference in individuals' intention to take a payday loan regardless of their attitudes towards borrowing. However, for those who score higher on the need for material resources, the role of the attitude is much stronger in relation to intention to take payday loans. More specifically, when the need for material resources is low, the average score on the intention to take a payday loan for those who have a more favorable attitude towards borrowing is 1.41. The corresponding score for those who have a less favorable attitude towards borrowing is 1.08. The difference of 0.33 is only marginally significant at the 10% ($p = 0.058$). In contrast, when the need for material resources is greater, the average score on the intention to take a payday loan for those who have a more favorable attitude towards borrowing is 2.11 that is 1.21 point higher than the average score for those who have a less favorable attitude (0.90). The difference is 1.05 points and is statistically significant at the 1% level ($p < 0.001$).

Finally, the plots in Panel E show that the need for material resources affects how the attitude towards borrowing translate into intentions to obtain a personal loan. The plots show that a more favorable attitude towards borrowing leads to a stronger intention for personal loans, but the relationship is much stronger when the need for material resources is greater.

Overall, the findings in Figure 1 support Hypothesis 3a. Specifically, they present evidence consistent with the supposition that while the connection between the attitude towards borrowing and the intention to borrow is intuitive, it is meaningfully impacted by one's need for material resources. In Panels A, B, and C, when the need for material resources is low, the attitude towards borrowing seems to have insignificant role in determining one's intention to borrow. In Panels D and E, when the need for material resources is low the attitude towards borrowing has a weaker impact on the intention to borrow. In contrast, when the need for material resources is higher, a more favorable attitude towards borrowing significantly intensifies one's intention to borrow.

The results in Figure 2 provide support of the hypothesis regarding the moderating role of the need for arousal in the relationship between attitude towards borrowing and specific borrowing intentions. The plots in Panel A indicate that at lower levels of the need for arousal (i.e., those individuals who score low on this trait), the intention to obtain a home improve-

ment loan does not significantly change at different levels of attitudes towards borrowing. More specifically, when need for arousal is low, home improvement loan intention for those who have a more favorable attitude towards borrowing is 1.62, and the corresponding score for those who have a less favorable attitude towards borrowing is 1.36. The difference, 0.26, is small and insignificant ($p = 0.220$). In contrast, when the need for arousal is higher, the average score on the intention for home improvement loan for those who have a more favorable attitude towards borrowing is 2.49 which is 1.21 points higher than the average score for those who have a less favorable attitude ($M = 1.28$). The difference is statistically significant at the 1% level ($p < 0.001$). We conclude that when the need for arousal is high, the attitude towards borrowing plays a significant role in enticing one to apply for home improvement loan. When the need for arousal is low, the attitude towards borrowing does not impact the intention to take a home improvement loan.

The same observations extend to Panels B and C; that is, when the need for arousal is low, the average score on the intention to draw a business loan (Panel B) or to take a payday loan (Panel C) does not improve significantly when the attitude towards borrowing is more favorable. In contrast, when the need for arousal is greater, the average score on the intention to draw a business loan (Panel B) or to take a payday loan (Panel C) is systematically higher for those who demonstrate a more favorable attitude towards borrowing.

The observations also extend to Panel D but with a remarkably lower significance. We still observe a non-significant impact of attitude on the intention to take a student loan for those who have a lesser need for arousal (the difference is a small −0.18 points and is statistically insignificant form zero). When the need for arousal is greater, there is a more positive impact of attitude on the intention to take a student loan. The difference is a reasonable 0.54 point and is statistically significant at 10% only ($p$-value is 0.066).

Finally, the plots in Panel E show that the need for arousal impacts how the attitude towards borrowing translate into intentions to obtain a personal loan. The plots show that a more favorable attitude towards borrowing leads to a stronger intention for personal loans but the relationship is much stronger when the need for arousal is greater.

Overall, the findings in Figure 2 support Hypothesis 3b. They indicate that the relationship between attitude towards borrowing and the intention to borrow extends only to individuals with greater need for arousal. In all five panels, except Panel E, when the need for arousal is low, the attitude towards borrowing exhibits an insignificant role in one's intention to borrow. In Panel E, when the need for arousal is low, the attitude towards borrowing exhibits a much weaker impact on one's intention to borrow. In contrast, when the need for arousal is greater, the attitude towards borrowing significantly strengthens one's intention to borrow.

### *3.5. Regressions with interaction terms*

In this section, we focus on the interaction effects between the attitude towards borrowing, the intention to borrow, and personality traits. Hypotheses 3a and 3b postulate that the attitude towards borrowing might have a different effect on the intention to borrow for individuals with different personalities. We test these hypotheses by estimating the incre-

mental effect of personality on the relationship between the attitude towards borrowing and the intention to borrow.

Empirically, we estimate the following regression models

$$BorrIntn = C + \beta_1 Matr + \beta_2 Att_{Borrow} + \beta_3 (Matr \times Att_{Borrow}) \quad (1)$$

$$BorrIntn = C + \beta_1 Arous + \beta_2 Att_{Borrow} + \beta_3 (Arous \times Att_{Borrow}) \quad (2)$$

The first model includes the need for material resources score (*Matr*), the attitude towards borrowing ($Att_{Borrow}$), and an interaction between the two ($Matr \times Att_{Borrow}$). The dependent variable is the intention to borrow (*BorrIntn*). The null hypothesis, therefore, is that the change in the intention to borrow that is induced by the attitude towards borrowing is the same across individuals with different need for material resources. If interpreted carefully, the coefficients on *Matr*, $Att_{Borrow}$, and $Matr \times Att_{Borrow}$ are sufficient to reveal the intention to borrow differentials across all possible combinations of need for material resources and the attitude towards borrowing relative to hypothetical base group defined by construction as [$Matr = 0$, $Att_{Borrow} = 0$]. See legend of Table 3 for more explanation.

The second model with the need for arousal trait is a replica of the first model and, thus, is interpreted in an analogous manner. The parameters of second model are reported in Table 4.

The results in Table 3 indicate that the interaction between the attitude towards borrowing and the need for material resources is not consistent across all borrowing options; which supports our core argument that borrowing options are not homogenous and are motivated differently.

The coefficients on the interaction term, $\beta_2$, are significantly positive in regressions 2, 3, 4, 7, and 8 that correspond to the intentions to apply for a mortgage, a home improvement loan, a business loan, a personal loan, and a payday loan, respectively. This indicates that for individuals with greater need for material resources, the attitude towards borrowing shows a stronger association on the intention to use these borrowing options. This is consistent with Hypothesis 3a.

An interesting find was that in regressions 2 through 8, the coefficients on the attitude towards borrowing, $\beta_2$, and the need for material resources, $\beta_1$, are statistically indistinguishable from zero. This implies that neither the attitude towards borrowing nor the need for material resources can, alone, influence one's intentions to borrow.

Regression 1 corresponds to the intention to open a credit card account and seems to be structurally different from other regressions. In particular, we observe that both $\beta_2$ and $\beta_1$ are positive and statistically significant. This indicates that credit card borrowing is motivated differently from other borrowing options. A more favorable attitude towards borrowing as well as higher values of need for material resources induce stronger intentions for opening a new credit card account. At the same time, we cannot reject the null that the interaction between the two is insignificant.

As in Table 3, the results in Table 4 indicate that the interaction between the attitude towards borrowing and the need for arousal is not consistent across all borrowing options; which supports the argument that borrowing options are not homogenous and are, therefore, motivated differently.

Table 3 Regression analyses with interaction terms: The need for material resources

| | (1) Credit card | (2) Mortgage | (3) Home improvement loan | (4) Business loan | (5) Automobile | (6) Student loan | (7) Personal loan | (8) Payday loan |
|---|---|---|---|---|---|---|---|---|
| Constant [C] | 0.1678 | 1.9042*** | 1.4830*** | 1.4660*** | 2.0458*** | 1.2401*** | 1.0323*** | 1.3147*** |
| $Att_{Borrow}$ [$\beta_2$] | 0.0350*** | −.0098 | −0.0076 | −0.0077 | −0.0004 | −0.0021 | 0.0059 | −0.0059 |
| *Materialism* [$\beta_1$] | 0.2848** | −.0765 | −0.1313 | −0.1448 | −0.0364 | 0.1961 | −0.0941 | −0.0205 |
| *Interaction* [$\beta_3$] | −0.0024 | .0067** | 0.0068*** | 0.0071*** | 0.0044 | 0.0015 | 0.0046** | 0.0066*** |
| $R^2$ | 0.1296 | 0.0415 | 0.681 | 0.0705 | 0.0324 | 0.0393 | 0.0900 | 0.0760 |
| df. Regression | 845 | 845 | 845 | 845 | 845 | 845 | 845 | 845 |
| F-state | 41.96 | 12.19 | 20.60 | 21.35 | 9.436 | 11.536 | 27.854 | 23.17 |
| Sig. | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

*Notes:* The table shows the results of eight interaction regressions that correspond to the eight different borrowing intentions explored in this study. In each model, we interact the attitude towards borrowing score ($Att_{Borrow}$) with the need for material resources (*Matr* score. Specifically, we run the following models:

$$BorrIntn = C + \beta_1 Matr + \beta_2 Att_{Borrow} + \beta_3 (Matr \times Att_{Borrow})$$

*BorrIntn* is the borrowing intention variable that captures the respondents' intention to use a certain type of borrowing. The introduction of an interaction term in a regression calls for a careful interpretation of the coefficients on the other variables. The interaction term $Matr \times Att_{Borrow}$ captures the incremental effect of the attitude towards borrowing on the intention to borrow for individuals with greater need for material resources. A significantly positive coefficient $\beta_3$ implies that the need for material resources affect how the attitude towards borrowing changes one's intention to borrow, that is, a significantly positive $\beta_3$ leads to the conclusion that the attitude towards borrowing yields a stronger intention to borrow for individuals with greater need for material resources. $\beta_2$ measures the impact of the attitude towards borrowing on the intention to borrow in the absence of a need for material resources. $\beta_1$ measures the impact of the need for material resources on the intention to borrow when the attitude towards borrowing is zero. Therefore, the $\beta_3$ coefficient supplies a direct test for Hypothesis 3a and the $\beta_1$ coefficients supply additional testing of Hypothesis 1a. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

Table 4 Regression analyses with interaction terms–The need for arousal

| | (1) Credit card | (2) Mortgage | (3) Home improvement loan | (4) Business loan | (5) Automobile | (6) Student loan | (7) Personal loan | (8) Payday loan |
|---|---|---|---|---|---|---|---|---|
| Constant [C] | 0.6860* | 1.6616*** | 1.6323*** | 1.2523*** | 1.5219*** | 1.6750*** | 1.3418*** | 1.4170*** |
| $Att_{Borrow}$ [$\beta_2$] | 0.0222** | −0.0038 | −0.0095 | −0.0048 | 0.0123 | −0.0125 | −0.0029 | −0.0086 |
| Need for arousal [$\beta_1$] | 0.0661 | 0.0038 | −0.2092* | −0.0669 | 0.1628 | 0.0030 | −0.2245* | −0.2536*** |
| Interaction [$\beta_3$] | 0.0029 | 0.0048 | 0.0081*** | 0.0062** | −0.0003 | 0.0060* | 0.0082*** | 0.0079*** |
| $R^2$ | 0.1305 | 0.0349 | 0.0608 | 0.0755 | 0.0279 | 0.0403 | 0.1019 | 0.0796 |
| df. Regression | 845 | 845 | 845 | 845 | 845 | 845 | 845 | 845 |
| F-state | 42.26 | 10.18 | 18.23 | 23.00 | 8.10 | 11.84 | 31.95 | 24.35 |
| Sig. | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

*Notes:* The table shows the results of eight interaction regressions that correspond to the eight different borrowing options considered in this study. In each model, we interact the attitude towards borrowing score ($Att_{Borrow}$) with the need for arousal score (*Arous*). Specifically, we run the following models:

$$BorrIntn = C + \beta_1 Arous + \beta_2 Att_{Borrow} + \beta_3 (Arous \times Att_{Borrow})$$

*BorrIntn* is the borrowing intention variable that captures the respondents' intention to use a certain type of borrowing. As explained in Table 3 above, a significantly positive $\beta_3$ implies that the attitude towards borrowing yields a stronger intention to borrow for individuals with greater need for arousal. $\beta_2$ measures the impact of the attitude towards borrowing on the intention to borrow in the absence of a need for arousal. $\beta_1$ measures the impact of the need for arousal on the intention to borrow when the attitude towards borrowing is zero. Therefore, the $\beta_3$ coefficients supply a direct test for Hypothesis 3b and the $\beta_1$ coefficients supply additional testing of Hypothesis 1b. Asterisks denote statistical significance at the 1% (***), 5% (**), or 10% (*) level.

The coefficients on the interaction term, $\beta_3$, are significant and positive in regressions 3, 4, 6, 7, and 8 that correspond to the intentions to apply for a home improvement loan, a business loan, a student loan, a personal loan, and a payday loan, respectively. This indicates that the attitude towards borrowing has a stronger relationship with the intention to borrow for individuals with higher levels of need for arousal. This is consistent with Hypothesis 3b.

In regressions 2 through 8, the coefficients on the attitude towards borrowing score, $\beta_2$, and are statistically indistinguishable from zero. This implies that the attitude towards borrowing cannot, alone, influence one's intentions to borrow. In regression 1, only $\beta_2$ is positive and statistically significant. This indicates that a more favorable attitude towards borrowing induces a stronger intention for opening a new credit card account. It also indicates that we cannot reject the null that the interaction between the attitude towards borrowing and the need for arousal is insignificant.

### *3.6. Discussion of findings*

Consistent with previous research and in line with behavioral finance theories, the results suggest that psychological characteristics impact individuals' financial choices. In addition, our findings are generally in line with the behavioral influence perspective of consumer financial decision making. Nevertheless, this research adds several new perspectives to the literature on financial behavior and personal characteristics.

We document evidence that greater values of need for material resources and need for arousal are associated with stronger intentions to borrow. This lends support to Hypotheses 1a and H1b. We also show that for individuals who score higher on need for material resources, the positive association between attitude towards borrowing and the intention to borrow is significantly stronger relative to individuals with a lesser need for materials resources. This supports Hypothesis 3a. The same finding extends to the need for arousal trait that is consistent with Hypothesis 3b.

Furthermore, the overall results support a few overarching suppositions tested in this article. First, the attitude towards borrowing and the intention to borrow are not interchangeable. In fact, the intention to borrow is sometimes inconsistent with the borrower's attitude towards borrowing. This is consistent with Hypothesis 2. Second, the fact that we were able to document an interaction effect in only a subset of borrowing options indicates that borrowing options are not homogenous and are motivated differently. A further discussion of this issue is supplied in the conclusion section.

Finally, our analyses take into account conventional controls used in extant literature. We did not find fundamental deviations from previous findings (i.e., we found that attitudinal biases towards money, wealth, indebtedness, planning as well as financial knowledge and other demographics impact borrowing behavior in a predictable manner).

## 4. Conclusions and implications

The present research is an interdisciplinary approach to investigate household's financial borrowing decisions in the light of psychological characteristics of individuals. The review

of extant literature reveals a three-fold gap in household borrowing research. First, the role of personality traits in household finance remains an area that should be investigated. The extant research has mainly focused on the Big Five personality traits and has not examined the extensions by the more comprehensive 3M model of motivation and personality. Specifically, the need for material resources and the need for arousal traits have not been fully explored. Second, current literature has often applied attitude toward a behavior and intention for the behavior interchangeably. Third, borrowing behavior has been defined too broadly with minimal attention to the fact that the ultimate purpose of the borrowing might influence the decision to borrow.

The present research is an effort to address the aforementioned gaps. First, we use an extended version of the Big Five model of personality that includes, in addition to the conventional five traits, the two additional personality traits mentioned above. Second, we make a clear distinction between the attitude towards borrowing and the intention to borrow. Finally, we consider a wide spectrum of borrowing behaviors defined by the SCF administered by the Federal Reserve.

The findings are insightful and present several practical and academic implications. First, our analyses indicate that the two additional personality traits, the need for material resources and the need for arousal, play a significant role in shaping borrowing behavior. Second, our findings indicate the importance of making a clear distinction between the attitude towards borrowing and the intentions to borrow. The attitude towards borrowing and the intention to borrow do not always accord, and the inconsistency between the two varies across personalities. In other words, our results provide evidence for the interaction between personality and attitudes towards borrowing on intentions for specific borrowing options. Third, we demonstrate that different borrowing options are not homogenous and more importantly, are motivated differently across personalities. Intuitively, the attitude towards borrowing influences the intention to borrow. Our finding, however, shows that this intuitive relationship is not consistent across different borrowing options and is greatly influenced by the borrower's personality characteristics.

Overall, individuals with greater need for material resources find happiness in owning material wealth. They view possessions as means of achieving utility and social status as opposed to comfort and pleasure (Richins & Dawson, 1992). Therefore, they are more willing to carry the burden of a loan in exchange for psychological satisfactions. Their borrowing behavior, therefore, is marked by stronger urge to possess material wealth. We find that for individuals with greater need for material resources, the impact of the attitude towards borrowing on the intention to borrow is significantly intensified in mortgages, home improvement loans, business loans, personal loans, and payday loans. The same is not true for automobile loans, credit cards, and student loans. We find this divergence well-explained by the psychological characteristics of individuals with greater need for material resources. They are more concerned about their social image compared to those who score lower on this trait (Christopher, Marek, & Carroll, 2004) and, therefore, they have a stronger urge to own a home, improve their home, and own a business. These individuals are more likely to spend money on themselves than on others and they contribute less money to charities (Richins & Dawson, 1992) that explains why they have stronger intention to obtain personal loans. Finally, they are more likely to get engaged in compulsive buying (Mowen,

2000; Mowen & Spears, 1999) that explains the stronger intention for payday loans. Arguably, they are willing to carry the burden of the debt to satisfy their psychological need to spend and own personal items immediately (as opposed to wait and save up for them).

In contrast, individuals who have greater need for arousal derive happiness from the purchasing experience itself and, thus, they enjoy the frequency of purchasing (Licata, Mowen, Harris, & Brown, 2003; Mehrabian & Russell, 1974). Therefore, they spend more on frequent purchases including impulse purchases and less on big ticket items. We find that their borrowing pattern is consistent with their psychological characteristics. For individuals with greater need for arousal, the association between attitude towards borrowing and the intention to borrow is significantly stronger in the case of home improvement loans, business loans, student loans, personal loans, and payday loans. The same is not true for mortgages, automobile loans, and credit cards. In fact, the intention for credit cards and automotive loans seems to be independent of the borrower's personality. This finding is consistent with the anecdotal evidence of the wide prevalence of these types of borrowing options in the society.

Despite the aforementioned contributions, the findings of this research are limited in terms of generalizability because of our sample size. Our findings, however, pave the road for future research in this area that could span beyond academia. For marketers of financial services, our findings suggest that personality traits of individual and their associated inherent tendencies should be considered when communicating with borrowers. More specifically, since personality traits are associated with different borrowing decisions, it is expected that different groups of individuals with varying personality traits should react differently to marketing efforts. As such, borrowers can be categorized based on their personality traits and attitudes towards certain borrowing options and approached differently. We encourage future research to follow experimental designs and examine such differences.

Moreover, in consumer profiling and target market selections fields, more research may explore the possibility that the attitude towards borrowing and the intention to borrow are not always consistent. Our results identify the moderating role of personality traits as a boundary condition that provides insights on these inconsistencies. Future research is encouraged to identify additional boundary conditions. Our results also highlight the importance of psychological characteristics in financial decisions. According, this research calls for more research by social planners, legislators, personal financial planners, and educators. We specifically recommend more research on how personal differences shape household's financial behaviors.

## Notes

1 Our analysis also incorporates individuals' attitude towards financial planning and money, borrowing history and self-evaluation of one's finances and financial decision-making abilities. These factors are largely ignored by previous studies.
2 Standard controls for demographics, knowledge, and financial endowment are also considered. See for example Ryack and Sheikh (2016), Balasubramnian and Brisker (2016), and Docking, Fortin, and Michelson (2013).
3 There are two distinct approaches for studying personality, namely the psychoanalytic theory and the trait theory. The trait Theory focuses on various personality traits and

their impact on consumer decisions. This theory has been used in two approaches. One approach argues that people have the same set of traits, but these traits are manifested dissimilarly. The second approach argues that individual variances are because of different combinations of each trait varying from one individual to another (Lin, 2010). In fact, the theoretical mechanism through which individual differences influence decisions is rooted in the social cognition research perspective (Witte and Morrison, 2000). According to this perspective, individual differences influence individuals' perceptions of the world and environmental stimuli (Fiske & Taylor, 1991) and, thus, can influence their behavior.

4 See Davey and George (2011) for a detailed discussion of these traits. Openness to experience is the general interest in finding novel solutions and original ideas, and the tendency to use the imagination in performing activities. This trait is associated with being open to ideas and values and trying new things that could potentially be costly. Conscientiousness is the need to be organized and efficient in tasks and is defined as the extent to which individuals are careful and self-disciplined. Conscientious individuals are organized, hard-working, and reliable as opposed to carefree individuals who score lower on this trait. Extroversion is the tendency to be warm blooded, friendly, and sociable. Agreeableness is the need to express kindness and sympathy to others. Scoring low on this trait shows higher levels of self-interest. As a result, low-agreeable individuals have higher tendencies to hoard their money and engage in frugal practices rather than extravagance. Neuroticism is the tendency to be emotional, moody and temperamental. Neurotic individuals are more likely to experience negative emotions and are more susceptible to stress. Scoring high on neuroticism indicates lack of emotional stability and self-control, which results in taking more emotional/impulsive decisions and less planned/controlled ones.

5 Physical/body needs are related to devoting more time to improve one's body on a daily basis. Those who score higher on this trait work hard to keep their bodies healthy and in good shape (Mowen, 2000) and have active lifestyles. This trait is, therefore, not related to borrowing behavior or attitude toward borrowing (Pirog & Roberst, 2007) and is not included in our analyses.

6 This is a simple yes/no question with a text box that allows respondents, if they wish, to specify the nature of the event. About a third of respondents cited events related to work (e. g. promotion) or personal life (e. g. marriage, divorce). The corresponding binary variable, however, was found to have insignificant impact on borrowing behavior.

7 However, it is higher than non-U. S.-based studies. For instance, the averages reported by Larkin, Lucey, and Mulholland, 2013 who used the same risk tolerance quiz on an Irish sample fall in the 20 to 30% range.

## References

Ajzen, I., & Fishbein, M. (1977). The influence of attitudes on behavior. In D. Albarracin, B. T. Johnson, & M. P. Zana (Eds.), *The Handbook of Attitudes* (pp. 173–221). Mahwah, NJ: Lawrence Erlbaum.

Ajzen, I., & Fishbein, M. (1980). *Understanding Attitudes and Predicting Social Behavior.* Englewood Cliffs, NJ: Prentice-Hall.

Alhenawi, Y., & Elkhal, K. (2013). Financial literacy of U.S. households: Knowledge vs. long-term financial planning. *Financial Services Review*, *22,* 211–244.

Bagozzi, R. P., Baumgartner, J., & Yi, Y. (1989). An investigation into the role of intentions as mediators of the attitude-behavior relationship. *Journal of Economic Psychology, 10,* 35–62.

Balasubramnian, B., & Brisker, E. R. (2016). Financial adviser users and financial literacy. *Financial Services Review, 25,* 127–155.

Baumeister, R. F., & Exline, J. J. (2000). Self-control, morality, and human strength. *Journal of Social and Clinical Psychology, 19,* 29–42.

Belk, R. W. (1984). Three scales to measure constructs related to materialism: Reliability, validity, and relationships to other measures of happiness. In T. Kinnear (Ed.), *Advances in Consumer Research* (Vol. 11, pp. 291–297). Provo, UT: Association for Consumer Research.

Bentler, P. M., & Speckart, G. (1981). Attitudes 'cause' behaviors: A structural equation analysis. *Journal of Personality and Social Psychology, 40,* 226–238.

Besharat, A., Carrillat, F. A., & Ladik, D. M. (2014). When motivation is against debtors' best interest: The illusion of goal progress in credit card debt repayment. *Journal of Public Policy & Marketing, 33,* 143–158.

Besharat, A., Varki, S., & Craig, A. W. (2015). Keeping consumers in the red: Hedonic debt prioritization within multiple debt accounts. *Journal of Consumer Psychology, 25,* 311–316.

Bloch, P. H., Sherrell, D. L., & Ridgway, N. M. (1986). Consumer search: An extended framework. *Journal of consumer research, 13,* 119–126.

Brandstatter, H. (1996). *Saving, Income, And Emotional Climate Of Households Related To Personality Structure.* Progress Report 38. VSB-CentER Savings Project, Tilburg University, the Netherlands.

Brown, S., & Taylor, K. (2011). Household finances and the 'big five' personality traits. *Journal of Economic Psychology, 45,* 197–212.

Buhrmester, M., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk a new source of inexpensive, yet high-quality, data? *Perspectives on Psychological Science, 6,* 3–5.

Campbell, J. Y. (2006). Household finance. *Journal of Finance, LXI,* 1553–1604.

Christopher, A. N., Marek, P., & Carroll, S. M. (2004). Materialism and attitude toward money: An exploratory investigation. *Individual Differences Research, 2,* 109–117.

Consumer Federation of America. (2013). *Financial Planning Profiles of American Households: The 2013 Household Financial Planning Survey and Index*. Certified Financial Planner Board of Standards, September 18, 2013.

D'Astous, A., Maltais J., & Roberge, C. (1990). Compulsive buying tendencies of adolescent consumers. *Advances in Consumer Research, 17,* 306–312.

Davey, J., & George, C. (2011). Personality and finance: The effects of personality on financial attitudes and behavior. *The International Journal of Interdisciplinary Social Sciences, 5,* 275–294.

Docking, D., Fortin, R., & Michelson, S. (2013). The influence of race on the social security early retirement decision for married couples. *Financial Services Review, 22,* 133–150.

Duclos, R. (2015). The psychology of investment behavior: (De)biasing financial decision-making one paragraph at a time. *Journal of Consumer Psychology, 25,* 317–325.

Financial Consumer Agency of Canada. Your attitude toward credit and debt. https://www.canada.ca/en/financial-consumer-agency/services/financial-toolkit/credit/credit-1/2.html accessed on 4-16-2014.

Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley.

Fishbein, M., & Ajzen, I. (1980). Predicting and Understanding Consumer Behavior: Attitude-Behavior Correspondent. In I. Ajzen & M. Fishbein (Eds.), *Understanding Attitude and Predicting Social Behavior* (pp. 148–172). Englewood Cliffs, NJ: Prentice-Hall.

Fiske, S., & Taylor, S. (1991). *Social Cognition* (2nd ed.). New York, NY: McGraw-Hill.

Gilliam, J. E., Chatterjee, S., & Grable, J. (2010). Measuring the perception of financial risk tolerance: A tale of two measures. *Journal of Financial Counseling and Planning, 21,* 30–43.

Goodman, J. K., Cryder, C. E., & Cheema A. (2013). Data collection in a flat world: The strengths and weaknesses of Mechanical Turk samples. *Journal of Behavioral Decision Making, 26,* 213–224.

Grable, J. E. (2000). Financial risk tolerance and additional factors that affect risk taking in everyday money matters. *Journal of Business and Psychology, 14,* 625–630.

Grable, J. E., & Lytton, R. H. (1999). Financial risk tolerance revisited: The development of a risk assessment instrument. *Financial Services Review, 8,* 163–181.

Guiso, L., Haliassos, M., & Jappelli, T. (2002). *Household Portfolios.* Cambridge, MA: MIT Press.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate Data Analysis* (6 ed.). Upper Saddle River, NJ: Pearson Prentice Hall.

Harley, A., & Wilhelm, M. (1992). Compulsive buying and exploration into self-esteem and money attitudes. *Journal of Economics Psychology, 13,* 5–17.

Hayes, A. F. (2012). *PROCESS: A Versatile Computational Tool for Observed Variable Mediation, Moderation, and Conditional Process Modeling [White Paper]* (available at http://www.afhayes.com/public/process 2012.pdf).

Hilgert, M., Hogarth, J., & Beverly, S. (2003). Household financial management: The connection between knowledge and behavior. *Federal Reserve Bulletin, 89,* 309–332.

Hurst, M., & Mendoza, M. (2016). The behavior heuristics responsible for formation and liquidation of tax holding accounts. *Financial Services Review, 25,* 279–301.

Johnson, K., & Li, G. (2010). The debt-payment-to-income ratio as an indicator of borrowing constraints: Evidence from two household surveys. *Journal of Money, Credit and Banking, 42,* 1373–1390.

Jonas, K., Diehl, M., & Bromer, P. (1997). Effects of attitudinal ambivalence on information processing and attitude-intention consistency. *Journal of Experimental Social Psychology, 33,* 190–210.

Knoll, M. A., & Houts, C. R. (2012). The financial knowledge scale: An application of item response theory to the assessment of financial literacy. *The Journal of Consumer Affairs, 46,* 381–410.

Larkin, C., Lucey, B., & Mulholland, M. (2013). Risk tolerance and demographic characteristics: Preliminary Irish evidence. *Financial Services Review, 22,* 77.

Lee, J., & Kwon, K.-N. (2002). Consumers' use of credit cards: Store credit card usage as an alternative payment and financing medium. *The Journal of Consumer Affairs, 36,* 239–262.

Licata, J. W., Mowen, J. C., Harris, E. G., & Brown, T. (2003). On the trait antecedents and outcomes of service worker job resourcefulness: A hierarchical model approach. *Journal of the Academy of Marketing Science, 31,* 256–271.

Lin, L. (2010). The relationship of the consumer personality trait, brand personality and brand loyalty: An empirical study of toys and video games buyers. *Journal of Product & Brand Management, 19,* 4–17.

Lusardi, A., & Mitchell, O. S. (2008). Planning and financial literacy: How do women fare? *American Economic Review, 98,* 413–417.

Lynch J. R. (2011). Introduction to the journal of marketing research special interdisciplinary issue on consumer financial decision making. *Journal of Marketing Research,48,* SIV–SVIII.

Mansfield, P. M., Pinto, M. B., & Parente, D. H. (2003). Self-control and credit-card use among college students. *Psychological Reports, 92,* 1067–1078.

Mason, W., & Suri. S. (2012). Conducting behavioral research on Amazon's Mechanical Turk. *Behavior Research Methods, 44,* 1–23.

McCrae, R. R., & Cost, P. T. Jr. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology, 52,* 81–90.

Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. Cambridge, MA.

Mowen, J. C., & Carlson, B. (2003). Exploring the antecedents and consumer behavior consequences of the trait of superstition. *Psychology & Marketing, 20,* 1045–1065.

Mowen, J. C., & Spears, N. (1999). A hierarchical model approach to understanding compulsive buying among college students. *Journal of Consumer Psychology, 8,* 407–430.

Mowen, J. C. (2000). *The 3-M Model of Motivation and Personality: Theory and Empirical Applications to Consumer Behavior*. Boston, MA: Kluwer Academic Press.

Mowen, J. C., Park, S., & Zablah, A. (2007). Toward a theory of motivation and personality with application to word-of-mouth communications. *Journal of Business Research, 60,* 590–596.

Norvilitis, J. M., Merwin, M. M., Osberg, T. M., Roehling, P. V., Young, P., & Kamas, M. (2006). Personality factors, money attitudes, financial knowledge, and credit card debt in college students. *Journal of Applied Social Psychology, 36,* 1395–1413.

Nyhus, E. K., & Webley, P. (2001). The role of personality in household savings and borrowing behavior. *European Journal of Personality, 15* (special issue: personality and economic behavior), 85–103.

Pinto, M. B., Parente, D. H., & Palmer, T. S. (2000). Materialism and credit card use by college students. *Psychological Reports, 86,* 643–652.

Pirog, S. F. III, & Roberts, J. A. (2007). Personality and credit card misuse among college students: The mediating role of impulsiveness. *Journal of Marketing Theory and Practice, 15,* 65–77.

Ponchio, M. C., & Aranha, F. (2008). Materialism as a predictor variable of low income consumer behavior when entering into installment plan agreements. *Journal of Consumer Behaviour, 7,* 21–34.

Rand, D. G. (2012). The promise of Mechanical Turk: How online labor markets can help theorists run behavioral experiments. *Journal of Theoretical Biology*, *299,* 172–179.

Richins, M. L., & Dawson, S. (1992). A consumer values orientation for materialism and its measurement: Scale development and validation. *Journal of Consumer Research, 19,* 303–316.

Rook, D. W. (1987). The buying impulse. *Journal of Consumer Research, 14,* 189–199.

Ryack, K. N., & Sheikh, A. (2016). The relationship between time perspective and financial risk tolerance in young adults. *Financial Services Review, 25,* 157–180.

Ryack, K. (2011). The impact of family relationships and financial education on financial risk tolerance. *Financial Services Review, 20,* 181–193.

Sadi, R., Ghalibaf A., H., Rostami, M. R., Gholipour A., & Gholipour, F. (2011). Behavioral Finance: The explanation of investors' personality and perceptual biases effects on financial decisions. *International Journal of Economics and Finance, 3,* 234–241.

Shefrin, H., & Nicols, C. M. (2014). Credit card behavior, financial styles, and heuristics. *Journal of Business Research, 67,* 1679–1687.

Sheppard, B. H., Hartwick, J., & Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research, 15,* 325–343.

Stango, V., & Zinman, J. (2009). Exponential growth bias and household finance. *Journal of Finance, 64,* 2807–2849.

Stevens, J. P. (1992). *Applied Multivariate Statistics for the Social Sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Strayhorn, J. M. (2002). Self-control: Theory and research. *Journal of the American Academy of Child and Adolescent Psychiatry, 41,* 7–16.

Witte, K., & Morrison, K. (2000). Examining the influence of trait anxiety/repression-sensitization on individuals' reactions to fear appeals. *Western Journal of Communication, 64,* 1–27.

Wooldridge, J. M. (2006). *Introductory Econometrics: A Modern Approach* (3ed Edition). Thomson Learning, CT: Stamford.

Yamauchi, K., & Templer, D. (1982). The development of a money attitude scale. *Journal of Personality Assessment, 46,* 522–528.

Youn, S., & Faber, R. J. (2000). Impulse buying: Its relation to personality traits and cues. *Advances in Consumer Research, 27,* 179–185.