Original Article

Sequential loss of self-control: Exploring the antecedents and consequences of student credit card debt

Received (in revised form): 19 February 2016

James W. Peltier

is the Arno Kleimhagen Professor of Sales and Marketing at the University of Wisconsin-Whitewater Institute of Sales Excellence. He has over 100 refereed journal publications. He is also President and Partner of Applied Ph.D. Research and Marketing.

Andrew J. Dahl

is an Adjunct Professor of Marketing and doctoral student at the University of Wisconsin-Whitewater Institute of Sales Excellence. He is also Director of Research and Partner of Applied Ph.D. Research and Marketing.

John E. Schibrowsky

is a Professor of Marketing at the University of Nevada-Las Vegas. He has published extensively in the area of consumer decision making and has more than 60 refereed journal publications.

ABSTRACT Self-control lapses not only impact credit card debt, but combined with this debt lead to further self-control lapses and life stressors for consumers. A causal model is developed and tested exploring college students' pre-/post-debt decisions as a series of sequential losses in self-control, and how initial and post-failure decisions impact financial anxiety. Pre-debt loss of control takes on two forms: materialism and impulsivity. Locus of control theory is used to test how post-failure self-control lapses negatively impact the psychological well-being of consumers. A better understanding of these time-ordered self-control mechanisms offers insights for developing educational and policy interventions useful for staving off self-control lapses early in the decision-making process.
Journal of Financial Services Marketing (2016) **21,** 167–181. doi:10.1057/s41264-016-0002-5; published online 27 July 2016

Keywords: credit card debt; self-control; materialism; impulsivity; anxiety; locus of control; financial services

INTRODUCTION

Managing self-control has important ramifications for societal welfare and represents one of the most important decision domains in consumer behavior (Gal and Liu, 2011). Broadly, self-control is a stable personality trait associated with the capacity to resist temptation, maintain self-discipline, and break harmful habits (Baumeister, 2002; Tangney *et al*, 2004). Research shows that consumers exhibiting higher levels of self-control are better able to manage their judgments, regulate

Correspondence: James W. Peltier, University of Wisconsin-Whitewater, 800 W Main Street, Whitewater, WI 53190, USA
E-mail: Peltierj@uww.edu

their emotions, and resist buying and consumption impulses (Baumeister *et al*, 1998; de Ridder *et al*, 2012).

Two discipline-eroding self-control constructs with harmful economic and psychological consequences are materialism and impulsive buying behavior. Although both represent an inability to control purchase desires (Chudry *et al*, 2011; Sotiropoulos and D'Astous, 2012; Wang *et al*, 2011), materialism is a consumer trait related to acquiring goods to evaluate one's social standing among peers (Limbu *et al*, 2012), while impulsivity is more situation specific (Baumeister, 2002; Wang and Xiao, 2009). Materialistic and impulsive consumption have strong consumer welfare implications when self-control lapses are the result of irrational decision-making stemming from a buy now, pay later mentality associated with credit card purchases (Amar *et al*, 2011; Bearden and Haws, 2012). Such failures impact both the actual outcomes these impulses may produce and the emotional state wrought by these decisions (Gal and Liu, 2011). High credit card debt has been associated with a multitude of negative psychosocial consequences including low self-esteem, high anxiety, and poor mental health (Berg *et al*, 2010; Gathergood, 2012; Robb and Pinto, 2010). Self-control theory is thus important for explaining why consumers resist or succumb to credit-based buying urges (Wilcox *et al*, 2011).

Irresponsible credit card use stemming from pre- and post-failure decisions is especially problematic for college students (Hawkins, 2012; Khare, 2013). Equally troublesome, many college students have only a rudimentary understanding of how to make informed choices, leading to debt exceeding their capacity to pay (Braunsberger *et al*, 2004; Pinto and Mansfield, 2006). High credit card debt has serious and often traumatic consequences for college-aged students (Dwyer *et al*, 2011), including low self-esteem, anxiety, (Norvilitis *et al*, 2003), increased college dropout rate, and poor mental health (Berg *et al*, 2010; Robb and Pinto, 2010). Although these psychosocial effects vary among college-aged students, the impact of overwhelming debt accrual is significant and warrants attention (Harrison, 2012).

Although self-control is typically studied in terms of specific positive or negative outcomes, scholars and policymakers are increasingly interested in "post-failure loss of control decisions" as a result of initial self-control breeches (Zemack-Rugar *et al*, 2012). Investigating post-failure, self-control behavior is relevant for a number of reasons. First, a single self-control lapse represents only one in a series of potential decision failures (Dholakia *et al*, 2005). For example, chronically high credit card debt is more commonly the result of multiple buying opportunities than a single purchase. Second, how consumers recover (or fail to recover) from initial self-control lapses have important psychological consequences (Mewse *et al*, 2010). Lastly, initial and post-failure behaviors related to consumer debt have potentially severe economic costs at both the individual and societal level.

While there is a growing stream of research exploring the antecedents of credit card debt, relatively little is understood of psychosocial and behavioral antecedents of sequential losses in self-control (Limerick and Peltier, 2014; Wilcox *et al*, 2011). With this in mind, we develop and test a causal model exploring pre-/post-debt decisions as a series of sequential losses in self-control, and how initial and post-failure decisions impact financial anxiety. We investigate sequential decision making in the form of two prebehavior self-control constructs, materialism and impulsivity. We utilize locus of control theory to better understand post-failure self-control lapses and how this loss of control negatively impacts the psychological well-being of consumers.

Given the high interest rates associated with credit card debt, self-control lapses are a critical issue for consumers faced with economic and psychosocial stressors to their well-being and for policymakers seeking to protect consumer welfare (Slowik, 2012). We contribute to the literature by answering the call for more comprehensive research investigating the

antecedents and consequences of self-control failures (Chan *et al*, 2012; Limbu *et al*, 2012; Peltier *et al*, 2013; Wilcox *et al*, 2011; Xiao *et al*, 2011; Harrison, 2012). We extend the literature by showing self-control lapses not only impact credit card debt, but combined with this debt lead to further self-control lapses and life stressors. A better understanding of these time-ordered self-control mechanisms offers insights for developing educational and policy interventions useful for staving off self-control lapses early in the decision-making process. Finally, implications for policymakers, financial/debt counselors, and marketers provide suggestions for improving consumer education on credit card use and management that may lead to lower credit misuse among college students and other vulnerable consumers and in turn help them better manage financial anxiety.

LITERATURE REVIEW

Financial self-control is an important aspect of buyer behavior that has far-reaching implications at both the individual and societal level (Bearden and Haws, 2012; Haws *et al*, 2012). Consumer self-control is often difficult to practice, placing psychological and social pressure on the decision-making process (Dir *et al*, 2013; Mukhopadhyay and Yeung, 2010). Reasons include lack of financial knowledge and debt consequences, information overload, the suggestive power of advertising, social influence, and processes such as shopping resulting in decreased control (Vohs *et al*, 2008). Rook (1987) frames this as the personal classic battle between self-control and indulgence. More recently, researchers have come to view compulsivity and impulsivity as psychological traits that reside in all of us and the issue is the level of self-regulation that the individual has to control those tendencies (Verplanken and Sato, 2011).

As Figure 1 shows, we develop a three part sequential decision model investigating the impact of initial lapses in self-control mechanisms on credit card balances along with their impact on post-failure self-control and financial anxiety. In this section, we present a review of the literature and offer hypotheses related to five constructs: Materialism, Impulsivity, Credit Card Balances, Negative Post-Failure (Locus of Control), and Financial Anxiety. Framed as a sequential processing model, these variables are viewed as both

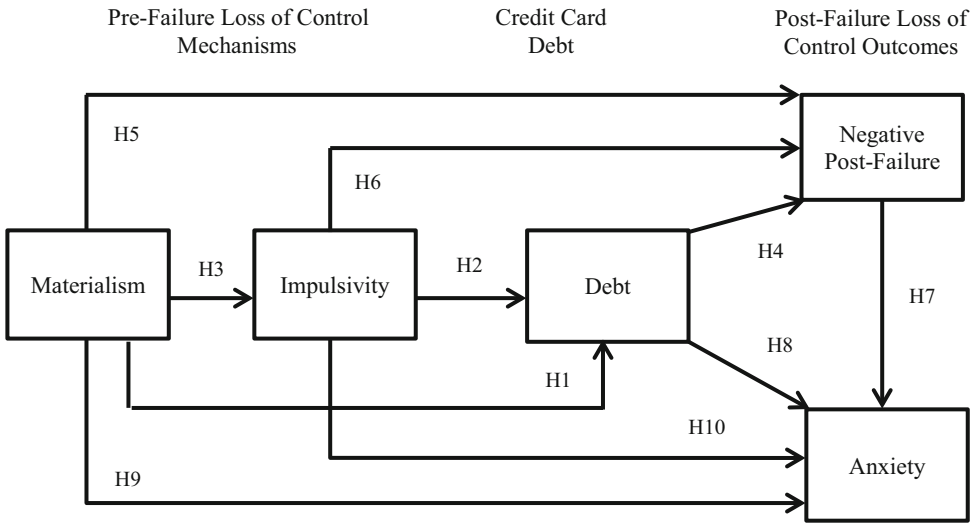

Figure 1: Proposed materialism–impulsivity sequential model.

antecedents (initial losses of control) and consequences of credit card debt (negative post-control failures). We first review the literature and make hypotheses related to initial losses of control and credit card debt, followed by the relationships between post-failure losses of control and their sequential consequences on financial anxiety.

Credit card debt

The Federal Reserve Consumer Credit Report indicates U.S. consumers' debt now totals $3526 billion with revolving credit accounting for nearly 27 % of total debt (Federal Reserve System, 2016). Among other purposes, the CARD Act of 2009 sought to reduce college students' access to credit cards and credit limits beyond their ability to pay off monthly balances (Berrocal *et al*, 2012; Hawkins, 2012). In addition to reducing aggressive marketing practices targeting college students, the CARD Act requires consumers under 21 years old without substantial income to obtain a cosignor in order to gain access to a credit card (Berrocal *et al*, 2012; Nelson, 2011). However, recent studies question the legislation's impact and suggest students' access to credit cards and potential for spending beyond their ability to pay remains a relevant issue (Hawkins, 2012; Xiao *et al*, 2011). A common measurement of credit card debt is the outstanding balance an individual carries on their credit card(s) each month (Peltier *et al*, 2013; Xiao *et al*, 2011). Our study uses self-reported outstanding balance when measuring credit card debt.

Materialism

Materialism represents an individual's "set of centrally held beliefs about the importance of possessions in one's life" (Richins and Dawson, 1992, p. 308). Materialism thus signifies the value he/she places on acquiring material goods and other objects and is commonly used by consumers to evaluate one's social standing among peers (Limbu *et al*, 2012). Consumers exhibiting high materialism tend to be more likely to measure their success and social status relative to others based on accumulation of material possessions (Bernthal *et al*, 2005; Goldsmith and Clark, 2012; Eastman *et al*, 2013).

The concept of materialism is of great interest to the field of consumer behavior due to its propensity to increase consumption (Rindfleisch *et al*, 2009). Additionally, the fields of psychology and sociology examine materialism's negative impact on psychological health and well-being (Dittmar *et al*, 2014; Goldsmith and Clark, 2012). Research suggests materialism represents an undesirable aspect of consumer culture driven in part by marketing efforts promoting consumer feelings of greed, envy, and dissatisfaction (Belk, 1985; Burroughs and Rindfleisch, 2002; Richins and Dawson, 1992; Watson, 2003). More recent research shows high materialism consumers tend to believe their life, and satisfaction with it, can be positively enhanced through acquisition of additional material objects (Richins, 2011). However, purchasing typically offers only a short-term effect on the emotional state of materialistic-oriented consumers (Richins, 2013).

Materialism as an antecedent of credit card debt

Research suggests consumers with high materialism scores tend to have expectations their life will positively change upon acquiring material goods (Limbu *et al*, 2012; Richins, 2011, 2013). Credit cards are thus seen as a mechanism through which students may enhance their social status (Roberts, 1998; Wang and Xiao, 2009; Nga *et al*, 2011), leading to more favorable attitudes toward credit card use (Palmer *et al*, 2001; Pinto *et al*, 2000) and greater misuse of credit cards (Pirog Iii and Roberts, 2007; Limerick and Peltier, 2014). Roberts and Jones (2001) showed the existence of a positive relationship between power and prestige and excessive buying by college students, a finding supported by Peltier *et al* (2013).

H1 Materialism is positively related to credit card debt.

  1363-0539 **Journal of Financial Services Marketing** Vol. 21, 3, 167–181

Impulsivity

Impulsivity refers to a consumers' engagement in impulsive or spontaneous purchases driven by a strong need for instant gratification without much contemplation of long-term implications (Nga *et al*, 2011; Sengupta and Zhou, 2007; Thomas *et al*, 2011). Researchers view impulsivity as an internal consumer trait that varies based on an individual's ability to control impulsive tendencies when presented with external triggers, including marketing activities (DeSarbo and Edwards, 1996; Verplanken and Herabadi, 2001; Verplanken and Sato, 2011). The ability to resist buying urges is thus a battle of two competing self-control orientations - immediacy vs. long-term (Zhang and Shrum, 2009).

The self-control literature suggests actions taken to remove one's self from the marketing and buying context may help reduce a consumer's impulsive urge to purchase by encouraging the consumer to judiciously evaluate the purchase and its consequences (Verplanken and Sato, 2011). Impulsive buying behavior is often a result of spontaneous decisions originating from an enhanced emotional state associated with the excitement of owning the product (Zhang and Shrum, 2009). Impulsivity has also been strongly correlated with compulsive buying behavior (DeSarbo and Edwards, 1996), which represents uncontrollable and irrational purchase decisions mimicking other addictive behavior patterns (Lo and Harvey, 2011; Mukhopadhyay *et al*, 2008; O'Guinn and Faber, 1989).

Impulsivity as an antecedent of credit card debt

Although a wide range of consumer behaviors may be impulsive in nature (Sharma *et al*, 2014), the current study focuses on the impulsive buying context via total credit debt. The extant literature shows that college age consumers exhibit stronger impulsivity tendencies (Khare, 2013). This segment often finds it more difficult to exert situation-specific self-control (Baumeister, 2002; Wang and Xiao, 2009). A lessened ability to control spontaneous urges has been found to lead to increased spending, credit card usage, and student debt (Limerick and Peltier, 2014; Peltier *et al*, 2013; Verplanken and Sato, 2011).

H2 Impulsivity is positively related to credit card debt.

Materialism as an antecedent of impulsivity

As a social construct, a consumer's materialistic values are likely to impact financial anxiety both directly as well as indirectly through impulsivity, credit card debt, and negative post-failure credit behaviors. Marketing efforts influence the underlying consumer culture encouraging consumers to compare their social status to others via materialistic possessions (Bernthal *et al*, 2005; Eastman *et al*, 2013; Sidoti and Devasagayam, 2010). Of concern is the ease with which credit cards enable consumers to purchase materialistic items in an attempt to keep their lifestyle on par with other consumers around them (i.e., "keeping up with the Jones"), often without considering the long-term financial consequences of credit card debt, financial anxiety, and other negative outcomes (Bernthal *et al*, 2005; Sotiropoulos and D'Astous, 2012). Importantly, an individual's inability to control their impulsive purchasing behavior is in part driven by the desire to gain social acceptance with peers (Peltier *et al*, 2013) which indicates materialism will lead to greater impulsive buying.

H3 Materialism is positively related to impulsivity.

Locus of control, debt, and negative post-debt self-control failures

Locus of Control (LOC) has been defined in terms of viewing the world and the underlying cause of outcomes in terms of rewards and punishments (Rotter, 1966). Consumers aligning with an internal LOC feel more in control of their environment, including how

they handle their individual behaviors and the rewards and/or losses that occur (Pinto *et al*, 2004). High internal LOC individuals accept personal responsibility for their behaviors, are more risk adverse, and follow more logical decision processes that tend to result in more positive behavioral outcomes. People scoring high on external LOC traits feel their behaviors and resulting outcomes are due to environmental considerations beyond their control. In response, they seek to alter life's fate through actions designed to take back control, often through greater risk mechanisms (DeSarbo and Edwards, 1996). Research also suggests that this internal versus external orientation leads to different perceptions of credit-based purchase decisions (Caputo, 2012; Xiao *et al*, 2011). In the context of credit card usage by college students, those with an internal LOC have been found to better moderate their debt purchases through a better understanding of proper and improper credit behaviors (Plunkett and Buehner, 2007; Warwick and Mansfield, 2000). In contrast, high external LOC students have more positive attitude toward having debt balances (Peltier *et al*, 2013).

Although research evidence exists showing that external LOC students carry higher credit card balances than internals (Joo *et al*, 2003; Plunkett and Buehner, 2007), much less is understood about "post-failure" decisions are impacted by self-control mechanisms (Zemack-Rugar *et al*, 2012) and particularly with regard to how students behave once debt has accrued (Limerick and Peltier, 2014). In response, an emerging stream of research examines how consumers paying off balances with other credit cards or loans, hide debt from others, make only minimum monthly payments, and other financial behaviors that reduce their ability to pay off their debt (Joo *et al*, 2003; Watson, 2009; Xiao *et al*, 2011). Such consumer behaviors reflect negative reactions to an initial credit misuse such as materialism, impulsivity, or credit card debt and are referred to in this study as "negative post-failure behaviors." Although research on the concept of risky credit behaviors is growing, there is a lack of research examining the relationships with the other constructs proposed in this study (Xiao *et al*, 2011). However, the literature on self-control failures and the negative disposition of risky credit behaviors suggest engaging in these behaviors may lead to a downward spiral of other credit misuse and negative outcomes.

H4 Credit card debt is positively related to negative post-debt self-control failures.

Materialism and impulsivity as antecedents of negative post-debt self-control failures

As proposed earlier, we anticipate materialism and impulsivity will lead to self-control lapses in the form of increased credit card debt. Consumers exhibiting materialistic and impulsive consumption behaviors are also likely to experience secondary self-control lapses in the form of negative post-failure credit behaviors which compound their debt. Both materialism and impulsivity are enduring self-control consumer traits (Baumeister, 2002; Tangney *et al*, 2004). Research suggests materialistic consumers may overlook the long-term financial costs of credit card purchases because they are more focused on enhancing their social standing among peers (Sidoti and Devasagayam, 2010). In response, individuals may conceal their increasing debt from family and peers while continuing to make purchases to maintain their social status. Unfortunately, this materialistic-driven pattern is likely to lead to further self-control problems and financial risks such as high-cost credit terms and new credit accounts (Gathergood, 2012), difficulty maintaining their average monthly outstanding balance (Limbu *et al*, 2012), and other risky credit behaviors which hinder their ability to pay off their debt. Similarly, the self-control literature suggests consumers with impulsive tendencies are more likely to accumulate debt because of self-control failures and subsequently are more likely to adopt risky post-failure credit behaviors (Watson, 2009; Joo *et al*, 2003; Xiao *et al*, 2011; Plunkett and

  1363-0539 **Journal of Financial Services Marketing** Vol. 21, 3, 167–181

Buehner, 2007). In particular, consumers yearning to complete additional impulse-driven purchases may utilize quick-access credit products such as high interest store credit terms, cash advances, or payday loans which increases their risk exposure and exacerbates their debt management issues (Gathergood, 2012). Consequently, consumers with self-control lapses are more likely to engage in suboptimal decision making and irrational credit repayment behavior when faced with mounting credit card debt (Amar *et al*, 2011; Besharat *et al*, 2014). Therefore, highly materialistic and impulsive consumers are likely to continue to make credit card purchases even after accumulating debt, thus requiring them to move around debt and engage in other risky post-failure credit behaviors. In particular, consumers experiencing these secondary self-control lapses may engage in risky borrowing behaviors (i.e., cash advances, opening new credit accounts, payday loans), make minimum repayments, choose not to pay off higher interest balances first, and other behaviors which can lead them to default (Xiao *et al*, 2011, 2014; Amar *et al*, 2011; Besharat *et al*, 2014). Therefore,

H5 Materialism is positively related to negative post-debt self-control failures.

H6 Impulsivity is positively related to negative post-debt self-control failures.

Financial anxiety

Financial anxiety/stress characterizes an individual's "conscious and intuitive emotional anxiety toward one's personal finances" (Shapiro and Burchell, 2012, p. 92). Shapiro and Burchell (2012) imply financial anxiety/stress is distinct from an individual's feelings of general anxiety or depression and is motivated by an individual's money-related attitudes, beliefs, and behaviors often resulting from prior negative experiences with personal finances. Recent research suggests consumers with financial anxiety have stronger feelings of financial helplessness, struggle with financial decisions, and are less likely to seek appropriate decision-making assistance which can lead to more long-term financial struggles (Grable *et al*, 2015). Financial anxiety/stress may have severe negative consequences for a student's health, educational outcomes, along with long-term financial implications (Heckman *et al*, 2014; Joo *et al*, 2008; Hogan *et al*, 2013). Although there is an emerging stream of research considering the financial anxiety construct (Archuleta *et al*, 2013), less clear is how the psychosocial constructs of materialism and impulsivity effect financial anxiety/stress in combination with debt and negative post-failure credit behaviors.

Self-control failures as antecedents of financial anxiety

Based on prior literature, we expect pre- and post-control failures to heighten students' financial anxiety. First, research suggests financial delinquency, a form of post-failure behavior, leads to higher financial anxiety (Hogan *et al*, 2013). Specifically, consumers' post-control failures to restrain from additional credit card use and risky credit behaviors is likely to negatively impact their emotional and mental state by amplifying feelings of guilt, regret, and financial anxiety/stress (DeSarbo and Edwards, 1996; Bearden and Haws, 2012; Gal and Liu, 2011). Second, research suggests higher credit card debt leads to lower self-esteem and higher financial anxiety/stress (Hayhoe *et al*, 2000; Pinto *et al*, 2004; Roberts and Jones, 2001). In particular, high levels of credit card debt are associated with high levels of stress among college students (Norvilitis *et al*, 2006) and may negatively impact other aspects of their life including mental and physical health and academic performance (Hogan *et al*, 2013; Nelson *et al*, 2008).

Third, students with high materialism tend to exhibit stronger emotional attachment to credit cards thus amplifying the psychosocial effects of credit card usage (Limbu *et al*, 2012). Specifically, materialistic consumers are more likely to experience guilt and worries stemming

from overspending, dissatisfaction with the purchases not transforming their life as expected, or other feelings of financial anxiety/stress that may negatively impact their psychological well-being and lead to more spending (Dittmar *et al*, 2014; Gardarsdottir and Dittmar, 2012; Richins, 2013). Finally, research indicates consumers who frequently are unable to control their impulsive buying behaviors are more likely to experience higher levels of financial anxiety/stress as post-consumption feelings of guilt and regret surface (O'Guinn and Faber, 1989; Pinto *et al*, 2004; Joireman *et al*, 2010). Therefore, the study posits materialism, impulsivity, debt, and negative post-failure credit behaviors will all directly increase the amount of financial anxiety/stress an individual feels.

H7 Negative post-debt self-control failure is positively related to financial anxiety.

H8 Credit card debt is positively related to financial anxiety.

H9 Materialism is positively related to financial anxiety.

H10 Impulsivity is positively related to financial anxiety.

METHODS

Sample

Students enrolled in beginning marketing courses and freshman introduction to psychology courses at a Midwestern university completed the survey for extra credit. Table 1 provides a profile of the 198 student respondents and represents a 77 % response rate. The profile of students is similar to the overall university enrollment. Consistent with other recent studies of college students' credit usage, nearly half (46.0 %) pay their balance each month. However, 23.3 % exhibit risky credit behavior by carrying credit card balances over $500, a strong indicator of risky credit behavior (Xiao *et al*, 2011).

Table 1: Respondent profile

Gender	
Male	50.5 %
Female	49.5 %
Age	
18	15.2 %
19	56.1 %
20	25.8 %
21	2.0 %
22+	1.0 %
Number of credit cards	
One	17.2 %
Two	39.4 %
Three	19.7 %
Four+	23.8 %
Total credit card balance	
Pay balance each month	46.0 %
$1–249	23.7 %
$250–499	7.1 %
$500–1000	7.6 %
>$1000	15.7 %

Measures

Although the questionnaire itself is original, a literature review identified the behavioral, psychological, and sociological dimensions to include. In addition, 40 interviews with students and three focus groups provided qualitative discussion of student credit card behaviors. Findings from the qualitative aspects and literature review were used to develop the final questionnaire. Scale items were adopted from the literature and used a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Table 2 provides the individual items and reliability coefficients.

- *Materialism* Four-item measure adapted from Nga *et al* (2011), and Peltier *et al* (2013).
- *Impulsivity* Six-item measure adapted from Rook and Fisher (1995), Pirog and Roberts (2007), Nga *et al* (2011), Wang and Xiao (2009), and Peltier *et al* (2013).
- *Negative Post-Failure Credit Behaviors* Four-item measure adapted from Pirog and Roberts (2007), Nga *et al* (2011), and Peltier *et al* (2013).
- *Financial Anxiety* Seven-item measure adapted from Pinto *et al* (2004), Nga *et al* (2011), and Peltier *et al* (2013).
- *Credit Card Debt* One-item measure of the individual's outstanding credit card balance.

  1363-0539 **Journal of Financial Services Marketing** Vol. 21, 3, 167–181

Table 2: Psychosocial variables used in the analysis

Construct	*Measurement and questions*	*Scale*
Materialism	I buy items with my credit card to impress people	$\alpha = .80$
	Credit cards allow me to express myself to others	
	Credit cards are symbols of wealth and prosperity	
	What I see on television influences my credit card use.	
Impulsivity	With my credit card I buy what I want when I want it	$\alpha = .80$
	When using my credit card I buy more than one item	
	I am more likely to buy something if I can pay for it with a credit card	
	Having a credit card makes me feel like I have "extra" money	
	I am more impulsive when I shop with credit cards	
	I spend more money with credit cards than without them	
Negative post-failure (locus of control)	I pay credit card balance(s) off with another credit card(s)	$\alpha = .70$
	I have had to ask my family for money to pay my credit card debt	
	I have had to use a payday loan to pay my credit card debt	
	I have had to use a bank loan to pay of my credit card debt	
Financial anxiety	Having a credit card makes me feel anxious	$\alpha = .80$
	I look back and regret making credit card purchases	
	I am worried about my credit card spending	
	Having a credit card makes me feel stressed	
	I look back and regret making credit card purchases	
	I envy those who have no credit card debt	
	I use my credit card knowing I don't have the money	
Credit card de*bt*	What is your average monthly credit card debt (see Table 1)	

Data analysis procedures

First, we subjected the 23 items to a confirmatory factor analysis using AMOS 21 to corroborate the unidimensionality of the measures (Churchill Jr, 1979). Credit card balance was excluded from the confirmatory factor analysis since it is a one-item measure and the remaining 22 items were included in a four-factor measurement model. Replicating the process of Anderson and Gerbing (1988), we estimated the model by requiring each of the items to load on their a priori specified factors with each factor allowed to correlate with the other factors. The overall Chi-square statistic for the model was significant ($\chi^2 = 169.432$, 141 df, $p < .001$). Additionally, the goodness of fit index (GFI = .925), adjusted goodness of fit index (AGFI = .89), comparative fit index (CFI = 1.000), normed fit index (NFI = .989), root mean residual (RMR = .015), and root mean square error of approximation (RMSEA = .000) all suggested a satisfactory model fit allowing a valid test of the model. Following Mathwick and Rigdon (2004), all of the individual item loadings were significant at $p < .001$, and the completely standardized solution for all items ranged from .462 to .742. The average variance extracted value was .51, meeting Fornell and Larcker's (1981) convergent validity criterion of .5. The coefficient alpha scores for materialism ($\alpha = .80$), impulsivity ($\alpha = .80$), negative post-failure credit behaviors ($\alpha = .70$), and financial anxiety ($\alpha = .80$) all show adequate levels of internal reliability (Nunnally, 1978). Lastly, Table 3 presents the correlation between the variables in our model, with most ranging from .149 to .465. This makes them suitable for inclusion in a structural equations model, correlated enough to demonstrate relationships between variables but not so highly correlated as to make the analysis problematic.

Model testing and results

Structural equation modeling was used to assess the direct and indirect hypotheses. Structural equation modeling allows simultaneous evaluation of all proposed direct and indirect relationships in the model and therefore provides a framework for investigating sequential, higher-order psychosocial processes. After completing the confirmatory factor analysis, a full structural model based on the hypotheses presented

Table 3: Correlation table

	Materialism	*Impulsivity*	*Debt*	*Neg. behavioral*	*Anxiety*
Materialism	1				
Impulsivity	.465**	1			
Debt	.013	.169*	1		
Neg. post-failure	.431**	.223**	.149*	1	
Anxiety	.423**	.456**	.427**	.398**	1

** Sig. at $p < .01$.

* Sig. at $p < .05$.

Table 4: Tests of the hypotheses

Hypotheses and paths[a]				*Std. coefficient*	*t-value*	*p value*
H1	Materialism	→	Credit card debt	−.084	−1.058	n.s.
H2	Impulsivity	→	Credit card debt	.170	2.40	.016
H3	Materialism	→	Impulsivity	.467	7.38	.001
H4	Credit card debt	→	Neg. post-failure	.142	2.21	.027
H5	Materialism	→	Neg. post-failure	.426	6.65	.001
H6	Impulsivity	→	Neg. post-failure	−.001	−.019	n.s.
H7	Neg. post-failure	→	Anxiety	.194	3.25	.001
H8	Credit card debt	→	Anxiety	.349	6.35	.001
H9	Materialism	→	Anxiety	.216	3.29	.001
H10	Impulsivity	→	Anxiety	.250	4.12	.001

Note: $\chi^2 = 1.1$; df = 2; GFI = .99; AGFI = .98; NFI = .99, RMR = .01, RMSEA = .001.

earlier was developed and estimated using AMOS 19. In addition, testing of alternative models which varied the ordering of variables, reversed directional paths, and added/eliminated paths indicated that none better matched theory or provided superior fit statistics. Absolute, incremental, and residual fit measures were used to evaluate the overall fit of the data to the model. The overall Chi-square value for the structural model was significant ($\chi^2 = 1.1$, 2 df, $p < .001$). Both the Goodness of Fit Index (GFI) and Adjusted Goodness of Fit Index (AGFI), which measure the fit of the combined measurement and structural model to data (unadjusted and adjusted for degrees of freedom), were greater than .90, respectively (GFI = .99 and AGFI = .98), meeting the requirements set by Baumgartner and Homburg (1996). In combination with other fit indices such as the comparative fit index (CFI = 1.000), normed fit index (NFI = .99), root mean residual (RMR = .01), and root mean square error of approximation (RMSEA = .001), the results provide strong evidence the model is an excellent fit of the data and presents a logical basis to test the outlined hypotheses.

Table 4 and Figure 2 display results of individual hypotheses tests. Structural model parameter estimates and corresponding t-values are also included in Table 4. Overall, eight of the ten hypothesized paths were significant, including all four proposed direct relationships between the antecedent variables and financial anxiety, and four of the six proposed interrelationships.

DISCUSSION AND IMPLICATIONS

This study examined how self-control lapses pre- and post-credit card debt accumulation by college student impacts financial anxiety. We extend the self-control and credit card literature by developing and testing a comprehensive framework of key social-psychosocial constructs pertinent to how sequential lapses in judgment negatively impact students' use of credit cards, how they respond once they accumulate debt (locus of control),

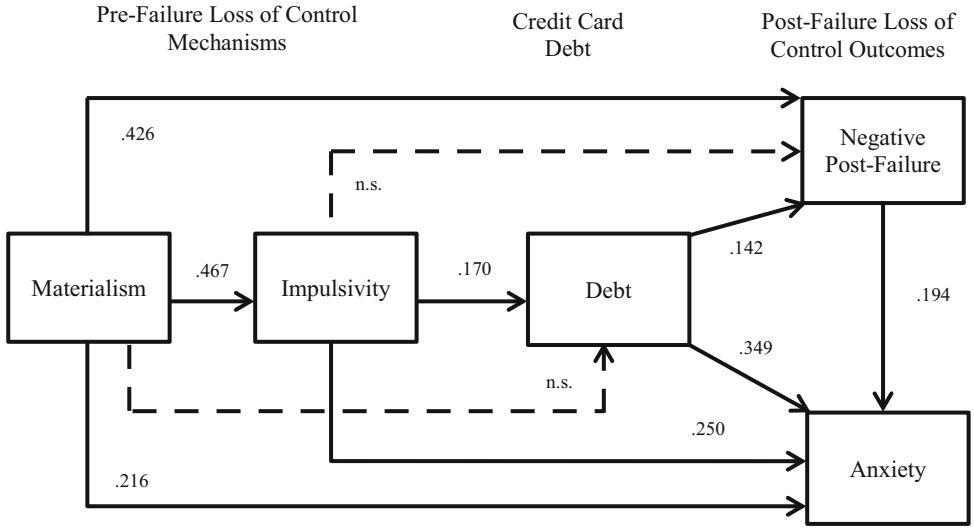

Figure 2: Significant paths and standardized coefficients of the materialism–impulsivity model.

and the negative psychological consequences that ensue (financial anxiety). We thus extend recent research by Peltier *et al* (2013) and Limerick and Peltier (2014) through a better understanding of how these self-control lapses effect and are affected by credit card debt.

A number of key findings emerge. While materialism did not have a direct relationship with credit card debt, the two largest standardized coefficients in our model were for its impact on impulsivity and locus of control. With its strong association with impulsivity, students higher on the materialism scale find it difficult to control urges when confronted with purchase opportunities, leading to greater debt. This finding may in part help explain conflicting evidence on the relationship between materialism and credit card debt in the prior literature (Norvilitis *et al*, 2006). In this way, materialism may need a buying trigger in the form of impulsive decision making. When highly materialistic consumers cannot control their buying urges, the direct effect with higher levels of external locus of control means that many of these consumers continue to make poor decisions even after accumulating debt. Materialistic decision-making activities were also found to directly impact financial anxiety, adding another negative consequence for students/consumers. The findings support prior research suggesting materialism may lead consumers to falsely believe additional materialistic possessions and the related spending will improve their life (Richins, 2011). However, for many, these improvements are short-lived (Richins, 2013).

In line with prior research, impulsivity had a direct, positive effect on credit card debt. Students with impulsive tendencies are thus more likely to use their credit cards when triggered by purchase opportunities. Impulsivity also had a direct, positive relationship with financial anxiety, suggesting impulsive use of credit cards leaves students with higher post-purchase anxiety related to these impulsive tendencies. While not well documented in the literature, this finding extends previous work by Joireman *et al* (2010) and Peltier *et al* (2013). Although the self-control literature suggests consumer's impulsive tendencies may lead to future risky credit behaviors (Joo *et al*, 2003; Plunkett and Buehner, 2007; Watson, 2009; Xiao *et al*, 2011), the current study did not find a significant direct relationship from impulsivity to negative post-failure credit behaviors. It seems that self-control loss in the form of status seeking mechanisms plays a greater role in post-debt self-control losses than impulsivity. This might be due to the fact that materialism is a

more constant consumer trait than impulsivity, which is more situation specific (Baumeister, 2002; Limbu *et al*, 2012; Wang and Xiao, 2009).

Our study also found strong support that individuals with higher credit card balances are more susceptible to compounding negative credit behaviors, causing increased financial anxiety. These findings contribute to the literature by showing that post-failure loss of control are in part a function of previous self-control breeches, thus extending Zemack-Rugar *et al* (2012) and Dholakia *et al* (2005). Students who failed to recover from initial self-control lapses suffer the psychological consequences of these failures (Mewse *et al*, 2010). Combined, our study contributes to the credit card literature by showing that higher level of consumer debt is directly and indirectly affected by lapses in self-control associated with the need for status and the inability to resist buying temptations. These self-control lapses and resulting debt in turn increase further self-control lapses associated with avoiding payment of debt. Financial anxiety is thus impacted by self-control losses prior to and subsequent to debt accumulation.

Marketing and policy implications

In addition to theoretical contributions, the study provides important implications for marketers and policymakers related to consumer financial education efforts. Although the CARD Act of 2009 seeks to restrict marketing activities and make it more difficult for college students to obtain credit cards without cosignors (Berrocal *et al*, 2012; Hawkins 2012; Nelson 2011), the current study suggests this policy change may have only limited effects on student's (and others) negative credit outcomes and financial anxiety. Considering college students and other vulnerable consumers progressively accumulate higher levels of credit card debt (Federal Reserve System, 2016), the study highlights the significant need for consumer education efforts designed to help consumers manage and control their materialistic and impulsive consumption behaviors. Although marketers seek to take advantage of these underlying psychosocial issues to increase sales, questions remain about what if any policy changes surrounding the marketing of credit cards may enhance consumer protection by reducing the impact of consumer's own psychosocial issues. The results suggest policymakers need to determine how to incorporate educational messages in credit card offers, financial/debt counseling, or other consumer financial education efforts to help consumers recognize and regulate issues related to materialism and impulsivity. Especially important is the need to find ways to break the sequential nature of risky debt-related behaviors found in this study.

At a minimum, policymakers and marketers may want to evaluate the impact of incorporating messaging into financial and debt counseling programs designed to help consumers cope with materialism/impulsivity. In turn, improved consumer education programs and debt/financial counseling efforts targeting consumers' materialistic and impulsive beliefs/behaviors may lower credit misuse, reduce consumer's negative credit card outcomes (i.e., debt, paying off balances with other cards or loans, making minimum monthly payments), and in turn help better manage financial anxiety.

Limitations and directions for future research

Although the current study contributes to the literature by exploring the complex effects of materialism and impulsivity on negative credit card outcomes and financial anxiety, a few limitations exist. First, although college students represent an important credit card user audience exhibiting negative credit outcomes and financial anxiety, our results may not be generalizable to vulnerable, credit-risky consumers across other age groups. Future research should examine the model across multiple campuses and with other vulnerable consumer

groups. Second, the model uses self-reported measures for credit card balance and engagement in negative post-failure behaviors. However, consumers' actual balances and behaviors may differ from these self-report measures. Longitudinal studies examining consumers' actual credit card debt and negative post-failure behaviors may offer additional insights on how the impact of materialism and impulsivity evolves especially as consumers are exposed to additional marketing communications, changes in debt, among other influences. Finally, research evaluating policy changes, debt/financial counseling programs, marketing restrictions, or consumer education programs will help policymakers increase consumer protection and education on these issues and ultimately reduce consumer's negative credit outcomes and financial anxiety.

REFERENCES

Amar, M., Ariely, D., Ayal, S., Cryder, C. E. and Rick, S. I. (2011) Winning the battle but losing the war: The psychology of debt management. *Journal of Marketing Research* 48: S38–50.

Anderson, J. C. and Gerbing, D. W. (1988) Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin* 103(3): 411–423.

Archuleta, K. L., Dale, A. and Spann, S. M. (2013) College students and financial distress: Exploring debt, financial satisfaction, and financial anxiety. *Journal of Financial Counseling & Planning* 24(2): 50–62.

Baumeister, R. F. (2002) Yielding to temptation: Self-control failure, impulsive purchasing, and consumer behavior. *Journal of Consumer Research* 28(4): 670–676.

Baumeister, R. F., Bratslavsky, E., Muraven, M. and Tice, D. M. (1998) Ego depletion: is the active self a limited resource? *Journal of Personality and Social Psychology* 74(5): 1252–1265.

Baumgartner, H. and Homburg, C. (1996) Applications of structural equation modeling in marketing and consumer research: A review. *International Journal of Research in Marketing* 13(2): 139–161.

Bearden, W. O. and Haws, K. L. (2012) How low spending control harms consumers. *Journal of the Academy of Marketing Science* 40(1): 181–193.

Belk, R. W. (1985) Materialism: Trait aspects of living in the material world. *Journal of Consumer Research* 12(3): 265–280.

Berg, C. J., Sanem, J. R., Lust, K. A., Ahluwalia, J. S., Kirch, M. A. and An, L. C. (2010) Health-related characteristics and incurring credit card debt as problem behaviors among college students. *Internet Journal of Mental Health* 6(2): 1

Bernthal, M. J., Crockett, D. and Rose, R. L. (2005) Credit cards as lifestyle facilitators. *Journal of Consumer Research* 32(1): 130–145.

Berrocal, G., Spencer, M. K. And Chambers, V. (2012) Credit Card Accountability Responsibility and Disclosure Act of 2009: Helpful for 18- to 21-year-olds? *Journal of Economics and Economic Education Research* 13(1): 59–78.

Besharat, A., Carrillat, F. A. and 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(2): 143–158.

Braunsberger, K., Lucas, L. A. and Roach, D. (2004) The effectiveness of credit-card regulation for vulnerable consumers. *Journal of Services Marketing* 18(5): 358–370.

Burroughs, J. E. and Rindfleisch, A. (2002) Materialism and well-being: A conflicting values perspective. *Journal of Consumer Research* 29(3): 348–370.

Caputo, R. K. (2012) Patterns and predictors of debt: A panel study, 1985–2008. *Journal of Sociology & Social Welfare* 39(2): 7–29.

Chan, S. F., Chau, A. W.-L. and Chan, K. Y.-K. (2012) Financial knowledge and aptitudes: Impacts on college students' financial well-being. *College Student Journal* 46(1): 114–132.

Chudry, F., Foxall, G. and Pallister, J. (2011) Exploring attitudes and predicting intentions: Profiling student debtors using an extended theory of planned behavior. *Journal of Applied Social Psychology* 41(1): 119–149.

Churchill Jr, G. A. (1979) A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research* 16(1): 64–73.

De Ridder, D. T. D., Lensvelt-Mulders, G., Finkenauer, C., Stok, F. M. and Baumeister, R. F. (2012) Taking stock of self-control A meta-analysis of how trait self-control relates to a wide range of behaviors. *Personality and Social Psychology Review* 16(1): 76–99.

Desarbo, W. S. and Edwards, E. A. (1996) Typologies of compulsive buying behavior: A constrained clusterwise regression approach. *Journal of Consumer Psychology (Lawrence Erlbaum Associates)* 5(3): 230–262.

Dholakia, U. M., Gopinath, M. and Bagozzi, R. P. (2005) The role of desires in sequential impulsive choices. *Organizational Behavior and Human Decision Processes* 98(2): 179–194.

Dir, A. L., Karyadi, K. and Cyders, M. A. (2013) The uniqueness of negative urgency as a common risk factor for self-harm behaviors, alcohol consumption, and eating problems. *Addictive behaviors* 38(5): 2158–2162.

Dittmar, H., Bond, R., Hurst, M. and Kasser, T. (2014) The relationship between materialism and personal well-being: A meta-analysis. *Journal of Personality and Social Psychology* 107(5): 879–924.

Dwyer, R. E., Mccloud, L. and Hodson, R. (2011) Youth debt, mastery, and self-esteem: Class-stratified effects of indebtedness on self-concept. *Social Science Research* 40(3): 727–741.

Eastman, J., Iyer, R. and Thomas, S. (2013) The impact of status consumption on shopping styles: An exploratory look at the millennial generation. *Journal of Marketing Management* 23(1): 57–73.

Federal Reserve System. (2016) *Consumer Credit - G. 19* [Online]. Available: http://www.federalreserve.gov/releases/g19/current/default.htm#fn2a, accessed 13 January 2016.

Fornell, C. and Larcker, D. F. (1981) Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research* 18(1): 39–50.

Gal, D. and Liu, W. (2011) Grapes of wrath: The angry effects of self-control. *Journal of Consumer Research* 38(3): 445–458.

Gardarsdottir, R. B. and Dittmar, H. (2012) The relationship of materialism to debt and financial well-being: The case of Iceland's perceived prosperity. *Journal of Economic Psychology* 33(3): 471–481.

Gathergood, J. (2012) Self-control, financial literacy and consumer over-indebtedness. *Journal of Economic Psychology* 33(3): 590–602.

Goldsmith, R. E. and Clark, R. A. (2012) Materialism, status consumption, and consumer independence. *Journal of Social Psychology* 152(1): 43–60.

Grable, J., Heo, W. and Rabbani, A. (2015) Financial anxiety, physiological arousal, and planning intention. *Journal of Financial Therapy* 5(2): 2.

Harrison, T. (2012) Editorial. *Journal of Financial Services Marketing* 17(2): 117–119.

Hawkins, J. (2012) The CARD Act on campus. *Washington & Lee Law Review* 69(3): 1471–1534.

Haws, K. L., Bearden, W. O. and Nenkov, G. Y. (2012) Consumer spending self-control effectiveness and outcome elaboration prompts. *Journal of the Academy of Marketing Science* 40(5): 695–710.

Hayhoe, C. R., Leach, L. J., Turner, P. R., Bruin, M. J. and Lawrence, F. C. (2000) Differences in spending habits and credit use of college students. *Journal of Consumer Affairs* 34(1): 113–133.

Heckman, S., Lim, H. and Montalto, C. (2014) Factors related to financial stress among college students. *Journal of Financial Therapy* 5(1): 3.

Hogan, E. A., Bryant, S. K. and Overymyer-Day, L. E. (2013) Relationships between college students' credit card debt, undesirable academic behaviors and cognitions, and academic performance. *College Student Journal* 47(1): 102–112.

Joireman, J., Kees, J. and Sprott, D. (2010) Concern with immediate consequences magnifies the impact of compulsive buying tendencies on college students' credit card debt. *Journal of Consumer Affairs* 44(1): 155–178.

Joo, S.-H., Durband, D. B. and Grable, J. (2008). The academic impact of financial stress on college students. *Journal of College Student Retention: Research, Theory & Practice* 10: 287–305.

Joo, S.-H., Grable, J. E. and Bagwell, D. C. (2003) Credit card attitudes and behaviors of college students. *College Student Journal* 37(3): 405–419.

Khare, A. (2013) Credit card use and compulsive buying behavior. *Journal of Global Marketing* 26(1): 28–40.

Limbu, Y. B., Huhmann, B. A. and Xu, B. (2012) Are college students at greater risk of credit card abuse? Age, gender, materialism and parental influence on consumer response to credit cards. *Journal of Financial Services Marketing* 17(2): 148–162.

Limerick, L. and Peltier, J. W. (2014) The effects of self-control failures on risky credit card usage. *Marketing Management Journal* 24(2): 149–161.

Lo, H.-Y. and Harvey, N. (2011) Shopping without pain: Compulsive buying and the effects of credit card availability in Europe and the Far East. *Journal of Economic Psychology* 32(1): 79–92.

Mathwick, C. and Rigdon, E. (2004) Play, flow, and the online search experience. *Journal of Consumer Research* 31(2): 324–332.

Mewse, A. J., Lea, S. E. G. and Wrapson, W. (2010) First steps out of debt: Attitudes and social identity as predictors of contact by debtors with creditors. *Journal of Economic Psychology* 31(6): 1021–1034.

Mukhopadhyay, A., Sengupta, J. and Ramanathan, S. (2008) Recalling past temptations: An information-processing perspective on the dynamics of self-control. *Journal of Consumer Research* 35(4): 586–599.

Mukhopadhyay, A. and Yeung, C. W. M. (2010) Building character: Effects of lay theories of self-control on the selection of products for children. *Journal of Marketing Research* 47(2): 240–250.

Nelson, E. S. (2011) From the schoolhouse to the poorhouse: The Credit Card Act's failure to adequately protect young consumers. *Villanova Law Review* 56(1): 1–49.

Nelson, M. C., Lust, K., Story, M. and Ehlinger, E. (2008) Credit card debt, stress and key health risk behaviors among college students. *American Journal of Health Promotion* 22(6): 400–407.

Nga, J. K. H., Yong, L. H. L. and Sellappan, R. (2011) The influence of image consciousness, materialism and compulsive spending on credit card usage intentions among youth. *Young Consumers* 12(3): 243–253.

Norvilitis, J. M., Merwin, M. M., Osberg, T. M., Roehling, P. V., Young, P. and Kamas, M. M. (2006) Personality factors, money attitudes, financial knowledge, and credit-card debt in college students. *Journal of Applied Social Psychology* 36(6): 1395–1413.

Norvilitis, J. M., Szablicki, P. B. and Wilson, S. D. (2003) Factors influencing levels of credit-card debt in college students. *Journal of Applied Social Psychology* 33(5): 935–947.

Nunnally, J. C. (1978) Psychometric Methods. New York: McGraw Hill.

O'guinn, T. C. and Faber, R. J. (1989). Compulsive buying: a phenomenological exploration. *Journal of Consumer Research* 16(2): 147–157.

Palmer, T. S., Pinto, M. B. and Parente, D. H. (2001) College students' credit card debt and the role of parental involvement: Implications for public policy. *Journal of Public Policy & Marketing* 20(1): 105–113.

Peltier, J. W., Pomirleanu, N., Endres, M. and Markos, E. (2013) Psycho-social factors impacting credit acquisition and use by college students. *Journal of Financial Services Marketing* 18(4): 271–284.

Pinto, M. B. and Mansfield, P. (2006) Direct mail credit card solicitation of college students: An exploratory study. *Services Marketing Quarterly* 27(4): 27–34.

Pinto, M. B., Mansfield, P. M. and Parente, D. H. (2004) Relationship of credit attitude and debt to self-esteem and locus of control in college-age consumers. *Psychological Reports* 94(3): 1405–1418.

Pinto, M. B., Parente, D. H. and Palmer, T. S. (2000) Materialism and credit card use by college students. *Psychological Reports* 86(2): 643–652.

Pirog III, S. F. and Roberts, J. A. (2007) Personality and credit card misuse among college students: The mediating role of impulsiveness. *Journal of Marketing Theory & Practice* 15(1): 65–77.

Plunkett, H. R. and Buehner, M. J. (2007) The relation of general and specific locus of control to intertemporal monetary choice. *Personality and Individual Differences* 42(7): 1233–1242.

Richins, M. L. (2011) Materialism, transformation expectations, and spending: Implications for credit use. *Journal of Public Policy & Marketing* 30(2): 141–156.

Richins, M. L. (2013) When Wanting is better than having: Materialism, transformation expectations, and product-evoked emotions in the purchase process. *Journal of Consumer Research* 40(1): 1–18.

Richins, M. L. and Dawson, S. (1992) A consumer values orientation for materialism and its measurement - Scale development and validation. *Journal of Consumer Research* 19(3): 303–316.

Rindfleisch, A., Burroughs, J. E. and Wong, N. (2009) The safety of objects: Materialism, existential insecurity, and brand connection. *Journal of Consumer Research* 36(1): 1–16.

Robb, C. A. and Pinto, M. B. (2010) College students and credit card use: An analysis of financially at-risk students. *College Student Journal* 44(4): 823–835.

Roberts, J. A. (1998) Compulsive buying among college students: An investigation of its antecedents, consequences, and implications for public policy. *Journal of Consumer Affairs* 32(2): 295–319.

Roberts, J. A. and Jones, E. (2001) Money attitudes, credit card use, and compulsive buying among American college students. *Journal of Consumer Affairs* 35(2): 213–240.

Rook, D. W. (1987) The buying impulse. *Journal of Consumer Research* 14(2): 189–199.

Rook, D. W. and Fisher, R. J. (1995) Normative influences on impulsive buying behavior. *Journal of Consumer Research* 22(3): 305–313.

Rotter, J. B. (1966) Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied* 80(1): 1–28.

Sengupta, J. and Zhou, R. R. (2007) Understanding impulsive eaters choice behaviors: The motivational influences of regulatory focus. *Journal of Marketing Research* 44(2): 297–308.

Shapiro, G. K. and Burchell, B. J. (2012) Measuring financial anxiety. *Journal of Neuroscience, Psychology, & Economics* 5(2): 92–103.

Sharma, L., Markon, K. E. and Clark, L. A. (2014) Toward a theory of distinct types of "impulsive" behaviors: A meta-analysis of self-report and behavioral measures. *Psychological Bulletin* 140(2): 374–408.

Sidoti, P. M. and Devasagayam, R. (2010) Credit cards and college students: Effect of materialism and risk attitude on misuse. *Marketing Management Journal* 20(2): 64–79.

Slowik, J. (2012) Credit CARD Act II: Expanding credit card reform by targeting behavioral biases. *UCLA Law Review* 59(5): 1292–1341.

Sotiropoulos, V. and D'astous, A. (2012) Social networks and credit card overspending among young adult consumers. *Journal of Consumer Affairs* 46(3): 457–484.

Tangney, J. P., Baumeister, R. F. and Boone, A. L. (2004) High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality* 72(2): 271–324.

Thomas, V., Fowler, K. and Kolbe, R. H. (2011) The implications of the FTC's clear and conspicuous standards for the communication of credit card information to young consumers. *Journal of Financial Services Marketing* 16(3/4): 195–209.

Verplanken, B. and Herabadi, A. (2001) Individual differences in impulse buying tendency: Feeling and no thinking. *European Journal of Personality* 15(1): S71–S83.

Verplanken, B. and Sato, A. (2011) The psychology of impulse buying: An integrative self-regulation approach. *Journal of Consumer Policy* 34(2): 197–210.

Vohs, K. D., Schmeichel, B. J., Nelson, N. M., Baumeister, R. F., Twenge, J. M. and Tice, D. M. (2008) Making choices impairs subsequent self-control: A limited-resource account of decision making, self-regulation, and active initiative. *Journal of Personality and Social Psychology* 94(5): 883–898.

Wang, J. and Xiao, J. J. (2009) Buying behavior, social support and credit card indebtedness of college students. *International Journal of Consumer Studies* 33(1): 2–10.

Wang, L., Lv, W. and Jiang, L. (2011) The impact of attitude variables on the credit debt behavior. *Nankai Business Review International* 2(2): 120–139.

Warwick, J. and Mansfield, P. (2000) Credit card consumers: College students' knowledge and attitude. *Journal of Consumer Marketing* 17(7): 617–626.

Watson, J. J. (2003) The relationship of materialism to spending tendencies, saving, and debt. *Journal of Economic Psychology* 24(6): 723–739.

Watson, S. (2009) Credit card misuse, money attitudes, and compulsive buying behaviors: A comparison of internal and external locus of control (loc) consumers. *College Student Journal* 43(2): 268–275.

Wilcox, K., Block, L. G. and Eisenstein, E. M. (2011) Leave home without it? The effects of credit card debt and available credit on spending. *Journal of Marketing Research* 48(SPL): S78–S90.

Xiao, J. J., Ahn, S. Y., Serido, J. and Shim, S. (2014) Earlier financial literacy and later financial behaviour of college students. *International Journal of Consumer Studies* 38(6): 593–601.

Xiao, J. J., Tang, C., Serido, J. and Shim, S. (2011) Antecedents and consequences of risky credit behavior among college students: Application and extension of the theory of planned behavior. *Journal of Public Policy & Marketing* 30(2): 239–245.

Zemack-Rugar, Y., Corus, C. and Brinberg, D. (2012) The "response-to-failure" scale: Predicting behavior following initial self-control failure. *Journal of Marketing Research* 49(6): 996–1014.

Zhang, Y. and Shrum, L. J. (2009) The influence of self-construal on impulsive consumption. *Journal of Consumer Research* 35(5): 838–850.