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EXAMINING SOCIAL DESIRABILITY BIAS
IN MEASURES OF FINANCIAL
BEHAVIOR

Nicole L. Kelly

75 Pages

Surveys that investigate the financial lives of consumers consist of direct questions about financial behavior, with college students being a heavily surveyed and convenient sample (Gutter & Copur, 2011). However, the subjective nature of survey data is not bias-free, indicated by the presence of disparities between the respondents' reported and actual behavior. Due to the fact that many students begin to acquire loans, establish credit, and initiate saving behaviors in college, it is important that we have a complete understanding of the financial behavior of college students.

The goal of this study was to investigate the role of socially desirable responding (SDR) in responses to survey questions to better understand students' financial behavior. Using survey data collected from 1,159 students at a Midwestern university, this study employed an indirect questioning method using scenarios. The study compared direct and indirect reporting of financial behaviors and attitudes in the following three areas: saving, credit cards, and loans, to determine the relationship between the direct and indirect

responses with a measure of socially desirable responding. Findings showed greater differences between direct and indirect reports of saving and spending behaviors were significantly related to higher scores on the measure of socially desirable responding. The results indicate that the use of indirect questioning can highlight and may reduce biased responses in future measures of financial behavior.

KEYWORDS: Biased responses, Financial behavior, Indirect questions, Self-deception, Sensitive questions, Social desirability

EXAMINING SOCIAL DESIRABILITY BIAS
IN MEASURES OF FINANCIAL
BEHAVIOR

NICOLE L. KELLY

A Thesis Submitted in Partial
Fulfillment of the Requirements
for the Degree of

MASTER OF SCIENCE

Department of Family and Consumer Sciences

ILLINOIS STATE UNIVERSITY

2015

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EXAMINING SOCIAL DESIRABILITY BIAS
IN MEASURES OF FINANCIAL
BEHAVIOR

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ACKNOWLEDGMENTS

I wish to express gratitude for my committee members, Dr. Connor Walters and Dr. Jan Murphy for their time and support in this endeavor. I want to acknowledge Stacy Wilkes for her assistance with the initial data analysis. A very special thanks is extended to my family and friends for their support.

This thesis is dedicated to Dr. Tammy Harpel. Her unwavering support and commitment was encouraging throughout this process. I've benefited from the opportunity to work with her because she is an excellent professor and mentor. Her role as my advisor has been valuable for both my skills as a researcher and a developing professional. Thank You.

N.L.K

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CHAPTER I
EXAMINING SOCIAL DESIRABILITY BIAS IN MEASURES OF FINANCIAL
BEHAVIOR

Abstract

Surveys that investigate the financial lives of consumers consist of direct questions about financial behavior, with college students being a heavily surveyed and convenient sample (Gutter and Copur 2011). However, the subjective nature of survey data is not bias-free, indicated by the presence of disparities between the respondents' reported and actual behavior. Due to the fact that many students begin to acquire loans, establish credit, and initiate saving behaviors in college, it is important that we have a complete understanding of the financial behavior of college students.

The goal of this study was to investigate the role of socially desirable responding (SDR) in responses to survey questions to better understand students' financial behavior. Using survey data collected from 1,159 students at a Midwestern university, this study employed an indirect questioning method using scenarios. The study compared direct and indirect reporting of financial behaviors and attitudes in the following three areas: saving, credit cards, and loans, to determine the relationship between the direct and indirect responses with a measure of socially desirable responding. Findings showed greater differences between direct and indirect reports of saving and spending behaviors were significantly related to higher scores on the measure of socially desirable responding. The

results indicate that the use of indirect questioning can highlight and may reduce biased responses in future measures of financial behavior.

KEYWORDS: Biased responses, Financial behavior, Indirect questions, Self-deception, Sensitive questions, Social desirability

Introduction

In the United States, many individuals and families are reportedly living beyond their financial means (Robb and Woodyard 2011). Numerous studies have documented growth in habitual spending, use of loans, and credit card debt among American citizens (Kennickell et al. 2000; Xiao et al. 2008). This rising “culture of debt” wherein consumers are faced with many financial hardships has contributed to the documented increases in the amount of households struggling to meet financial demands (Kennickell et al. 2000). Since the amount of borrowing and credit use has grown in recent years, increasingly larger shares of household income are being allocated to the repayment of debt (Kennickell et al. 2000).

Much attention has been paid to college students when investigating financial behaviors, partially because they are a heavily surveyed and convenient sample (Gutter and Copur 2011), but also due to recent changing and uncertain economic conditions. An increase in the cost of college tuition, matched with the struggling job market, has raised concern about college students’ financial well-being (Sages et al. 2013). Given that college students are new to financial independence and demonstrate high rates of credit card and loan use, they are an especially vulnerable and financially at-risk population when it comes to financial behaviors and attitudes (Xiao, Tang, and Shim 2009).

Low levels of financial literacy among the United States population demonstrate the fact that consumers lack basic knowledge about financial management (Schmeiser and Seligman 2013). Therefore, it is not surprising that the ability of consumers to make effective decisions about the management of their income, financial assets and investments has gained increasing attention from educators, the business sector, community organizations, and governmental agencies (Schmeiser and Seligman 2013).

Socially Desirable Responding

Recent findings from studies of financial behaviors carried out by consumer economists and the financial services industry have prompted the need for more research to better understand the financial behaviors of these consumers (Kim, Garman and Sorhaindo 2003). Self-report surveys are commonly used to investigate the financial behaviors and attitudes of consumers. The accuracy of data obtained in a self-report survey is primarily dependent on the accuracy or validity of participants' answers (Tourangeau et al. 2000). Despite their usefulness, self-report surveys have many limitations and biased survey data can result in problematic consequences (Chen 2011). Observed discrepancies exist between reported and actual financial behavior. These inconsistencies and issues with measurement call the accuracy of the obtained financial information into question.

The discrepancies between actual behavior and reported behavior may be a result of the respondents' propensity to engage in socially desirable responding (SDR) when reporting via self-report surveys. More specifically, the tendency for individuals to attribute overly positive self-descriptions to themselves and to deny other less desirable characteristics, thought to be faults or subject to disapproval, fall under the umbrella of

socially desirable responding (SDR) (Gignac 2013). The sensitive nature of questions about finance may trigger social desirability concerns because they are perceived as intrusive. The effects of SDR on sensitive topics suggest that misreporting can result in biased research findings and survey estimates (Tourangeau and Yan 2007).

The degree to which social desirability contamination is a problem and the pervasiveness of SDR bias are not known. Despite awareness among financial researchers that financial management is a more sensitive topic, there is an absence of studies that have employed methods to account for the presence of SDR bias in financial research literature. Recent studies indicate that undergraduate college students are one population that is particularly likely to engage in SDR (Miller 2012). Given the fact that college students are at a critical stage in terms of forming financial behaviors and the extensive use of this population to conduct research on consumer finance, the need for data collection methods that generate accurate information is critical (Tourangeau and Yan 2007).

Self-Deception

When investigating the phenomenon of SDR bias, self-deception (SD) is one factor that has been noted by researchers as an underlying motivation for engaging in SDR. The self-descriptions and definitions applied to oneself may be the act of incorporating a self-deceptive bias in self-regard (Gignac 2013). Self-deception, as its name implies, is a self-perceived deception, and these characteristics have a tendency to be internal to the respondent.

Self-deception can be used for avoiding pain or attaining pleasure, which can occur in the form of both denial and enhancement. Therefore, self-deceptive denial and

self-deceptive enhancement are actually defense mechanisms wherein individuals reject negative information about the self and affirm positively held self-beliefs (Gignac 2013). Responding derived from the self-deception factor is an unconscious positive bias that aims to protect one's positive self-image (Paulhus 1984). Therefore, research using self-report surveys conducted under anonymous conditions would likely be influenced by the self-deception (SD) factor of SDR because the respondents' motivation to appear more desirable is a result of their unconscious attempt to maintain an overly positive self-image.

Response Bias and Indirect Questioning

A variety of questioning methods are typically used in survey research to ask respondents sensitive questions in an effort to mitigate the effects of response biases and non-response or to highlight the existence of SDR (Armacost et. al 1991). Some of these questioning methods include the randomized-response technique (RRT) and the indirect questioning method, which include vignette or scenario-based questions (Fowler 1995; Moshagen, Hilbig and Musch 2011).

A different approach, mainly investigated in the areas of statistics and social sciences, is called the randomized-response technique (RRT; Warner 1965). According to Moshagen et. al (2011), the randomized-response technique requests information from participants on a probability basis rather than by directly questioning the participants. This method intends to maximize the anonymity of participants' responses to sensitive questions, because confidentiality is increased, and the rate of detection can only be estimated at a group level using probability computations. More specifically, the RRT is a procedure that tends to elicit more honest responding to sensitive questions because

respondents feel less stigmatized given that responses cannot be linked to any individual participant (Armacost et al.1991; Moshagen et al. 2011).

Armacost et al. (1991) explored scenarios as an approach for addressing the problems associated with direct questioning when measuring sensitive attitudes and behaviors. Their comparison of scenario-based questions with the RRT and direct questioning consistently showed the strength of the scenario approach, and the researchers noted that it was the strongest for questions that addressed individual actions (Fisher 1993). Armacost et al. (1991) also noted that the other-based scenario approach consistently produced less socially desirable estimates for nine out of ten items in their study.

The indirect questioning (IQ) method utilizes structured or unstructured questions as a means of reducing the effects of social desirability bias. The IQ technique uses projective questioning which asks participants to respond to questions from a third-person perspective (Fisher 1993). For example, instructing respondents to report on the nature of a typical other, rather than about the self, IQ potentially mitigates the distortion of privately held attitudes. In this sense, it is expected that respondents reveal their own attitudes in their responses by projecting their unconscious biases into hypothetical response situations (Fisher 1993).

Vignettes or scenarios are two similar types of indirect questioning methods that have been used most frequently in business research to assess ethical issues, with more emphasis on behavior than attitudes or disposition (Armacost et al.1991). In the scenario-based questioning method, questions are drafted in such a manner that they address the actions of the individual respondent or their perception of others' actions. These

“vignettes”, or scenario-based questions, refer to a type of IQ in which respondents are presented with brief descriptions of a person in a situation that contains precise references to the relevant factors in decision-making processes under investigation (Armacost et al. 1991; Fisher 1993).

To our knowledge, no published studies have explored alternative questioning methods, namely IQ, to ameliorate social desirability response (SDR) bias in financial behavior assessments. Financial researchers, indicating a need to find alternative methods of collecting data related to personal finance, have overlooked this area of survey research methodology. The goal of this study was to explore the role of self-deception (SD), one of two dimensions of SDR bias, in direct self-reports of financial behaviors by using a measure of SDR (Paulhus 1994).

The scenario-based form of the IQ method employed in this study could highlight the existence of SDR bias in measures that survey individuals about personal finances. The comparison of indirect and direct questioning methods was used to assess if differences exist between the two types of questioning methods, and to investigate the relationship of such differences with the concept of socially desirable responding. This could ultimately lead to more accurate measurement of financial variables. The following hypotheses were tested in the study:

Hypothesis 1: Greater differences between direct reports and indirect reports of credit card behavior will be related to higher scores on the Self-Deception scale.

Hypothesis 2: Greater differences between direct reports and indirect reports of saving behavior will be related to higher scores on the Self-Deception scale.

Hypothesis 3: Greater differences between direct reports and indirect reports of attitude toward loan use will be related to higher scores on the Self-Deception scale.

Methods

Participants

The sample consisted of students at a large Midwestern university. After receiving human subject approval from the university, an email containing information about the survey including its purpose, length, and confidentiality was sent to students who had consented to receive recruitment emails for research studies. The students were required to read and indicate their consent, as well as confirm that they were at least 18 years old by clicking, “Yes” (APPENDIX A). The consenting students were then forwarded to the online survey via a web link. The survey was administered through Select Survey, which is a secure site that ensures anonymity and confidentiality for surveying college students. Upon completion, the survey directed respondents to a separate page where they had the option of providing their email address to enter a drawing for one of two \$50 retail gift cards. The end of the survey notified participants that the prize drawing would not be linked to their survey responses in any way. The survey remained open for a total of three weeks, with a follow-up email sent to the students one week after the first solicitation email.

A total of 1,305 students started the survey. We eliminated participants who did not complete the survey ($n = 146$), yielding a sample of 1,159 students. Respondents were mostly female (74%, $n = 863$), between the ages of 21 to 24 (47%), and white (82%, $n = 863$). The majority (55%) of respondents were junior- or senior-level undergraduates, employed part-time (57%, $n = 608$), and living off campus ($n = 662$ or 63%).

See Table 1.

Table 1

Demographic Table of Sample

Demographic Variable	%	<i>n</i>
Gender		
Female	74	863
Male	26	296
Race or Ethnicity		
White	82	863
Black	6	60
Asian	5	47
Hispanic	4	46
Multi-racial	1.4	20
Other	1.6	21
Age (years)		
18	7	78
19	14	152
20	17	187
21-24	47	525
25-30	9	103
>30	6	70
Academic Standing		
Freshman	13	137
Sophomore	14	149
Junior	27	283
Senior	28	297
Master's Student	15	163
Doctoral Student	3	28

Table continues

Living arrangement		
Apartment/Rent	63	662
Dorm	24	255
Other	6	61
With family/home	7	79
Parental Income		
<\$30,000	11.6	121
\$30,000-\$39,000	8.2	86
\$40,000-\$59,000	16.5	172
\$60,000-\$79,000	17.3	181
\$80,000-\$99,000	17.5	183
\$100,000-\$150,000	20.6	214
> \$150,000	8.3	87
Employment Status		
Part time	57	607
Unemployed	33	344
Full-time	10	107

Measures

A survey instrument was created by the researcher specifically for this study. The ordering and organization of sections was designed to group together “like” question types and reduce the potential for order bias. The 59-item survey consisted of the following four sections: (1) seventeen direct questions about financial behavior, (2) fifteen indirect questions about financial behavior, (3) twenty items comprising the BIDR-SD subscale (Paulhus 1991), and (4) seven demographic questions.

Direct Versus Indirect Response Measurement

Direct reporting of financial behaviors was measured using seventeen researcher-generated questions. These direct questions (DQ) asked the respondents directly about their current and ongoing financial behaviors, attitudes and intentions. They were asked about credit card use, saving and spending behavior, as well as attitudes and behaviors

involved in loan use. A total of 8 DQ asked about credit cards. One example of a direct question about credit cards asked, “What is the combined total balance you owe on your credit cards?” The response options included the following: (a) “I don’t have a credit card balance”, (b) \$1 - \$99, (c) \$100 - \$499, (d) \$500- \$1,999, (e) \$2,000- \$4,999, and (f) \$5,000 or more. Credit card questions also asked about how respondents pay their credit card balance each month, with response options of full, the minimum, or between the minimum and full balance.

Saving behavior was measured with four direct questions that asked about the respondents’ saving habits, intentions and attitudes. One example of a direct question about saving was, “I find it difficult to save money while in college.” This question prompted the respondents’ to rate how often they engaged in the behavior or attitude on a 5-point Likert scale (*1 = never, 5 = always*). This question focused on one’s attitude about their ability to save while in college, as well as tapping into the frequency at which they engaged in the thought regarding their saving habits.

The five direct questions about loan use included questions similar to the credit card items; however the questions were specific to certain types of loans and intended to assess respondents’ perception about the value of student loans. One example of a DQ item that asked about attitudes toward loan use instructed respondents to rate their level of agreement using a 5-point Likert scale (*1 = strongly disagree, 5 = strongly agree*) for the statement, “Taking loans to pay for college is a worthy investment.”

Indirect reporting about financial behaviors was measured using fifteen researcher-generated questions. These indirect questions (IQ) questions asked the respondents indirectly about financial behaviors, attitudes and intentions from a third-

party perspective. Indirect questions about financial behavior consisted of scenarios and follow-up questions about a “typical” college student. The “typical” college student, the same gender as the participant, held a part-time job, received financial aid to pay for school and received financial assistance from their family on occasion. These scenarios were designed to be somewhat universal and unspecific for the purpose of reflecting a variety of students’ situations. An example of a scenario is: “John is a full-time college student who has a part-time job, and also gets financial help from his family from time to time. He has taken out some student loans to pay tuition, but his parents help him with school expenses as well.”

After presenting the scenario, indirect follow-up questions, asked the subjects to respond to questions about financial decisions that Jenny or John, described as a typical college student, should do in a variety of situations. Indirect questions were based on participant gender, with Jenny or John responses in two different groups. Responses to indirect questions for males and females, Jenny and John, were combined to create one variable for each item that was tested against the direct questions.

To reconcile the differing response options between the direct reporting and indirect reporting, z-scores were computed. Using z-scores, the indirect responses were subtracted from the direct responses in order to create a score representing the discrepancy between direct and indirect reporting. Due to the question formats and response options, some of the items needed to be coded such that, across all variables, the more risky financial behaviors were given a higher value than the reported financially prudent practices. This consistent coding was done to increase the interpretability of the results, therefore allowing the direction of the correlations to be conceptually consistent.

Subtracting the direct responses from the indirect responses was done to represent a discrepancy between reports about what an “other” should do and self-reported behavior. In order to test the hypotheses, these variables were combined to create an average for the three main financial behaviors explored in this study (spending/saving, loan use, and credit card behavior) and then compared with the SD scores.

Credit Card Behavior

Four total variables were created as a means for comparing the direct and indirect responses of credit card behavior. This was necessary in order to examine the relationship of these items with scores on the SD scale. Credit card ownership, late payment behavior, balance holding and payment frequency were all used to test for the relationship between DR and IR to items asking about credit card behavior. Differences between the correlated DR and IR of credit card behavior were then computed in order to test their relation to scores on the SD scale.

Credit card ownership. Direct responses (DR) and indirect responses (IR) to both direct (DQ) and indirect questions (IQ) about credit card ownership were the first items used to test for credit card behavior. The two items were scored, one direct and one indirect. The item “Do you have credit cards?” was the direct response (DR) item, with respondents reporting whether or not they personally owned credit cards (“Yes” or “No”). This item was paired with an indirect questioning item that asked participants whether the person in the scenario should get a credit card. (“Yes” or “No”). This item was also reverse coded in the same way as the matching direct response option item. Thus, both items in this direct/indirect pair were coded such that lower scores indicated lower utilization of credit cards. This consistent coding is important because it allowed

for the later creation of a variable representing the discrepancy between a respondent's own credit card and their indirect reports about whether they think Jenny or John should get a credit card. The indirect and direct responses to these items were significantly correlated ($r = .34, p < .01$).

Pay late variable. A second item asked participants about the rate at which they pay their credit cards in order to get a more complete look at credit card behavior. The following item was a direct question: "Which of the following best describes the way you pay your credit card payments?" The response options included the following: (a) "I am late making at least one credit card payment every month," (b) "I am late making a credit card payment several times a year," (c) "I am late making a credit card payment once or twice a year," and (d) "I never make late payments on my credit cards."

Direct reporting about frequency of paying late was compared to an average score of two indirect reporting questions. In order to obtain a composite score representing the latent construct of attitudes about credit card payments, two items were averaged to compute one variable: "It is perfectly acceptable for John to skip a credit card payment if he is short of funds that month" and "It's really not a big deal if John makes a late credit card payment." Response options were on a 5-point Likert scale ($1 = strongly disagree, 5 = strongly agree$). These items were intended to conceptually tap into the same (self-reported and other-reported) latent construct of credit card payment behavior.

Similarly, Likert-type response options were reverse coded for consistent interpretability of results. The following indirect questioning item about credit card behavior also used a Likert-type response, and was re-coded for interpretability of results. These items were combined to create the indirect response variable for "pay late"

behavior. Given that the indirect responses did not correlate with the direct responses to these items ($r = .07$), this variable was not included in the analysis when testing against the SD scores.

Balance holding variable. The balance holding variable was assessed with two questions. The direct question, “What is the combined total balance owed on your credit cards?” and the indirect question, “What is the maximum amount Jenny should have in credit card debt?” Due to the similarity in wording and response options of these two items, the IR and DR items were compared in terms of their differences without needing to recode. The indirect and direct responses to these items were significantly correlated ($r = .30, p < .001$), allowing the variable to be used when testing the hypothesis.

Pay full variable. The pay full variable was assessed with two questions. The direct question asked the respondent, “How do you usually pay your monthly credit card bills?” Response options included: (a) “I pay the minimum”, (b) “I pay between the minimum and the full amount”, and (c) “I pay my credit cards in full”. The IQ asked the respondents to rate their level of agreement ($1 = strongly disagree, 5 = strongly agree$) with the statements “John should pay the balance on his credit cards every month” and “John is fine making the minimum payments on his credit cards.” Due to the different question types, the responses to the IQ items that represented attitudes about monthly credit card payment behavior were z-scored for the purpose of converting them to the same scale. This z-scoring allowed the two items to be averaged to create a composite variable representing IR to questions that asked about attitudes regarding monthly credit card payment amount. The IR to items that asked about credit card payment amounts did

not correlate significantly with the DR ($r = .04$) to credit card payment amounts; therefore it was not used to test against the SD measure. See Table 2.

Table 2

Correlations between DR and IR to Credit Card Behavior

	1	2	3	4	5 ^a	6 ^a	7 ^a	8 ^a
1. DR CC own	1				.34**			
2. DR Pay Late		1				.07		
3. DR Balance			1				.30**	
4. DR Pay Full				1				.04
5. IR CC Own	.34**				1			
6. IR Pay Late		.07				1		
7. IR Balance			.30**				1	
8. IR Pay Full				.04				1

** $p = .01$

^a Indirect Responses to their paired Direct Response variable

Saving Behavior

Four total variables were created as a means for comparing the direct and indirect reporting of saving behaviors. Items on the survey were created to gain an understanding of saving behavior by using questions that also asked about *spending*, which is directly related to one's ability or propensity to save. It is cited in the literature that spending and saving are behaviors are both in one domain of financial behavior, which is (Dew and Xiao 2010) in the form of consumption management (i.e., spending over saving). In order to set up dichotomies between the indirect reporting and direct reporting of saving behavior we created z-scores for the comparative scoring of the responses (from each individual) respondent to one another. This was necessary in order to examine the relationship between the individuals in terms of differences in their responses to DQ and IQ items and when examining the relation of such scores with the SD scale. Attitudes

about saving and saving behaviors were measured using four variables that compared DR items and IR items.

Saving for the future variable. The saving for the future variable was assessed with indirect and direct response items that focused on the importance of saving for the future while in college. The direct question asked respondents to rate their agreement ($1 = \textit{strongly disagree}$, $5 = \textit{strongly agree}$) with the statement, “Saving for the future is important.” This was compared to indirect responses to the statement, “Saving a little money each month is important for John/Jenny, even as a student.” The responses to the items were reverse scored in order to create a dichotomy between IR and DR due to the identical wording and response options. The indirect responses and direct responses to these items were highly correlated ($r = .44$, $p = .00$).

Difficulty saving variable. The difficulty saving variable was assessed with indirect and direct response items that asked about respondents’ attitudes regarding their ability to save for the future while in college. The direct question prompted respondents to rate their agreement with the following statements: “I find it difficult to save money while in college.” The indirect item was phrased, “Jenny/John, like all college students can’t really save money while in college” ($1 = \textit{strongly disagree}$, $5 = \textit{strongly agree}$). The difference between direct and indirect responses to these items was computed after reverse scoring the items in order to obtain an identical response format. This created the variable that measured respondents’ feelings about difficulty saving while in college. The indirect and direct responses to these items were strongly correlated ($r = .22$, $p = .00$). See Table 3.

Spending intentions variable. The spending intentions variable was assessed with the direct question, “If you have a little extra money some months, what do you do with the money?” Respondents were prompted to choose one, both, or neither of the following options: “Spend it on something fun” and “Spend it on something I need.” The indirect question was worded identically, “Because Jenny works she has a little extra money most months. What should Jenny do with the extra money?” The response options and format were the same as the direct response item; however they were written from the third-person perspective of Jenny or John. The responses to these items were averaged in order to create a variable that represented spending intentions. The indirect and direct reporting of spending intentions were significantly correlated ($r = .06, p < .01$). See Table 3. The IR item was then reverse scored after this in order to compute a discrepancy variable representing the differences between DR and IR to the spending intentions variable for use in testing against the SD scale.

Saving intentions. The saving intentions variable was assessed with two questions, “If you have a little extra money some months, what do you do with the money?” The respondents were prompted to choose one, both, or neither of the following options: “Save it for another month when I might need it” and “Save it for a long-term investment or large purchase”. The indirect question was worded exactly the same, except that it asked about what Jenny/John should do if they have a little extra money some months. The response options and format were exactly the same as the direct question, however they were written from the third-person perspective of Jenny or John. The responses to these items were averaged in order to create a variable representing saving intentions. The averaged comparison of IR and DR regarding spending intentions

were significantly correlated ($r = .14, p = .00$) with one another. See Table 3. The IR item was then reverse scored in order to compute a discrepancy variable representing the differences between DR and IR to the saving intentions variable for later use in testing against the SD scale.

Table 3

Correlations between DR and IR to Saving Behavior

	1	2	3	4	5 ^a	6 ^a	7 ^a	8 ^a
1. DR Attitude	1				.22**			
2. DR Difficulty Saving		1				.44**		
3. DR Saving intentions			1				.14*	
4. DR Spending intentions				1				.06*
5. IR Attitude	.22**				1			
6. IR Difficulty Saving		.44**				1		
7. IR Saving Intentions			.14*				1	
8. IR Spending Intentions				.06*				1

** $p = .01$

* $p = .05$

^a Indirect Responses to their paired Direct Response variable

Loan Use

Attitudes toward loan use were assessed using two questions. Loan use was measured directly with the question, “Do you have an automobile or other kind of non-student loan?” and the indirect question “Taking out an auto loan is an unwise decision for John/Jenny.” These questions were used to create the variable representing the IR and DR for loan use. The two items were not correlated ($r = .00$), with almost no relationship. The researchers also tested the other DQ and IQ items about reported attitudes regarding loan use using item-to-total statistical tests, however the Chronbach’s alphas were not within an acceptable range for correlational testing. Therefore, they were not used to test for their relationship with scores on the SD scale for this hypothesis because of very low

correlations between the IR and DR to items about loan use. As a result we were not able to test the third hypothesis in this study.

Self-Deception

Self-Deception was measured with the 20-item Self-Deception (SD) subscale of the Balanced Inventory of Desirable Responding (BIDR-SD; Paulhus 1994). Items on this subscale measure the self-deception component of socially desirable responding (SDR). Items on the SD subscale specifically measure rigid overconfidence in an individual's self-perceived abilities (Gignac 2013). The SD subscale used in this study captures unconscious exaggerations of one's self-perception. Example items include: (a) "I always know why I like things," (b) "I never regret my decisions," and (c) "I am a completely rational person." The respondents rated their agreement with each statement on a 7-point Likert scale (*1 = strongly disagree, 7 = strongly agree*). The summed score of the items represented the respondent's propensity for self-deceptive SDR, with higher scores meaning a higher likelihood to engage in self-deception. The scoring key was balanced with 10 of the items reverse scored. Reliability coefficients for continuous scoring of the whole BIDR-SD reportedly range from .70 to .82 (Stober, Dette, and Musch 2002). Paulhus (1994) also reported adequate internal consistency with alphas ranging from .65 to .75 for the self-deception (SD) subscale (Paulhus 1994).

Demographic Questions

The seven demographic questions asked respondents about their gender, as well as questions about their age, employment status, family income, housing arrangement, and year in school. The variables were mainly categorical, with the items being close-ended and multiple-choice format. The purpose of the close-ended format

was to help reduce response errors; therefore, this meant that the direct reporting of age and parental income needed to be reported in ranges that were provided via multiple-choice questions. See Table 4.

Table 4

Direct Reports of Financial Behaviors

Financial Behavior/Attitude	%	<i>n</i>	<i>M</i>	<i>SD</i>
Credit Cards	-	1,111		
Have Credit cards	47	527		
Do not have credit cards	53	584	0.83	1.16
Balance on credit cards	-	527	1.51	1.5
Monthly payment amount	-	525	0.5	0.6
Paying the minimum	5	27		
Pay credit cards in full	60	312		
Pay between min/full	35	186		
Loans				
Having Loans (non school)	16	164		
No loans (non-school loans)	84	885		
I worry about paying loans when I graduate (1=Never, 5=Always)	-	517	3.13	1.58

Results

To reconcile the differing response options between the direct reporting and indirect reporting, z-scores were computed. Using z-scores, the indirect responses were subtracted from the direct responses in order to create a score representing the discrepancy between direct and indirect reporting. Due to the question formats and response options, some of the items needed to be coded such that, across all variables, the negative reported financial behaviors were given a higher value than the reported positive

financial practices. This consistent coding was used to increase the interpretability of the results, therefore allowing the direction of the correlations to be conceptually consistent.

A composite score was created for the Self-Deceptive subscale for the entire sample. This was done by reverse scoring 10 of the items on the scale. The SD scores for all participants ($n = 1,159$) had a mean of 5.32 ($SD = 3.85$), which was close to, but slightly lower than, the reported norms for means and standard deviations for both female and male college undergraduates as reported by Paulhus. Cronbach's alpha for the subscale in this study was .70, which is within the acceptable limits according Paulhus (1994).

The males scored slightly higher on the SD scale in this study ($M = 6.07$, $SD = 4.02$) than the females ($M = 5.06$, $SD = 3.76$). Males typically score slightly higher than females on this measure (Paulhus 1994) and the lower scores of female participants, although not significant, imply less of a tendency to engage in self-deception, which is often a source of error in survey estimates. The lower scores for female participants are reported by Paulhus for the age group as typical. The scoring key provided by Paulhus, reported the norms for means and standard deviations on the SD scale for males ($M = 7.5$, $SD = 3.3$) and females ($M = 6.8$, $SD = 3.1$). These scores suggest that respondents in our study responded more honestly on this measure, having less of a tendency to engage in high levels of self-deceptive enhancement, and presumably less likely to be impacted by social desirability bias. See Table 5.

Table 5*Self-Deception Scale Scores*

Gender	<i>n</i>	<i>M</i>	<i>SD</i>
Male	296	6.07	4.02
Female	863	5.06	3.76
Total	1,159	5.32	3.85

Hypothesis 1: Credit Cards

Hypothesis 1, which stated that more agreement between direct and indirect reporting of credit card behavior would be related to lower scores on the Self-Deception scale, was tested by first eliminating the IR and DR variables regarding credit card behavior that did not correlate with each other. Specifically, these were the pay late variable and the pay full variable. Next, subtracting the responses to IQ from responses to DQ created the discrepancy variables used to test the hypothesis. In the final analysis, the discrepancy variables were compared to the scores on the self-deception measure using bivariate correlations to determine if greater differences between direct and indirect reporting were related to higher scores on the SD. The results indicate that differences in responses to DQ and IQ of credit card ownership were not significantly correlated with higher scores on the SD measure ($r = -.05$). The credit card balance discrepancy variable was also not significantly correlated with the SD scale ($r = -.03$). Therefore hypothesis 1 was not supported. See Table 6.

Table 6*Credit Card Behavior Correlations of IR and DR with SD Scores*

	1	2	3
1. BIDR-SD	1		
2. Own CC	-.05	1	
3. Balance	-.03		1

Hypothesis 2: Saving Behavior

Hypothesis 2, which stated that agreement between direct reporting and indirect reporting of saving behavior would be related to higher scores on the SD scale, was tested by first creating the discrepancy variables between direct and indirect responses to questions about saving and spending. These variables included attitude about saving, perceptions of ability to save while in college (difficulty saving variable), and saving intentions. The variable about spending intentions was included because spending directly relates to one's ability to save money (Xiao et al. 2008). The IR and DR to these items were combined and averaged to create two composite variables, with IR reverse scored to compute variables representing discrepancies between DQ and IQ responses to saving and spending questions. These were tested using bivariate correlations for their relationship with scores on the SD scale.

In partial support of hypothesis 2, we found that the respondents with *greater differences* between direct and indirect reporting of saving intentions had higher scores on the SD measure ($r = .13, p = .00$). In addition, differences in direct and indirect reports of spending intentions ($r = .07, p = .02$) were also positively correlated with the SD scores.

The respondents who had greater differences between DR and IR representing attitudes about the importance of saving did not have higher scores on the SD scale, therefore this variable was not significantly correlated with the SD scale ($r = .04$). There was also a very weak correlation between discrepancy variable about perception of difficulty saving while in college and the scores on the SD scale ($r = .01$). See Table 7.

Table 7

Saving Behavior Correlations of IR and DR with SD Scores

	1	2	3
1. BIDR-SD	1	.07*	.13**
2. Saving Intentions	.07*	1	
3. Spending Intentions	.13**		1

** $p = .01$

* $p = .05$

Hypothesis 3: Loans

Hypothesis 3, which stated greater differences between direct reporting and indirect reporting of attitude toward loan use would be related to higher scores on the SD scale was not tested due to reasons described earlier in the manuscript. The researchers did not test for the relationship with scores on the SD scale for this hypothesis because of very low correlations between the IR and DR to items about loan use.

Discussion

The goal of the study was to determine if there were noticeable differences between direct and indirect reports of financial behavior and if such differences would be positively correlated with higher scores on the standardized measure of self-deception, one dimension of SDR. The results of our study found that that the correlations between the discrepancy variables with the standardized (SD scale) measure provided partial

support for Hypothesis 2, wherein differences in responses to IQ and DQ of saving and spending behavior intentions were positively correlated with higher scores on the self-deception scale measure. In partial support of Hypothesis 2, individuals with higher discrepancies between what they directly report themselves in terms of *spending* intentions and their indirect reports of *spending* intentions, regarding what they believe Jenny or John should save were significantly more likely to score higher on the self-deception scale. Individuals with higher discrepancies between what they directly report themselves in terms of *saving* intentions and their indirect reporting of *saving* intentions regarding what they believe Jenny or John should do were significantly correlated, and more likely to have a higher propensity for engaging in the self-deception component of SDR.

Reasons for partial support of the second hypothesis could be related to the fact that saving and spending are behaviors students have the opportunity to engage in on a regular basis. Also, the questions focused on *intentions* to save or spend. The fact that people often intend to save, but end up spending, provides insight as to the reasons that there were differences between the IR and DR of saving and spending intentions (Hogarth 2003). Respondents may have been protecting themselves from their truly negative financial decisions in order to feel better about their habits. Their responses about Jenny and John were different because they either know what the other student *should* do, but they don't. Further, these results suggest that these respondents are so prone to engaging in SDR, that it's possible their direct responses to these questions were actually the behaviors they would like to engage in, but actually don't end up doing.

The lack of support for Hypothesis 1, which focused on credit card behavior and the relationship to higher SD scores, is likely due to a variety of reasons. First, there were two variables that had to be removed from the final analyses because they were not correlated with one another. The variables that were removed from the credit card hypothesis (pay late and pay full) may have impacted the lack of correlation between the differences in IR and DR of credit card behavior variables and scores on the SD scale.

It is also possible that the lack of significance may be related to the type of behavior being investigated. For example, saving and spending behaviors are more salient for students, which contrasts to credit card behavior, which is less of a day-to-day reality for college students (Archuleta, Dale and Spann 2013). Students in our sample may have been particularly unfamiliar with credit card behaviors. Finally, the strong correlations of response differences for saving intentions with higher scores on the SD scale, indicates that the indirect questioning method may be strongest when behaviors that the sample are most familiar with are used in the scenarios. Given the fact that just over half (53%) of the sample had credit cards and a small percentage (16%) had loan debt, it is not surprising that we found higher correlations with the saving and spending variables.

Limitations and Future Directions

To our knowledge this study was the first to consider the integration of the indirect questioning method within a measure of financial behavior. In addition, the inclusion of the SD scale, allowing for comparison to a validated psychological measure of SDR for investigating financial behavior has not been noted in the literature.

Despite the gap this study fills in the literature, there are limitations within this study. To begin with we did not have access to raw financial data, which would have allowed us to see if respondents were truthful in their responses to questions about their own behavior and to what degree those differences related to scores on the BIDR-SD scale. In addition, biases in responding may have been further enhanced by the contextual and ordering effects of the questions. Items preceding the SD scale were about the topic of personal finance. Therefore, the respondents might have ‘caught-on’ when answering the SD subscale and tried to answer more honestly.

Future research should involve a pilot test prior to conducting the survey where the similarities and differences between direct and indirect reports of behaviors can be identified. More importantly the DR and IR could be tested for correlations among the items in order to better inform the study. A limitation preventing the ability to discover differences between IR and DR was the absence of a pilot test in this study. For example, in this study the loan questions were not worded in a manner that allowed for correlation between responses to take place, despite the reverse scoring and averaging efforts in the analyses. The questions were clearly not tapping into the correct underlying construct for both direct and indirect questions or were not worded in the correct manner.

Additionally, having access to raw financial data (e.g., participants bank account and credit card statements) would strengthen future studies. Although hard to obtain, this information would have allowed us to see if respondents were truthful in their responses to questions about their own behavior, and to what degree those differences related to scores on the SD scale. To our knowledge, there are no accepted measures of financial behavior that have been psychometrically validated at this time. The inclusion of a

financial behavior measure that is psychometrically validated would strengthen future research on this topic (Dew and Xiao 2010).

A study carried out by Alexander and Becker (1978), in which they employed the use of scenarios or “vignettes” as hypothetical survey interview techniques, found support for the use of surveys as a substantiated means for producing more valid and reliable measures of respondent opinions and attitudes. The researchers found that the fractional replication of an experimental design enables a wide range of situation characteristics to be included and varied in terms of the presentations made to different respondents. Furthermore, they explained that this type of design minimizes the number of scenario versions required for the instrument in the research (Alexander and Becker 1978). This means that having different types of participants and various scenarios could demonstrate the potential use of indirect questions as being less prone to SDR. In future investigations, research using the discrepancy variables between IR and DR could be tested on the same sample at different times using the standard psychological measure of social desirability responding (BIDR-SD subscale).

Fisher’s (1993) research showed that responses to IQ in which the projective target is a typical other appear to reflect the self-perceptions of the respondent. In addition, Fisher found that subjects made systematically different predictions for themselves and typical others for the socially sensitive variables. The opposite was found when subjects were asked about socially neutral variables, or variables that are not prone to SDR. He found that subjects attributed the undesirable trait to a typical other, but denied that behavior for themselves.

One limitation was the lack of generalizability. While some questions about loan use and credit card behavior were administered to all participants, there were others (4 credit card questions and 3 loan questions) that were omitted when participants answered that they did not have a credit card or loan. This was done in order to reduce the likelihood of attrition, given that the survey was lengthy. This limited the results because such a small percentage of our sample reported having non-student loans (16%) and credit cards (53%). The small number of reported loans and credit card use in our sample may have been related to the higher socioeconomic status of the sample majority. Future research would benefit from gathering data from students that are from lower to moderate- income families, as well as samples of individuals that are not in the higher education system.

Conclusion

Survey research monitors changes in social climate and changes in the economic state of families in the United States in order to inform policy initiatives, monitor trends, and determine best ways to meet the needs of the general population (Weber 1992). Self-report surveys are clearly an indispensable tool for collecting data that is used to impact our daily lives. Given the fact that the accuracy of that data allows decision-makers to determine where funding and education initiatives will be used, the methodological sophistication of surveys is an important topic for further exploration among social scientists, governmental agencies, and businesses (Dojak 2006).

With the availability of online data collection, surveys have become more prevalent by easily providing a variety of information that informs decision-makers in government and business (Miller 2012). However, the information gathered from surveys

is not necessarily accurate and free from bias, meaning that survey design is a critical component of gaining accurate information. This study used a method of questioning in an effort to determine how the use of both indirect (scenario-based) and direct questions may differ among respondents. The further exploration of how these differences in responses related to the standardized measure of the self-deception component of SDR, allowed us to gain a better understanding of how the use of alternative questioning methods might mitigate, or at least highlight, the existence of social desirability bias in measures of financial behavior.

The self-deceptive component of desirable responding may be more important for investigating financial behavior via self-report surveys that are conducted online since they participants feel their responses are anonymous and confidential. In addition, the consumers holding the most debt, especially in terms of credit card and loans, are the younger population, specifically college students (Dew and Xiao 2010). This is clearly a topic that needs to be explored further, and has implications relating to the fact that students need to understand interest rates, and how interest works on certain loans. With the burden of student loan debt and increases in interest rates, this can result in the inability to establish good credit, become a homeowner, make investments, and plan for retirement. It is evident based on what we know about consumer finance, that there are far-reaching effects of positive and negative financial management practices, and that this is an important area to investigate further.

For years, political, educational, and economic industries have cited the fact that income is a highly sensitive topic, due to the high non-response rates. Questions about personal finance and financial assets are considered to be sensitive, with very high rates

(20-40%) of nonresponse and missing data (Moore et. al 1999). The reason suggested for this is because the respondent will think, “it is no one’s business”, where in other contexts they may discuss it openly (Stone 2000). Regardless of what their income is, people tend to deliberately avoid the question. The topic of income has higher non-response rates than that of abortion and illegal activities. Surprisingly, the role of the SDR phenomenon has been ignored in consumer finance research.

By considering SDR, we may be able to provide a more comprehensive understanding of systematic bias in self-report surveys. These findings relate to consumer financial practice and this study can inform future survey research on sensitive topics related to consumer finance. Our approach was exploratory and the findings show that there may be potential for this type of indirect questioning method to highlight the existence of response bias. The results do not prove that this type of questioning is an effective way of gaining more accurate information about financial behavior, but rather show that it is an option that can be explored further since we know that SDR influences responses about financial behavior.

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CHAPTER II

EXTENDED LITERATURE REVIEW

The purpose of the following literature review is to highlight concepts relevant to the financial behavior of college students and issues with measurement. Measuring financial behavior using self-report surveys may prove to be influenced by problematic response errors that result from socially desirable responding.

Financial Behavior

In the U.S., a consumer society, individuals and families engage in various financial behaviors every day, and these financial decisions have an impact on their overall well-being. For example, the more consumer credit households have, the more likely they are to default on their loans and the less likely they are to have retirement savings, such as an IRA (Bernstein, 2004; Dew & Xiao, 2010). Consumer debt levels are positively correlated with reported anxiety, and assets positively predict emotional well-being (Dew & Xiao, 2010). In a review of existing measures of financial behaviors, Dew and Xiao (2010) selected five domains that represented important areas of financial management – consumption, cash flow, credit, savings and investment, and insurance.

According to Sages, Britt, and Cumbie (2013), positive and negative financial patterns form over the time when individuals transition to adulthood, and these habits are likely to continue throughout the adult years (Sages, Britt, & Cumbie, 2013). According to Xiao et al. (2005), there has been a swift increase in the consumer credit counseling

industry. The growth of these services indicates an increasing desire among consumers to learn more successful credit management practices. In order to help meet the needs of these consumers, more knowledge about their behaviors and attitudes is needed (Xiao et al., 2009).

Some suggested predictors of financial satisfaction and well-being are demographic factors such as education, income, and age. Other predictors include financial stressors, knowledge about finances, and financial attitudes and behaviors (Robb & Woodyard, 2011). Xiao et al. (2009) examined financial behavior and the potential effects financial behaviors have on the overall well-being of college students. There is evidence to support the argument that domain-specific behavior (in this case, financial behavior) is associated with domain-specific well-being (i.e., financial well-being). Findings among financial researchers have demonstrated that positive cash management (i.e., saving and spending behaviors, and credit and loan use) is related to individual well-being (Gutter & Copur, 2011).

Sound financial management practices have many consequences that are far reaching. For the college student population, positive financial behaviors are associated with physical and emotional health, academic success, and overall life satisfaction (Xiao et al., 2008). Problematic financial behavior of college students may have long-term effects on their future financial well-being due to credit and debt, which affects the likelihood of saving regularly (Hayhoe, Leach, Turner, Bruin, & Lawrence, 2000; Henry, Weber, & Yarbrough, 2001). In addition, the rising cost of higher education can have an impact on their families because they may need additional financial support from parents,

which adds stress for families that may be struggling to meet their own needs (Hancock, Jorgensen, & Swanson, 2013).

Financial Behavior of College Students

The college years are a time when students face many new challenges associated with the transition to adulthood, including the challenge of making financial decisions (Sages et al., 2013). In particular, college students are at greater risk for serious financial problems, with many college students being vulnerable to financial crisis (Henry et al., 2001). College students also encounter a series of complex financial decisions when they determine how to fund their college education (Goetz et al., 2011). In addition, the irresponsible use of credit cards (e.g., maxing out credit cards) and negative saving and spending behaviors (e.g. overdrawing checking accounts) contribute to the fact that research has shown college students as a financially at-risk population. Many factors influence college students' debt levels such as their level of financial independence, with parental support and financial assistance from parents varying among individuals (Javine, 2013). Other factors include a lack of financial education, insufficient knowledge about financial management, and attitudes toward credit card and loan use (Gutter et al., 2010; Gutter & Copur, 2011).

Large student loan and credit card debt are both areas that have gained increasing attention among researchers and policymakers. The increasing awareness and focus on the importance for the citizens of the United States, especially young people, to gain skills needed to be successful consumers, investors and savers has prompted recent initiatives to integrate more personal finance education in schools throughout the country (Gutter et al., 2010). The Council for Economic Education (CEE) is spearheading the

movement to ensure that personal finance education is a priority in schools. They emphasize the fact that this knowledge is essential for the ability of young Americans to create opportunities for their communities as well as to become well-informed participants in a global economy (CCE, 2012).

Financial Knowledge

Researchers have found that financial knowledge scores of college students in the U.S. are remarkably low, as measured by scores on tests of financial knowledge. Some researchers have found evidence that financial knowledge and positive financial behaviors are positively related (Hilgert, Hogarth, & Beverly, 2003; Lusardi & Mitchell, 2006). Norvilitis et al. (2006) discovered that having increased credit card debt was predicted by a lack of financial knowledge. These findings suggest that higher levels of financial knowledge translate to positive behavioral outcomes, and are associated with avoiding financial problems in the future. In contrast, Robb and Sharpe (2009) have ascertained that greater financial knowledge was associated with greater amounts of credit card debt.

A recent study conducted by Danes and Brewton (2014) investigated financial education and behavior of high school students. They concluded that "...discussion among curriculum revision and development should acknowledge that knowledge and behavior are perhaps different constructs and that socially constructed financial roles, fostered within families and classrooms, are prevalent within US society" (p. 92). Additionally, Norvilitis et al. (2006) stated that education alone is not an effective strategy for lowering credit card debt among college students (Norvilitis et al., 2006). In

support, Robb and Woodyard's (2011) study found evidence that level of financial knowledge did not have an impact on behavior.

The literature reveals that the current research is inconclusive, demonstrated by the mixed findings regarding the relationship between financial knowledge and positive financial behavior. Despite the conflicting findings, Hancock et al. (2013) reported that many researchers agree that financial knowledge alone is insufficient in predicting responsible credit use, and saving and spending behaviors. One of the greatest challenges facing researchers is the lack of actual financial data, specifically data that allows for a truly accurate investigation of causality between financial knowledge and actual behavior (Robb & Woodyard, 2011). The findings from Robb and Woodyard's (2011) study demonstrate the need to conduct more research to identify more effective ways of measuring financial knowledge and behavioral outcomes. Having access to participants' bank statements, checking and savings accounts, and credit card statements would allow for a more accurate investigation (Robb & Woodyard, 2011).

Survey Research

Surveys are used to collect important data on a variety of topics in the social sciences (Chen, 2011). In particular, survey research is a common method used by universities, political organizations, marketing firms, and governmental agencies to collect information and monitor trends (Lemmon & Portniaguina, 2006; Stone, 2000). Surveys and self-report questionnaires that focus on financial behaviors are often concerned with the end goal of developing effective methods to prevent and minimize unwise financial decisions, and to use the data for informing education initiatives that best prepare consumers to develop prudent financial management skills. Data collected

via surveys are eventually used to develop public policy that aims to improve individual and family well-being, public health, and community resilience (Stone, 2000). Therefore it is clear that surveys are commonly used for researching issues to inform practice and policy that impacts the community-at-large (Stone, 2000).

Self-Report Surveys

The self-report survey has become an indispensable tool for institutional researchers (Chen, 2011). Other organizations and agencies use surveys to study students' political orientation, consumer preferences, customer satisfaction, and many more constructs. Unlike experimental research or observation studies, surveys are a more accessible and feasible means of obtaining information on a variety of characteristics from large samples of participants (Chen, 2011). Due to the fact that survey questionnaire studies tend to be inexpensive, timely, and easy to administer when compared to laboratory experiments and studies using raw data, most social research employs self-report measures (Stone, 2000). According to Tourangeau et al. (2000), survey research relies on the practice of finding out about a variety of topics that can only be obtained by asking people questions, or by asking respondents to self-report via survey questionnaires.

Self-report measures are typically quite straightforward, with respondents reporting what they are doing, what they are feeling, and what they recall about past behavior (Stone, 2000). Self-report questions that ask respondents about personal activities or situations are called behavioral or factual questions. On the other hand, attitudinal survey questions aim to capture the opinions and views of the respondent on a particular issue (Osterlind, 2006).

Response Bias

Since the late 1940's social scientists and survey specialists have noted systematic biases in self-reports of certain behaviors and attributes (Stone, 2000). When using survey data, researchers are faced with the challenge of dealing with response biases (Edwards, 1957; Paulhus & Reid 1991). Response biases are reflective of a systematic tendency to answer survey items on some basis that interferes with the accuracy of self-reports (Paulhus, 1994).

In light of the heavy dependence on self-report surveys as instruments that measure phenomena in the social and behavioral sciences, these systematic errors carry serious consequences when survey estimates are biased. Systematic biases can threaten the validity of conclusions drawn from scientific research, as well as lead to conclusions based on results that are not accurate representations of the construct of interest (Leak, 2004). One type of response bias is demonstrated by the phenomenon of a response set. This refers to the inclination of respondents to provide inaccurate responses through the tendency to display a pattern of response in self-reports. A response set is independent of the item itself, and on a self-report measure or psychological rating scale it refers to a common behavior participants engage in while responding to survey items. They exhibit a particular pattern of response (Vispoel & Tao, 2013), and one might be more inclined to chose "yes" over "no" when unsure of which response represents their actual belief or opinion.

Sensitive Survey Questions

The sources of bias in self-reports have been recognized by survey researchers to appear in sensitive domains, such as the reporting of events, behaviors, and

characteristics that are prone to disapproval (Paulhus, 1991). For example, some of these sensitive questions can involve asking the participant to report their involvement in illegal activities or admit privately held shameful beliefs. More specifically, the self-report items most likely to be viewed as sensitive are those that might cause the respondent concern that their response will be subject to the disapproval of others (Steenkamp et al., 2010).

Currently the understanding of errors in reports of sensitive topics suggests certain origins of reporting errors. According to Sakshaug, Yan, and Tourangeau (2010), cognitive processing, the social organization of the behavior being reported, and task requirements all affect the reports of their corresponding behaviors (Sakshaug et al., 2010). The pattern of over-reporting desirable behaviors and underreporting undesirable behaviors, often found when there is a criterion available to determine the direction of reporting error, suggests that there are sources of error that are specific to sensitive topics (Osterlind, 2006; Sakshaug, Yan, & Tourangeau, 2010).

When collecting information on sensitive topics, the integration of data collection procedures and survey design is an essential part of collecting adequate data - data that is truly representative of the sensitive topic (Fowler, 1995). Given the fact that respondents are often unwilling to report accurately on sensitive and private topics, the resulting data is systematically biased. According to Tourangeau et al. (2000), there are good reasons to believe that deliberate misreporting is a serious problem with regard to sensitive questions.

According to Fowler (1995), response distortion may be a result of the truly accurate answer (or self-presentation) conflicting with the way that the respondent wants

to think about oneself. When responding to questions about voting behavior, response distortion might actually be occurring because respondents are not only managing an image others might have of them, but also managing their own self-image (Holtgraves, 2004). When reporting personal financial behaviors and opinions (i.e., loan use, credit management, spending and saving), response distortion might come about because the truly accurate answer does not match how the respondent wants to think about oneself (Fowler, 1995).

Certain attributes, personal characteristics, and actions committed by people are valued by the larger society, and research has shown that these more desirable responses tend to be emphasized or exaggerated in self-reports (Fowler, 1995). In contrast, the behaviors and ideas that are perceived by the general public as being unfavorable, thus socially disapproved, are downplayed or underreported (Stone, 2000) For example, Locander, Sudman, and Bradburn (1976) found that respondents generally underreported bankruptcy and being charged with driving under the influence (as cited in Fowler, 1995 p. 28).

Studies have used comparisons between self-reported behaviors from surveys and direct observations, or raw-data records, to point out the disparities between reported and actual behavior (Locander, Sudman, & Bradburn, 1976; Tourangeau et al., 2000). For instance, reported drug use that is followed up with an administered drug test often shows discrepancies between self-reported drug use and results provided by a drug screening (Locander et al., 1976). Other areas sensitive to response distortion are questions about income and salary, with income standing out among survey researchers as being one of the most prone to non-response, resulting in missing data (Tourangeau et al., 2000). For

example, an item in the Current Population Survey (CPS) asked the respondents about their monthly income. More than one fourth of the wage and salary data was missing or incomplete (Stone, 2000). This is about ten times the rate of missing data for questions about illicit drug use, sexually transmitted diseases, and sexual behavior, all of which are items considered to be sensitive topics on the same CPS survey (Tourangeau et al., 2000).

Socially Desirable Responding (SDR)

The primary focus on the topic of systematic response bias in self-reports centers on the concept of social desirability – that is, the inclination of the participants to present themselves in a way that makes them appear more favorable in the eyes of the interviewer, the society in which they live, as well as within the context of the broader cultural or religious values (Fowler, 1995; Tourangeau et al., 2000). When respondents misreport on sensitive topics by editing their answers before reporting, this results in an increased probability of reporting errors. These reporting errors will bias the estimates from surveys, such as when differences in strength or direction of responses occur between two groups of respondents (Stoche & Hunkler, 2007; Tourangeau & Yan, 2007). Specifically, respondents might not respond truthfully, but rather provide answers that make them look good to others or to themselves (Steenkamp et. al., 2010).

This type of response bias is a phenomenon known as socially desirable responding (SDR) (Paulhus, 1991). SDR is one of the most heavily researched response biases in the survey industry and is also considered one of the most serious forms of response bias (Steenkamp et. al., 2010). SDR represents an unconscious or willful tendency to respond to items that make survey participants appear more favorable rather than answering truthfully, in a potentially less favorable manner (Vispoel & Tao, 2013).

The literature documents the presence of SDR bias for self-report measures of personality, attitudes, behaviors, and psychopathology (Holtgraves, 2004). Socially desirable responding (SDR) to self-report items is based on norms about the desirability of cultural values, traits, attitudes, interests, attitudes, and behaviors. Inventories containing items that are sensitive to social desirability bias contain items that have one answer that is recognized by the respondent as more favorable than the others. This favorable option might motivate the respondent to pick the answer that creates a more desirable impression and avoid the options that create a less desirable impression (Lautenschlager & Flaherty, 1990).

The propensity of some individuals to engage in SDR poses the threat of potentially inaccurate data collected from self-report surveys of behavior and attitudes. When respondents consistently engage in SDR across time and measures, they are considered to have a *response style* (Paulhus & Reid, 1991). One approach to understanding SDR bias is as an item characteristic, often termed “trait desirability” (Gove & Geerken, 1977). Trait desirability in survey research does not seek to associate the bias with a personality trait, but views it as an inherent “trait” in various behaviors considered by the respondents to be more or less socially desirable (Fernandes & Randall, 1992). In this case, SDR bias is understood in relation to the desirability of items (questions). Specifically, people tend to underreport engaging in socially undesirable behaviors such as substance abuse and declaring bankruptcy (Paulhus, 1991), but over-report engaging in more desirable behaviors such as charitable donations and voting (Holtgraves, 2004).

One of the most serious implications of SDR bias for survey research is that this bias can create misleading conclusions and suppress real associations between variables (Stober et al., 2002; Stocke & Hunkler, 2007). Social norms may differ between groups of respondents and result in misleading conclusions about associations between variables. For example, there is evidence that men tend to over report and women tend to under report their number of sexual partners, therefore wrongly implying a correlation between promiscuity and gender (Stocke & Hunkler, 2007). Socially desirable responding, actively researched in recent years, has led to important new insights that raise uncertainty about practices that are still considered standard in consumer research (Steenkamp et al., 2010).

Measurement of SDR Bias

Researchers in the field of survey methodology have developed a variety of measures to assess SDR. Several validated measures of the SDR construct have been developed and employed in both basic and applied research (Stober et al. 2002). Two of the most widely used are the Marlowe-Crowne Social Desirability Scale (MCSDS; Crowne & Marlowe, 1960) and the Balanced Inventory of Desirable Responding (BIDR; Paulhus 1991, 1999). These have been used as control variables in studies, as well as used independently to determine how prone a population is to SDR. In addition, the BIDR has been assessed for generalizability as well as construct and external validity using comparisons and testing their correlations with other questionnaires (Gignac, 2013; Holtgraves, 2004; Vispoel & Tao, 2013).

Paulhus Model of SDR

Called one of the most pervasive response biases in survey data (Steenkamp, et al., 2010), SDR continues to be a prevalently measured construct in self-report survey research (Gignac, 2013). Previous research regarded social desirability as a single construct, but Paulhus (1984, 1991) contended that social desirability should be broken down into two main components: self-deception and impression management. The partitioning of socially desirable responding focuses on distinguishing self-deception (SD), where the respondent actually believes in their positive self-reported behavior, from impression management (IM), where the respondent consciously engages in deceptive responding (Paulhus, 1984). The separate consideration of impression management (IM) and self-deception (SD) is seemingly consistent with the socio-analytic theory of personality by Hogan and colleagues. Hogan et al. (1983) argued that self-report surveys yield responses led by underlying self-images that are unconscious and not situation-dependent. Therefore, the self-descriptions and definitions applied to oneself may actually be the act of incorporating a self-deceptive bias in self-regard (Gignac, 2013).

Self-Deception

The second factor in Paulhus' (2003) model, termed self-deception (SD), refers to an honest but overly positive self-presentation that results from the respondents' desire to preserve a positive self-image (Holtgraves, 2004). Self-deception, as its name implies, is a self-perceived deception, and less likely to be motivated by the impressions of others. This factor (SD) in the model is positively correlated with narcissism (Paulhus, 1994) and has been described as an unconscious and stable trait even in the presence of

manipulation by the experimenter (Paulhus, 1994). According to Paulhus' model, self-deception characteristics have a tendency to be internal to the respondent, making them difficult to be confirmed or contested by observers (Gignac, 2013) because they reflect personally held self-descriptions.

Self-deception can be used for the purposes of avoiding pain or attaining pleasure, therefore as a means of ego enhancement or ego defense (Paulhus & Reid, 1991). This suggests that self-deception can occur in the form of both denial and enhancement. Therefore, self-deceptive denial (SDD) and self-deceptive enhancement (SDE) are actually defense mechanisms wherein individuals reject negative information about the self and affirm positively held beliefs (Gignac, 2013). Positive misconceptions assist in dealing with negative and stressful events and the ego enhancement may provide an alternative tactic for dealing directly with threatening situations (Paulhus & Reid, 1991).

Responding derived from the self-deception factor is an unconscious positive bias that aims to protect one's positive self-esteem (Paulhus, 1984). Therefore, research using self-report surveys conducted under anonymous conditions would be influenced by the self-deception (SD) factor of SDR because the respondents' motivation to appear more desirable is a result of their unconscious attempt to maintain an overly positive self-image rather than an impression to an audience.

Impression Management

Paulhus (1994) proposed that impression management (IM) refers to respondents' tendency to bias their answers to create a socially positive image and gain approval from others (Paulhus, 1994). Impression management refers to the extent to which respondents affirm very unlikely socially desirable behaviors such as "I always obey laws, even if I'm

unlikely to get caught” and “I have never dropped litter on the street” (Gignac, 2013). The behaviors falling under the IM factor have the potential to be confirmed or disconfirmed by others because of their directly observable nature, such as littering or attending religious services (Gignac, 2013).

In industrial-organizational psychology applicants are screened by potential employers to determine if they are the best fit for a position. More specifically, psychological measures are commonly used to determine characteristics of the applicant, relying on self-reported behavior (Dodaj, 2012). In these cases, the respondents would be most likely to give biased responses motivated by the impression management (IM) factor because they are trying to make a favorable impression to others (Paulhus, 1991).

The Balanced Inventory of Desirable Responding (BIDR)

The BIDR-version 6 (Paulhus, 1991) is one of the most well respected and widely used measures of social desirability and has been noted as psychometrically superior to the earlier versions (Dodaj, 2012; Gignac, 2013; Li & Bagger, 2007). The BIDR has been used extensively in both psychological and organizational research, with applications of the BIDR to existing personality and psychopathology measures also prevalent in the literature (Li & Bagger, 2007). The popularity of the BIDR confirms the latest reconceptualization of the social desirability construct (Li & Bagger, 2007). The BIDR provides separate and distinct measurement of the two components of SDR, giving it an advantage over other measures of the desirable responding because of its ability to assess both the previously discussed self-deception (SD) and impression management (IM) factors.

Items on the BIDR. Paulhus (1991) developed the (BIDR), a 40-item inventory consisting of two subscales that each measure one type of socially desirable responding. The two 20-item subscales on the BIDR that measure SD and IM are stated as propositions, presented as affirmations and denial items (Stober, et al., 2002). The items on the IM subscale represent the extent to which respondents deny engaging in minor indiscretions, such as “I have taken sick-leave from work or school even though I wasn't really sick” (Gignac, 2013). Items on the SDE subscale represent the extent to which respondents engage in self-deceptive enhancement to protect oneself from negative feelings, such as “I never regret my decisions.” The use of the separate IM and SD subscales allows researchers to discern the presence and extent of particular response tendencies in terms of which tendency is influential in different contexts.

Psychometric properties of BIDR. Despite the variability of reliability estimates across studies, the typical reliability coefficients of the Balanced Inventory of Desirable Responding have produced scores that were adequately reliable (Li & Bagger, 2007). The construct validity of the BIDR scores for the uses it is intended has been substantiated in numerous ways that include the following: confirmatory factor analyses that verify the BIDR's theoretical two-factor model, low to moderate correlations between the SD and IM scores themselves, greater discrepancies between self-rated and actual performance for those who score higher on the SD than low scorers, and weak relations of the BIDR scores with indexes of extremity bias (Paulhus, 1983, 1991). In addition, expected relations of the BIDR with other measures such as optimism and self-esteem, which would presumably correlate to different extents with SD and IM, follow logical patterns (Vispoel & Tao, 2013). The success of the BIDR is also demonstrated in

the ability of the self-deception scores to accurately predict overconfidence and overclaiming (Paulhus, 1994).

Rating of items and scoring of BIDR. Users of the BIDR are instructed to indicate their agreement on a seven-point scale with one representing “not at all true” and seven denoting “very true”. For example, items on the SD subscale include: “When my emotions are aroused, it biases my thinking,” and “My first impressions of people usually turn out to be right.” The scale is counterbalanced, with 10 positively keyed items and 10 negatively keyed items (Li & Bagger, 2007). In the context of measuring SDR, the BIDR is unlike other measures that tend to use a dichotomous rating format, such as true-false options (Gignac, 2013).

Scoring the BIDR. In scoring the BIDR, full item rating scoring or the dichotomous scoring are both supported by Paulhus (Paulhus, 1994) as appropriate scoring methods. The dichotomous scoring of the BIDR is unique, and the method is intended to capture the most extreme responding, thus indicative of SDR (Paulhus, 1994). The scoring of responses in the dichotomous method incorporates a scoring procedure that intends to capture only the most extreme responding. Ratings of 6 or 7 are coded as 1 and all other responses are coded as 0. Theoretically, the rationale for this scoring method is intended to represent the idea that only extreme responding indicates the presence of SDR (Paulhus, 1991). For instance, a respondent who answers *somewhat* to the item “I don't always know the reasons why I do the things I do,” is probably not engaging in self-deception (SD), and it is more probable that the individual might find that they only somewhat know why they act in certain ways, and therefore would not be engaging in SD.

In spite of the congruence in terms of the theoretical basis for using the dichotomous scoring of the BIDR, some researchers prefer to use the full rating scale because they assert that it is more psychometrically appropriate, claiming higher levels of internal consistency reliability and convergent validity (Gignac, 2013; Li & Bagger, 2007). Findings by Stober, Dette, and Musch (2002) are consistent with Paulhus' (1994) scoring recommendations and demonstrate that the scores for both BIDR subscales from continuous scoring yielded higher Chronbach's alphas than those from dichotomous scoring. In sum, the findings suggest that BIDR scores derived from continuous scoring differed from dichotomous scoring with respect to both convergent validity and reliability. In addition, the continuous scores showed higher correlations with other measures than the dichotomous scores (Li & Bagger, 2007; Stober et al., 2002).

Measuring Financial Behavior

The measurement of financial behavior is essential to understanding the economic state of American citizens and the national economy. Therefore, policymakers and economists focus on various components of financial behavior to gain an understanding of the overall financial well-being of both families and the economy (Lusardi, Mitchell, Curto, 2010). Aggregate metrics are used to make decisions about policy initiatives after collecting data on the financial state of consumers. Some of these elements include household savings and spending, loan use, and the credit history of consumers (Lusardi et al., 2010). In a review of existing measures of financial behaviors, Dew and Xiao (2010) found that very few validated financial behavior scales exist. The measures that do exist either fail to comprehensively measure financial behavior or fail to be psychometrically validated (Xiao et al., 2008).

In a study examining the relationship of credit card behavior with financial knowledge, conducted by Hancock et al. (2013), they noted that the main limitation in their study centered on *self-reporting error*. They found evidence that student perceptions could have biased the obtained information because the students reported fewer numbers of credit cards held, as well as less debt, and discrepancies were identified when compared to the raw financial data. They further explained that a common concern about convenience samples is that they may attract those with better financial practices and discourage those who have more financial problems due to perceived self-embarrassment (Hancock et al., 2013).

Participants may self-report to make themselves appear to have better control of their finances than they actually do. Hancock et al. (2013) study's inclusion of this as a main limitation, which focused on actual credit card behavior and the relationship with knowledge, directly relates to the concept of socially desirable responding (SDR) bias. This demonstrates that there is evidence for potential errors resulting from response biases in surveys examining college students and financial behaviors.

Controlling for Socially Desirable Responding

The bias resulting from the presence of SDR in self-reports has been an apparent concern for the researchers and practitioners using survey data. As a result, investigators have explored ways to assess social desirability and control for distortions in self-reports (Stober et al., 2002). Understanding SDR and its measurement is necessary for developing ways to prevent this response bias in consumer research. Steenkamp, DeJong, and Baumgartner (2010) suggest that the effects of SDR can become very apparent under certain experimental conditions, such as when the respondents are instructed to answer

from the perspective of “others” or themselves, and multi-method designs (i.e., using multiple studies with the same sample) (Fisher, 1993; Tourangeau et al., 2000).

Alternative Questioning Methods for Reducing SDR

Income, illicit drug use, abortion, and bankruptcy are noted in the literature as being highly sensitive issues (Fowler, 1995) that are prone to response effects which can threaten the validity of obtained data, as well as have very high non-response rates (Armacost et al. 1991; Chen, 2011; Fisher, 1993). In survey research, different questioning methods are typically used to ask respondents sensitive questions in an effort to mitigate the effects of response biases and non-response, or to highlight the existence of SDR (Armacost et al., 1991; Tourangeau & Smith, 1996). Some of these questioning methods include the following techniques: the randomized response method, the direct questioning method, and vignette or scenario-based questions (Tourangeau & Smith, 1996; Tourangeau & Yan, 2007).

Randomized response technique. A different approach, mainly investigated in the areas of statistics and social sciences, is called the randomized-response technique (RRT; Warner, 1965). According to Moshagen et al. (2011), the randomized-response technique requests information from participants on a probability basis rather than by directly questioning the participants. This method intends to maximize the anonymity of participants’ responses to sensitive questions, because confidentiality is increased, and the rate of detection can only be estimated at a group level using probability computations. More specifically, the RRT is a procedure that tends to elicit more honest responding to sensitive questions because respondents feel less stigmatized given that

responses can't be linked to any individual participant (Armacost et al. 1991; Moshagen et al. 2011).

Direct questioning. When relying on self-reports for obtaining information, the common method tends to be the use of surveys that ask respondents about the topic of interest directly. The practice of asking people what they are feeling, desiring, or recall from the past is referred to as self-report data, and the only method of obtaining this information is through direct questioning. This type of information gathering process is essential for not only those involved in education and research, but for the society-at-large. For example, in the health care field doctors must gain an understanding of patient needs by asking them direct questions about their symptoms and medical history – this information helps inform the proper treatment and diagnoses of illness. (Stone, 2000). Direct questioning is used in survey research as a method that informs many arenas such as politics, business, and education – usually in an effort to make changes or monitor trends.

The value of direct questioning, which is simply asking people for information (i.e., via online surveys, phone interviews, or face to face), impacts our daily life. The area of self-reports gained by direct questioning has become a field of research in itself, mainly due to the importance of obtaining accurate information from different individuals and populations on a plethora of topics. When students attend school for they are evaluated through tests, which ask direct questions about facts they have learned.

One of the major problems in survey and public opinion research is that ambiguity arises when participants are prompted to make a decision or judgment based on abstract information. This causes a cognitive bias affecting the decision-making

process because of the limited information in a survey question (Sakshaug et al., 2010). This may cause the respondent to choose an option in which there is more information, as well as call their attention to the missing information (Tourangeau et al., 2000).

Fisher's (1993) study used a series of experimental tests, and he found evidence that indirect questions produced different patterns for self- and typical-other responses, indicating that SDR may be causing biased survey results. Fisher (1993) also noted that the subjects evidently found the need to alter their responses when responding to direct questions about sensitive topics. The series of experiments carried out in this study indicated that the direct questioning method functions as a potential mitigating factor in reducing social desirability bias in self-reports. In sum, his experiments provided initial guidance as to the importance and implications of this type of questioning method to measure socially sensitive topics.

Survey researchers using the direct questioning approach have implemented various techniques to lessen the intimidation that sensitive questions apparently impose on respondents. Some of these techniques have included asking a sensitive question in a categorical format, which is done by beginning a sensitive question with a statement indicating that the sensitive behavior or attitude is typical (Armacost et. al. 1991). Another technique is hiding the sensitive question within a set of socially neutral questions that are very unlikely to make the subjects feel uncomfortable; these are usually items that are not perceived as private or personal (Tourangeau & Yan, 2007). Survey researchers have also employed a method that frames the question in an alternative context, one that asks the respondent indirectly about how others might feel or behave, versus how they personally feel or behave (Gignac, 2013).

Indirect questioning method. One questioning method employed by researchers who use self-report surveys is the use of indirect questioning (IQ). This method utilizes structured or unstructured questions as a means of reducing the effects of social desirability bias. The indirect questioning (IQ) technique uses projective questioning which asks participants to respond to questions from a third-person perspective (Fisher, 1993). For example, marketing researchers have asked subjects to state the importance of certain characteristics in determining the choices of “most people”, as opposed to directly asking subjects about their own characteristics in determining choices (Alpert, 1971; Armacost et. al. 1991). By instructing respondents to report on the nature of a typical other rather than about the self, indirect questioning potentially mitigates the distortion of privately held attitudes. In this sense, it is expected that respondents reveal their own attitudes in their responses by projecting their unconscious biases into hypothetical response situations (Fisher, 1993).

The extent to which indirect questions may provide information about the respondents is unclear because there is an absence of research that examines the validity of indirect questions. There are insufficient studies that attempt to empirically validate, but also research on the phenomenon is limited and inconclusive (Tourangeau & Yan, 2007).

Scenario-based questions. The use of “vignettes”, a type of indirect questioning (IQ) method, in survey research allows researchers to more closely reflect a real-life decision-making or judgment-making situation (Alexander & Becker, 1978; Armacost et al., 1991). These “vignettes”, or scenario-based questions, refer to a type of IQ in which respondents are presented with brief descriptions of a person in a situation that contains

precise references to the relevant factors in decision-making processes under investigation. Vignettes and scenarios such as these have been used most frequently in business research to assess ethical issues with more emphasis on behavior than attitudes or disposition (Armacost et. al., 1991).

Burstin, Doughtie and Raphaeli (1980) compared the scenario approach with direct questioning and found that the technique had more group differences than when direct questioning method was used. “There has been no comparison of individual-based and other-based questions for scenarios, and similar to direct questioning, the generally held belief is that questioning about the perceptions of others’ actions will provide higher estimates of socially undesirable behavior than questions about individual actions” (Burstin, Doughtie, & Raphaeli, 1980, p. 74). The few studies that have employed the indirect questioning method, mainly in business and market research (Alexander & Becker, 1978; Fisher, 1993; Weber, 1992), found that the mean scores and associations between variables were impacted by social desirability bias effects when using indirect questioning techniques (Fisher, 1993). This suggests that there is sufficient evidence that indirect questioning may have an influence on areas of investigation prone to social desirability bias. Thus, lending more support for the idea that indirect questioning should be further explored in areas of research that have been identified as prone to contaminated data resulting from biased responding.

Armacost et al. (1991) explored scenarios as an approach for addressing the problems associated with direct questioning when measuring sensitive attitudes and behaviors. Their comparison of scenario with the RRT and direct questioning consistently showed the strength of the scenario approach, and the researchers noted that it was the

strongest for questions that addressed individual actions (Fisher, 1993). Armacost et al. (1991) also noted that the other-based scenario approach consistently produced less socially desirable estimates for nine out of ten items in their study.

In the scenario-based questioning method, questions are drafted in a manner to address the actions of the individual respondent or their perception of others' actions. In a study conducted by Armacost et al. (1991), scenarios were explored as an approach for addressing the problems associated with direct questioning when measuring sensitive attitudes and behaviors. Their comparison of scenario with the randomized response method and direct questioning consistently showed the strength of the scenario approach, and the researchers noted that it was the strongest for questions that addressed individual-based characteristics, such as self-perceived abilities and knowledge.

Conclusion

Consumer finance literature consistently documents the strong relationship between financial stress and individual well-being. Therefore, the accurate investigation of financial behaviors, knowledge, and attitudes is critical for ensuring a healthy economy, as well as the financial stability and well-being of individuals and families across the country (Gutter & Copur, 2011). Consumer finance research focuses on the investigation of certain financial behaviors, and those included in this review of literature are most relevant to the college student population. Throughout the literature, financial behaviors and attitudes commonly cited as problematic for college students include saving and spending, credit card use, and loans.

Research on the relationship between financial knowledge and financial behaviors lacks consensus about whether financial knowledge predicts positive financial

management practices. Financial behaviors and attitudes are difficult to measure due to the lack of psychometrically validated scales (Dew & Xiao, 2010), limitations in survey design, insufficient amount of data, and biased responses (Tourangeau & Yan, 2007). There are very few studies that are able to measure objective financial behavior, using data that is truly representative of actual behaviors (Robb & Woodyard, 2011). The reliance on subjective reports of respondents' financial behavior is prone to biased survey estimates and can lead to false conclusions about financial behaviors (Chen, 2011).

The concept of social desirability bias is a phenomenon that occurs in the social sciences, and evidence supports the fact that misreporting on sensitive topics. Income and personal finance are perceived as private, which is why they are prone to very high non-response rates (Tourangeau & Yan, 2007). The BIDR-SD, Self-deception scale (Paulhus & Reid, 1991), which measures self-deceptive enhancement and denial may prove beneficial for consumer finance research by highlighting the degree to which self-reported financial behavior is influenced by response bias.

Alternative questioning techniques have been used in other areas of social sciences, such as business and ethics research, when investigating topics that are prone to SDR bias (Alexander & Becker, 1978; Armacost et al., 1991; Fisher, 1993; Weber, 1992). More importantly, the use of IQ has not been cited in the literature for measuring financial behaviors and dispositions. Due to the highly sensitive nature of personal finance, the discrepancies between what people report and their actual behavior, exploration of new survey techniques may elicit valuable information about more effective methods for the collection of accurate financial information.

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APPENDIX A
SURVEY EMAIL

Dear Illinois State University Student,

We are conducting an important survey on the financial behavior of ISU students and need your help! Knowledge related to how students spend and save their money is the first step toward a better understanding of how to shape curriculum and address issues in student finances. We're asking that you help in this endeavor by completing a short survey (approximately 10-15 minutes) about how you manage your finances.

Upon completion of the survey, you will have the option to enter **into a drawing to win one of two \$50 Target gift cards**. Entry into the drawing will require you to provide your email address. This information will NOT be linked to your survey responses in any way. Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. The study is completely anonymous and your answers will not be linked to you in any way. You must be 18 years of age or older to participate.

To access the survey, click here:

<https://survey.lilt.ilstu.edu/TakeSurvey.aspx?PageNumber=1&SurveyID=m82J3pmM&Preview=true>

If you have any questions concerning the research study, please contact me at tsharpe@ilstu.edu.

Thank you for your participation,

Tammy Harpel, Ph.D.
Associate Professor, Family & Consumer Sciences
Illinois State University

Nicole Kelly
Graduate Student, Family and Consumer Sciences
Illinois State University

APPENDIX B

LETTER OF INFORMED CONSENT

Dear Illinois State University Student:

You are being asked to take part in an online survey conducted by Associate Professor Tammy Harpel and Master's student Nicole Kelly from the Family and Consumer Sciences department at Illinois State University. Please read this form carefully before choosing to participate in this study.

Purpose: The purpose of this study is to assist researchers in understanding the financial attitudes and behaviors of ISU college students.

Procedure: If you agree to participate in this study, you will be asked to complete a short online survey (approximately 10 - 15 minutes) about your financial behavior, your attitudes about finances and your background (age, gender, education, etc.).

Risks and Benefits: There are no known risks associated with your participation in this research beyond those of everyday life. There are no benefits to you directly, but information gathered can be used for future research on the financial behavior of college students.

Compensation: For your participation in this study, at the end of the survey you have the option to provide your email address to be entered into a drawing to win one of two \$50 Target gift cards. You must complete the survey in order to enter your e-mail for the prize drawing. Your e-mail will NOT be linked to your survey responses in any way. You will be contacted via e-mail, if you are one of the winners. The survey is completely anonymous, and no names or identifying information will be collected as part of this survey. Electronic data will be encrypted and kept in a secure server; only the researchers will have access to the data. Additionally, information you provide in the course of the survey will not be traceable to you, and will be kept confidential.

Participation in this study is voluntary and you must be at least 18 years of age to participate.

You may refuse to participate or withdraw at any time without penalty. You have the right to skip or not answer any questions you prefer not to answer.

For questions about research participants' rights and/or a research related injury or adverse effects, contact the Research Ethics & Compliance Office at 309.438.2529 and/or rec@ilstu.edu.

If there is anything about the study or your participation that is unclear or that you do not understand, or if you have questions about the study, you may contact Dr. Tammy Harpel at 309.438.2680, tsharpe@ilstu.edu.

You may print a copy of this form to keep for your records or you can request a copy by contacting Dr. Tammy Harpel at 309.438.2680, tsharpe@ilstu.edu.

Statement of Consent: By clicking on the option below that acknowledges you are at least 18 years of age, providing your consent and completing the survey, you have agreed to participate in the study.

Sincerely,

Dr. Tammy Harpel and Nicole Kelly

APPENDIX C
SURVEY QUESTIONNAIRE

- 1) Are you at least 18 years of age and consent to participate in this study?*
- a) Yes
- b) No

- 2) Indicate the gender to which you identify?*
- a) Female
- b) Male

After reading the following scenario, answer the related questions.

Jenny is a full-time college student who has a part-time job, and also gets financial help from family from time to time. She has taken out some student loans to pay tuition, but her parents help her with school expenses as well.

- 3) Should Jenny get a credit card?
 - a) Yes
 - b) No

- 4) Jenny decides to get a credit card, is it okay for her to use her credit card for non-emergency expenses, such as a new outfit or concert tickets?
 - a) Yes
 - b) No

- 5) What is the maximum amount Jenny should have in credit card debt?
 - a) Jenny should not have any credit card debt.
 - b) \$1 - \$99
 - c) \$100 - \$499
 - d) \$500 - \$1,999
 - e) \$2,000 - \$4,999
 - f) \$5,000+

Jenny Matrix

Again, put yourself in Jenny's situation for each of the following.

Jenny is a full-time college student who has a part-time job, and also gets financial help from family from time to time. She has taken out some student loans to pay tuition, but her parents help her with school expenses as well.

6) Indicate how much you agree or disagree with the following statements about Jenny
(1= Strongly Disagree and 5= Strongly Agree)

- a) It is perfectly acceptable for Jenny to skip a credit card payment if she is short on funds that month
- b) Jenny should pay the balance on her credit cards every month
- c) It's really not a big deal if Jenny makes a late credit card payment
- d) Jenny is fine making the minimum payments on her credit cards
- e) Saving a little money each month is important for Jenny, even as a student
- f) Taking out an auto loan is an unwise decision for Jenny
- g) Jenny, like all college students, can't really save money while in college
- h) Jenny should use all the credit she's given
- i) It's okay for Jenny to skip a car payment one month if she needs the money for something else.

Jenny drives to work. One day, her car breaks down. She takes her car to the repair shop where she's told the costs of the repair will be substantial; almost as much as the car is worth. Jenny drives by the auto dealership and finds out she could purchase a new car (well, a used car, but new to Jenny!) because she qualifies for an auto loan.

7) Jenny needs to decide whether to repair her old vehicle or take out the auto loan to purchase a new (new to Jenny) vehicle. What should Jenny do in this situation?

- a) Repair the old car
- b) Buy the new (used) car
- c) Neither. Figure out another transportation option

8) Because Jenny works, she has a little extra money most months. What should Jenny do with the extra money? *Select all that apply.*

- a) Spend it on something fun
- b) Spend it on something she needs
- c) Pay credit card or other debt
- d) Pay it toward student loans
- e) Save it for another month when she might need it
- f) Save it for a long-term investment or large purchase (car, wedding, etc.)

After reading the scenario answer the related questions about John.

John is a full-time college student who has a part-time job, and also gets financial help from family from time to time. He has taken out some student loans to pay tuition, but his parents help him with school expenses as well.

- 9) Should John get a credit card?
- a) Yes
 - b) No
- 10) John decides to get a credit card, is it okay for him to use his credit card for non-emergency expenses, such as a new pair of shoes or concert tickets?
- a) Yes
 - b) No
- 11) What is the maximum John should have in credit card debt?
- a) John should not have any credit card debt
 - b) \$1 - \$99
 - c) \$100 - \$499
 - d) \$500 - \$1,999
 - e) \$2,000 - \$4,999
 - f) \$5,000+

John Matrix

- 12) Indicate how much you agree or disagree with the following statements about John
(1= Strongly Disagree and 5= Strongly Agree)

- a) It is perfectly acceptable for John to skip a credit card payment if he is short of funds that month
- b) John should pay the balance on his credit cards every month
- c) It's really not a big deal if John makes a late credit card payment
- d) John is fine making the minimum payments on his credit cards
- e) Saving a little money each month is important for John, even as a student
- f) Taking out an auto loan is an unwise decision for John
- g) John, like all college students, can't really save money while in college
- h) John should use all the credit he's given
- i) It's okay for John to skip a car payment one month if he needs the money for something else

- 13) Because John works, he has a little extra money most months. What should John do with the extra money?
- a) Spend it on something fun
 - b) Spend it on something he needs
 - c) Pay credit card or other debt
 - d) Pay it toward student loans
 - e) Save it for another month when he might need it
 - f) Save it for a long-term investment or large purchase (car, wedding, etc.)

John drives to work. One day, his car breaks down. John takes his car to the repair shop where he's told the costs of the repair will be substantial, almost as much as the car is worth. John drives by the auto dealership and finds out he could purchase a new car (well, a used car, but new to John!) because he qualifies for an auto loan.

14) John needs to decide whether to repair his old vehicle or take out the auto loan to purchase a new (new to John) vehicle. What should John do in this situation?

- a) Repair the old car
- b) Buy the new (used) car
- c) Neither. Figure out another transportation option.

15) What is your age?

- a) 18
- b) 19
- c) 20
- d) 21-24
- e) 25-30
- f) 30+

16) Do you have credit cards?

- a) Yes
- b) No

17) How many credit cards do you have?

- a) 1
- b) 2
- c) 3
- d) 4
- e) 5
- f) More than 5

18) Which of the following best describes the way you pay your credit card payments?

- a) I am late making at least one credit card payment every month
- b) I am late making a credit card payment several times a year
- c) I am late making a credit card payment once or twice a year
- d) I never make late payments on my credit cards

19) What is the combined total balance owed on your credit cards?

- a) I don't have a credit card balance
- b) \$1 - \$99
- c) \$100 - \$499
- d) \$500 - \$1,999
- e) \$2,000 - \$4,999
- f) \$5,000+

20) How do you usually pay your monthly credit card bills?

- a) I pay the minimum

- b) I pay between the minimum and the full amount
 - c) I pay my credit cards in full
- 21) Do you have an automobile or other kind of non-student loan?
- a) No, I don't have an auto or other kind of loan
 - b) Yes, I have an auto loan
 - c) Yes, I have another kind of loan (non-student loan)
- 22) Which of the following best describes the way you pay your loan payments?
- a) I am late making at least one loan payment every month
 - b) I am late making a loan payment several times a year
 - c) I am late making a loan payment once or twice a year
 - d) I never make late payments on my loan
- 23) How much do you estimate you owe on all debts including credit cards, loans (*do not include student loans*), and other debts?
- a) \$1 - \$4,999
 - b) \$5,000 - \$9,999
 - c) \$10,000 - \$19,999
 - d) \$20,000 - \$29,999
 - e) \$30,000 - \$39,999
 - f) \$40,000+
 - g) Don't know
- 24) If you have a little extra money some months, what do you do with the extra money?
Check all that apply
- a) Spend it on something fun
 - b) Spend it on something I need
 - c) Pay credit card or other debt
 - d) Pay it toward student loans
 - e) Save it for another month when I might need it
 - f) Save it for a long-term investment or large purchase (car, wedding, etc.).
- 25) Rate the following statements according to how often you engage in the behavior.
(1= Never and 5= Always)
- a) I worry about paying my student loans when I graduate
 - b) I plan on becoming entirely financially independent
 - c) I worry about my future financial situation
 - d) I find it difficult to save money while in college
- 26) To what extent do you agree or disagree with the following statements
(1= Strongly Disagree and 5= Strongly Agree)
- a) Saving for the future is important

- b) Acquiring some debt while in college is okay
- c) Having some debt is normal
- d) Taking loans to pay for college is a worthy investment

BIDR

27) Using this rating scale as a guide, indicate how true each of the following statements is for you.

(1= Not True and 7= Very True)

- 1) My first impressions of people usually turn out to be right.
- 2) It would be hard for me to break any of my bad habits.
- 3) I don't care to know what other people think of me.
- 4) I have not always been honest with myself.
- 5) I always know why I like things.
- 6) When my emotions are aroused, it biases my thinking.
- 7) Once I've made up my mind, other people can seldom change my opinion.
- 8) I am not a safe driver when I exceed the speed limit.
- 9) I am fully in control of my own fate.
- 10) It's hard for me to shut off a disturbing thought.
- 11) I never regret my decisions.
- 12) I sometimes lose out on things because I can't make up my mind soon enough.
- 13) The reason I vote is because my vote can make a difference.
- 14) My parents were not always fair when they punished me.
- 15) I am a completely rational person.
- 16) I rarely appreciate criticism.
- 17) I am very confident of my judgments.
- 18) I have sometimes doubted my ability as a lover.
- 19) It's all right with me if some people happen to dislike me.
- 20) I don't always know the reasons why I do the things I do.

Demographics

28) Which describes your current employment?

- a) Part-time
- b) Full-time
- c) Not currently employed

29) Do you live:

- a) Dorm (on campus)
- b) In an Apartment/House (Rent)
- c) With parents/other family home
- d) Other

30) Which best describes your parents' income last year?

- a) Under \$30,000
- b) \$40,000-\$60,000
- c) \$60,000-\$80,000
- d) \$80,000-\$100,000
- e) \$100,000-\$150,000
- f) \$150,000+

31) What is your academic standing?

- a) First-year (Freshman)
- b) Sophomore
- c) Junior/Senior
- d) Master's Student
- e) Doctoral Student

32) What is your race/ethnicity?

- a) African American
- b) Asian
- c) Caucasian/non-Hispanic
- d) Hispanic
- e) Multiracial Native American/Pacific Islander

Prize Drawing

33) If you would like to be entered into a drawing for one of two \$50 Target Gift Cards, please enter your e-mail address here. Your e-mail address will not be associated with your survey responses.