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Why Are Financial Incentive Effects Unreliable? An Extension of Self-Determination Theory

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ABSTRACT: This paper extends self-determination theory (SDT) to investigate the unreliability of financial incentives as motivators. The proposed model predicts that core financial need beliefs influence financial values, which in turn influence "hedonic" utility, i.e., happiness. Four financial need belief constructs are proposed and measured: (1) financial self-efficacy, (2) financial autonomy, (3) financial community—trust, and (4) financial community—support. In addition, our extension of SDT predicts that financial values, i.e., altruistic versus materialistic, differentially impact hedonic utility; accordingly, we measure the extent to which individuals value financial rewards for altruistic versus materialistic reasons. The results largely support the extension of SDT to the financial domain. Specifically: (1) financial values partially mediate the effects of financial need beliefs on hedonic utility, and (2) financial altruism positively, and financial materialism negatively, predicts hedonic utility. We conclude by noting the limitations of our research designs and the potential for SDT, as extended to *measured*—not assumed—financial need beliefs, financial values, and hedonic utility, to explain the unreliability of financial incentives in motivating behavior.

Keywords: self-determination theory; financial incentives; financial needs; self-efficacy; autonomy; financial altruism; financial materialism; financial values; hedonic utility.

Data Availability: Please contact the third author.

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INTRODUCTION

Why Do Financial Incentives Often Fail to Produce Desired Behavior?

Financial incentives are a central feature of accounting control systems. Hundreds of studies, many in accounting, investigate the effects of financial incentives and other organizational and accounting control variables (e.g., accountability) on task performance (e.g., Christ et al. 2008; Christ et al. 2006; Coletti et al. 2005; Drake et al. 1999; Drake et al. 2007; Sprinkle 2000). The maintained assumption of many of these studies is that financial incentives and other organizational controls increase effort and thereby produce "incentivized" behavior. For example, Bonner and Sprinkle (2002, 307) review four theories (social-cognitive, expectancy, agency, goal-setting) that are "the predominant explanations offered for the effects of monetary incentives on effort direction, duration, and intensity." Yet, research shows that in both controlled laboratory and field studies, financial incentives fail to produce desired behaviors about as often as they succeed (Bonner and Sprinkle 2002; Bonner et al. 2000; Baker et al. 1988; Camerer and Hogarth 1999; Prendergast 1999). Furthermore, research suggests that financial rewards can create negative organizational outcomes, including decreased trust and cooperation (Frey 1997; Frey and Osterloh 2002; Christ et al. 2006, 2008) and lowered self-perceptions of competence and autonomy (Drake et al. 2007; McGraw 1978). Hence, theories of incentives that fail to explain their inconsistency and dysfunctional effects are incomplete.

An adaptation of self-determination theory (SDT) (Deci and Ryan 2008; Ryan and Deci 2000) offers an alternative, potentially more complete, theoretical account of the effects of financial incentives. Although rarely applied in accounting research, SDT is among the most cited and studied theories in social psychology (Phillips 2008)[1]. Thirty years of research provide support for many of its core principles and demonstrate enhanced motivation and desirable personal and organizational outcomes in business, education, sports, medicine, and leadership (Deci and Ryan 2008).

This paper does not test, either directly or indirectly, the effects or effectiveness of financial incentives. Instead, it extends SDT by proposing constructs and measures that help explain the unreliable effects of financial incentives on behavior. Our conceptual model, which is based in SDT, assumes that core financial need beliefs influence financial values, which in turn influence hedonic utility. We use SDT principles to define and operationalize measures of core financial need beliefs and financial values. Conceptualizing and measuring core financial needs, and both altruistic and materialistic financial values, provides insight into when and why incentives often fail as components of accounting control systems. In addition, the financial need and value constructs and measures proposed herein offer an expanded arsenal of tools for investigating the unreliability of financial incentives.

We next summarize and adapt SDT to the issue of understanding the unreliability of financial incentives. Based on our extension of SDT, we predict the relations among financial need beliefs, financial values, and hedonic utility. We then report the method, results, limitations, and implications of two studies investigating these relationships.

[1] We identified three studies published in accounting journals that apply, and one that critiques, self-determination theory. Proceeding chronologically, Becker (1997) found that auditors (n = 41) who chose information had higher intrinsic motivation and bankruptcy prediction accuracy. Whitecotton and Butler (1998) found that students (n = 112) relied more on a decision aid when they chose its information content. Hunton (2005) found better task performance and lower turnover among medical coders who were given a choice of work locations. Finally, see footnote 5 for a discussion of Kunz and Pfaff's (2002) critique of intrinsic motivation and self-determination theory.

Extending SDT to Financial Incentive Effects: Financial Need Beliefs, Financial Values, and Hedonic Utility

SDT is a macro-theory of human motivation that seeks to explain human adaptation, well-being, and productivity (Deci and Ryan 2008). As adapted to explaining the effects of financial incentives, SDT (Deci and Ryan 1985) makes one core assumption and one prediction.[2] In addition, results to date suggest an important empirical observation.

Assumption: Modern humans have three core psychological needs: competence, autonomy, and relatedness.

SDT assumes that people are active agents with innate tendencies toward psychological growth and development (Deci and Ryan 2008). However, the social environment and individuals' goal choices can nurture or thwart these needs. Some environments and goal choices facilitate the fulfillment of core human psychological needs; others do not. The central focus of SDT is the dialectic between individual choice and social context, and the corresponding movement toward or away from the fulfillment of core psychological needs.

Within SDT, c*ompetence* refers to a belief that one can effectively influence meaningful outcomes. *Autonomy* concerns acting with a sense of choice, volition, and self-determination; it does not refer to independence, for people may volitionally choose to depend on others while acting autonomously. *Relatedness* refers to creating satisfying and supportive social relationships.

Prediction: Individuals' levels of happiness are partially a function of the extent to which their social environment supports the fulfillment of, and their values and motivations are congruent with, the three core psychological needs.

To illustrate this point, work environments that facilitate the development of competence and autonomy and include close, warm relationships contribute to fulfilling core psychological needs. In addition, individuals' choices may be toward or away from the fulfillment of core psychological needs. For example, individuals may choose to pursue wealth, fame, or social position; evidence indicates that these goals generally do not fulfill core psychological needs (e.g., see Kasser 2002; Kasser and Kanner 2003; Kasser et al. 2004).

Empirical Regularity: Materialistic financial values decrease happiness.

Financial materialism is a value of, or motivation for, obtaining financial wealth, economic luxury, or economically based individual power to increase one's social position or prestige (cf. Kasser and Kanner 2003; Kasser et al. 2004). To date, applications of SDT explore the effects of financial materialism on hedonic utility. An important empirical regularity observed in this research is that materialistic financial values, which do not align with the three core psychological needs posited by SDT, decrease psychological health (Kasser 2002; Kasser and Kanner 2003; Kasser et al. 2004). For example, Burroughs and Rindfleisch (2002) review the results of 18 studies that investigate the relationship between alternative measures of financial materialism and physical and psychological health. All studies provide evidence of a negative relationship between financial materialism and well-being.[3] Indeed, even critics of SDT find evidence of a negative relationship between financial materialism and well-being (e.g., see Carver and Baird 1998; Srivastava et al. 2001; Nickerson et al. 2003).

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[2] For more comprehensive expositions of self-determination theory see Deci and Ryan (1985, 2002, 2008) and Ryan and Deci (2000).

[3] One study (i.e., Rindfleisch et al. 1997) found that the relationship between materialism and well-being was moderated by family structure (intact versus disrupted).

Cross-cultural replications confirm these results among Australian, Bulgarian, English, German, Romanian, Russian, Singaporean, and South Korean participants (e.g., see Kasser et al. 2004). In addition, both cross-sectional (Ryan et al. 1999) and longitudinal (Sheldon and Kasser 1998; Sheldon et al. 2004) evidence confirms SDT's predictions of the causal direction of the effect of goal progress on happiness; progress toward the achievement of nonmaterialistic goals that fulfill core psychological needs increases happiness; progress toward the achievement of materialistic goals that do not fulfill core psychological needs does not increase happiness.[4]

In contrast to financial materialism, SDT posits, and finds evidence in support of the assertion, that goals that are self-perceived as intrinsic or closely identified with one's core self-concept increase well-being (Kasser and Ryan 1996).[5] Examples of such goals generally include self-acceptance, personal growth, relations with others, and connection to community. According to SDT, the pursuit and achievement of such goals increase hedonic utility because these activities fulfill core psychological needs.

However, existing SDT research does not explore the possibility that *financial* values may exist which contribute to the fulfillment of core psychological needs. Herein, we conceptualize and operationalize one such financial value: *financial altruism*. We define financial altruism as a value of obtaining and using financial resources to enhance one's community or interpersonal relationships (cf. Francois and Vlassopoulos 2008; De Cremer 2006).

LITERATURE REVIEW AND MODEL DEVELOPMENT

Our adaptation and application of SDT to financial incentive effects can be conceptualized as consisting of a set of independent variables based in: (1) financial need beliefs, (2) mediating variables related to financial values, and (3) outcome variables, i.e., hedonic utility (see Figure 1). We next consider each of these sets of variables.

Independent Variables: Core Financial Need Beliefs

Financial Competence

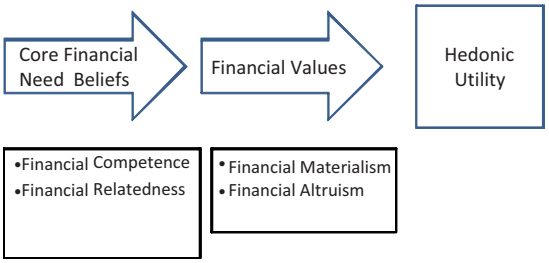
As applied to core financial needs, we speculate that financial competence and autonomy are related constructs. Accordingly, we created and operationalized two constructs related to financial competence: financial self-efficacy and financial autonomy. These constructs measure the extent to which individuals believe that they can competently manage their financial needs and achieve financial autonomy.

Financial competence: financial self-efficacy. Financial self-efficacy is the belief that one is capable of successfully managing the financial events in one's life, as an extension of the core psychological need of competence. SDT argues that self-efficacy is critical to task performance

[4] An alternative theory, which is inconsistent with self-determination theory, is that the nature or fundamental structure of one's goals differs depending upon whether one is poor or wealthy. Existing evidence does not support this alternative theory. For example, an international team of researchers (Grouzet et al. 2005) compared the structure of goals among 1,854 undergraduates from 15 cultures. Results indicated consistency in the basic structure of participants' goals across cultures, although there were "small differences" (p. 808) between wealthier and poorer countries in the relations among goals.

[5] Kunz and Pfaff (2002) argue that the construct of intrinsic motivation is ill-specified and unhelpful to agency research. However, 30 years of empirical research (e.g., Csikszentmihalyi and Seligman 2000; Deci and Ryan 2008, 2002, 1985; Seligman 2002) demonstrate the conceptual, operational, and pragmatic success of multiple programs of research investigating intrinsic motivation. Indeed, even Kunz and Pfaff (2002, 292) acknowledge that as a result of self-determination theory research (specifically, its precursor cognitive evaluation theory), "we [have] learned about the possibly deleterious consequences of autonomy restrictions and negative feedback on human motivation." In addition, recent economics research suggests increasing attention to the role of intrinsic motivation in economic theory (e.g., Frank 1988, 1999; Simon 1993).

FIGURE 1
Extension of SDT and Theoretical Framework



and happiness.[6] While previous research does not specifically investigate financial self-efficacy, it explores similar constructs. For example, Mitchell and Mickel (1999) investigate individual differences in financial values. A reinterpretation of their results suggests that a construct similar to financial self-efficacy (i.e., "skill at handling money") is uncorrelated with financial materialism in samples of both students and entrepreneurs.[7]

Tang and colleagues use the Money Ethics Scale (MES) to investigate financial and work attitudes among professionals and students in Asia, Europe, and the U.S. Depending on the version implemented, the MES includes a reliable two- or three-item measure called "budgeting" that is similar to the construct of financial self-efficacy. Results with the MES that were obtained in two or more studies suggest that the "budgeting" construct positively correlates with personality characteristics, demographic and personal attitudes, self-perceptions, work attitudes, and life satisfaction (Lim 2003; Lim et al. 2003; Luna-Arocas and Tang 2004; Tang 1992, 1993, 1995; Tang and Chiu 2003; Tang and Gilbert 1995; Tang and Kim 1999; Tang and Smith-Brandon 2001; Tang et al. 2002; Tang, Furnham, and Davis 2000, 2003; Tang, Kim, and Tang 2000; Tang et al. 2004).

Financial competence: financial autonomy. Although unexplored in previous research, we posit financial autonomy as the belief that one can make financial decisions that are volitional choices that reflect one's own interests and beliefs. For example, financial autonomy beliefs would likely facilitate the transition from adolescent financial dependence to adult financial volition. Alternatively, consider a spouse whose husband has a job while she does not; the spouse will have low financial autonomy if she feels that her husband's job and position constrain her financial choices.

Financial Relatedness

We created and operationalized two constructs related to the construct of financial relatedness. Financial community beliefs hold that financial resources can contribute to creating and sustaining communities and interpersonal relationships, and that one can trust significant others to consider one's financial needs. For example, goals such as obtaining a college education for one's self or

[6] Two theories argue for the importance of self-efficacy in mastering challenges and problems, though based on differing causal processes. In addition to SDT, social-cognitive theory (Bandura 1986, 1994) argues that self-efficacy contributes to one's ability to master challenges, to engage with intrinsic interest in activities and events, and to achieve individual well-being.

[7] Lastovicka et al. (1999; see also Kasser 2005) proposed and validated a measure of frugality that appears somewhat related to the construct of financial self-efficacy. They present evidence that frugality negatively correlates with materialism, and influences planned purchasing behavior.

loved ones, or creating valued community resources (e.g., a church, synagogue, mosque, or community center) would likely benefit from a belief that financial resources can contribute to building communities and inter-personal relationships. We speculate the existence of, and create, two such measures: financial community—support, and financial community—trust:

Financial relatedness: financial community—trust. Financial community—trust is the belief that significant others can be relied upon to help with one's financial issues and problems.

Financial relatedness: financial community—support. Financial community—support is the belief that financial resources can contribute to supporting communities and interpersonal relationships.

Mediating Variables: Financial Values

Values are the standards or principles by which humans evaluate beliefs, actions, and behaviors (Schwartz and Bilsky 1987; Kluckhohn 2001). Values and motivations are closely related, conceptually aligned constructs (Ryan and Deci 2000). Values are precursors to motivation. For example, an individual who highly values financial savings is more motivated and likely to save. Financial values relate to money-related beliefs and standards (Vitt 2004). We extend SDT to posit the existence of a financial value that, we speculate, positively contributes to core psychological needs: financial altruism. We contrast financial altruism with financial materialism, which has been previously explored in research and does not contribute to the fulfillment of core psychological needs. We speculate that individuals may have values of financial materialism, financial altruism, both, or neither.

Dependent Variable: Hedonic Utility

Calculative versus hedonic utility. Incentives research has often assumed that the motivation to obtain financial rewards is synonymous with the construct of economic utility (e.g., Kahneman et al. 1999); however, the original conceptualization of economic utility was hedonic (i.e., affective) rather than a calculative, decision theoretic construct (e.g., see Bentham 1780; Knight 1922). Recent models of utility (e.g., Frank 1999), including those posited by Nobel Prize winners Herbert Simon (1990, 1993), Daniel Kahneman (Kahneman et al. 1999), and Gary Becker (Rayo and Becker 2005) are consistent with the broader, original conception of hedonic utility. In decision theoretic utility models, increased wealth monotonically increases calculative utility; in hedonic utility models, increased wealth may increase or decrease hedonic utility (i.e., happiness) depending upon its "cost." For example, wealth obtained at a "cost" of ignoring one's personal values or interpersonal relationships may be deemed too "costly."

Recent hedonic models of utility in economics approximate the broader constructs of motivation and "utility," which is often called happiness or subjective well-being (SWB) in psychology research and practice. For example, many psychological theories assume that motivators such as self-development, personal growth, and self-mastery in chosen domains dominate human motivation (e.g., Coulson and Rogers 1968; Czikszentmihalyi and Rathunde 1990; Rogers 1954). Adapting principles from such models, including SDT, may explain why financial incentives frequently fail to motivate desired behaviors and succeed in motivating undesired behaviors. Specifically, individuals' financial values may differ in both strength and type; these value differences may give rise to differing perceived "costs" to obtaining financial rewards. For example, individuals with materialistic financial values may fail to pursue financial rewards because of their inability to fulfill core psychological needs (Deci and Flaste 1995; Ryan and Deci 2000; Deci and Ryan 2002). Alternatively, individuals with strongly altruistic financial values may fail to pursue financial rewards because their pursuit conflicts with movement toward the fulfillment of more important psychological needs.

Hedonic utility versus task performance. Historically, SDT focused on individual hedonic utility (i.e., subjective well-being [SWB] or happiness) as the principal outcome of interest in

human affairs (Sheldon et al. 2003). In contrast, almost all research investigating the effects of financial incentives has focused on task performance (e.g., see Jenkins et al. 1998); however, it may be necessary to look beyond task performance effects, perhaps to hedonic utility and other constructs that directly relate to individuals' psychological satisfaction, to understand financial incentives' unreliability.

A predominant focus in financial incentives research on task performance, to the exclusion of more organismically relevant outcomes (such as hedonic utility), may explain the anomalous findings of previous financial rewards research. Specifically, the individual "costs" of pursuing financial incentives may only be revealed by measuring individuals' financial needs and financial values and the relationship of these constructs to hedonic utility.

To summarize, we extend SDT to consider the relation among financial need beliefs, financial values, and hedonic utility. Figure 1 summarizes the theoretical framework of our extension of SDT to financial needs and values. We next articulate the research hypotheses, which are summarized in Figure 2.

HYPOTHESIS DEVELOPMENT

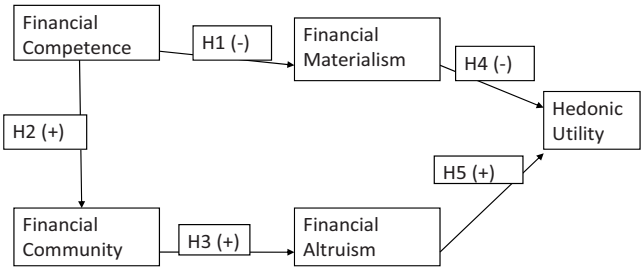
Core Financial Need Beliefs

Financial Competence Beliefs: Financial Self-Efficacy and Financial Autonomy

We hypothesize that financial competence beliefs, i.e., financial self-efficacy and financial autonomy, will influence financial values and correlate with measures of financial relatedness. Specifically, we speculate that financial competence beliefs will reduce financial materialism; financial materialism is partially rooted in an inability to recognize and self-manage financial desire (Kasser et al. 1995, 2004; Kasser 2002, 2005; Solberg et al. 2004). Financial competence, i.e., a belief in one's ability to manage money, may lessen spending and consumption desire (Kasser 2002; Kasser and Kanner 2003). Similarly, beliefs that one is financially competent may correlate with the extent of one's awareness of the ability of financial resources to contribute to interpersonal relationships and create and enhance community resources (Houlder and Houlder 2002). Hence, financial competence will negatively predict financial materialism and correlate positively with financial relatedness:

H1: Financial competence (i.e., financial self-efficacy and financial autonomy) will negatively predict financial materialism.

FIGURE 2
Hypothesized Relations Among Constructs



H2: Financial competence (i.e., financial self-efficacy and financial autonomy) will positively correlate with financial relatedness.

Financial Relatedness Beliefs: Financial Community—Trust and Support

One's "financial relations" with others should also influence one's financial values. We speculate that financial community beliefs, related to both trust and support, will predict financial altruism. In fact, financial community beliefs would seem to be aligned with a belief that financial resources are useful in motivating efforts to improve one's interpersonal and community relations.

H3: Financial relatedness beliefs (i.e., financial community—trust, financial community—support) will positively predict financial altruism.

Financial Values: Materialistic versus Altruistic

We replicate previous research (see Burroughs and Rindfleisch [2002] and Kasser [2002] for summaries) demonstrating that materialistic financial values negatively influence hedonic utility. We extend SDT to predict that financial altruism will positively contribute to hedonic utility. This speculation is based in the belief that financial altruism positively contributes to meeting core psychological, including financial, needs. Some evidence suggests that financial altruism, for example, spending money on others, increases hedonic utility (Dunn et al. 2008). Accordingly, we hypothesize:

H4: Financial materialism will negatively predict hedonic utility.

H5: Financial altruism will positively predict hedonic utility.

OVERVIEW OF STUDIES 1 AND 2

We tested H1 through H5 in two studies. Data for these studies were collected online using Internet-based software that included validity checks of participants' responses (e.g., for incomplete or invalid responses).[8] Participants are from two large state universities and earned class credit in undergraduate or graduate accounting or business classes for participating.[9] There was no duplication of participants between Studies 1 and 2.

Data analysis used structural equation modeling (SEM). SEM facilitates the simultaneous analysis, i.e., testing, of multiple construct relationships, such as is hypothesized in Figure 2 (Kline 2005). Consistent with recommendations in SEM literature (e.g., Anderson and Gerbing 1988), we conducted a two-stage analysis. Stage one modeled each latent variable as a separate measurement model. Stage two tested, i.e., confirmed, the relations hypothesized in Figure 2.

For Study 1 (n = 688), we report both measurement and structural model results. In Study 2 (n = 338), we tested for instrument order effects, confirmed that the measurement models did not substantially differ from Study 1, and replicated the structural model analysis conducted in Study 1. Table 1 presents demographic data.

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[8] Using this software, partially completed survey instruments can still result from participants who quit the instrument before completion.

[9] We followed the recommendations of the accounting literature in choosing participants (e.g., Ashton and Kramer 1980; Libby et al. 2002). Specifically, "In general, experimenters should avoid using professional subjects unless it is necessary to achieve their research goals" (Libby et al. 2002, 803). Our experimental task required no specialized expertise or accounting knowledge. Accordingly, participants were undergraduate and graduate students.

TABLE 1

Study 1: Participant Demographics
(n = 512 to 686)

	Mean	SD	Min.	Max.
Age	21.80	3.73	18	50
Percentage of males	0.54	0.50		
Number of years of full-time work	1.91	1.96	0	25
Number of years of college education (including this one)	3.06	1.35	1	15
Percentage of accounting majors	0.24	0.42		
Percentage of finance majors	0.10	0.29		
Number of accounting classes completed	2.71	2.56	1	12
Number of finance classes completed	1.38	0.96	1	8
Completed Bachelor's Degree?	0.10	0.30		
GPA (4 = A)	3.18	0.48	2	4

Study 1 Method

Measure Development and Measurement Models

We developed measures of five constructs: financial self-efficacy, financial autonomy, financial community—trust, financial community—support, and financial altruism. The development process included the creation or identification in existing literature of potential items for these scales, and pilot and pre-testing with participant groups (not reported) to determine valid constructs.[10]

Independent Variables: Measures of Core Financial Need Beliefs

Financial competence: financial self-efficacy. We created, or adapted from existing sources, potential item measures of financial self-efficacy from multiple sources (ANZ Bank and A. C. Nielsen 2005; Ryan et al. 1983; Mitchell and Mickel 1999; Chatzky 2003; Tang 1995). Results of pilot testing and analysis indicated a reliable six-item financial self-efficacy measure, e.g., item, "I am good at managing my money" (see Appendix A for all constructs and instruments).

Financial competence: financial autonomy. We created (two items) or adapted (five items from Reeve [2002]) seven potential item measures of financial autonomy. Pilot and pre-testing (not reported) resulted in a reliable four-item financial autonomy measure that is reverse-scored (e.g., item, "I don't have a choice about making money decisions"). Hence, the reverse-scored financial autonomy measure captures the extent to which one believes that one's financial life is controlled by forces other than the self.

Financial community: trust and support. We created (four items) or adapted (ten items from Rempel et al. [1985]) 14 potential item measures measuring financial community. Testing and analysis resulted in two reliable constructs: a three-item measure of financial community—trust (e.g., item, "I can rely on other people to help me when I am in financial need") and a four-item measure of financial community—support (e.g., item, "Money is valuable because it can help you support the people that you love").

[10] Unreported results related to pre-testing are available from the authors upon request.

Mediating Variables: Measures of Financial Values

Financial materialism. We measured financial materialism using Richins and Dawson's (1992) six-item measure related to possession-defined success (PDS) (Chang and Arkin 2002; Richins and Dawson 1992; e.g., item, "I admire people who own expensive homes, cars, and clothes."). We chose this instrument based on its extensive validation (e.g., Burroughs and Rindfleisch 2002; Richins 2004; Wong et al. 2003), brevity, and because some alternative materialism constructs are confounded with neuroticism (e.g., see Solberg et al. 2004). Consistent with previous research, including the two reverse-scored scale items reduced validity (Wong et al. 2003); we report results for the four-item scale.[11]

Financial altruism. Analysis of research sources related to financial altruism (e.g., Simon 1993, 1990; Sober and Wilson 1998), and pilot and pre-testing, resulted in a five-item measure of financial altruism (e.g., item, "Either now or in the future, I intend to donate money to causes that I care about").

Dependent Variables: Measures of Hedonic Utility (Satisfaction with Life and Vitality)

We measured hedonic utility using two previously validated instruments: one cognitive and one affective. The five-item Satisfaction with Life Scale (Diener et al. 1985) is a cognitive assessment of hedonic utility (Diener 1984; e.g., item, "In most ways, my life is close to ideal"). Six of the seven items from the vitality scale (Ryan and Frederick 1997; Bostic et al. 2000) formed a reliable affective assessment of hedonic utility (e.g., item, "I feel alive and vital"). Item loadings in a factor analysis were consistent with scale definitions; correlations between the satisfaction with life and vitality constructs were moderate (0.729) but insufficient to indicate poor discriminant validity.[12]

Study 1 Results

Construct Validity and Multivariate Normality

Table 2 presents the correlations among the measured constructs, i.e., latent variables, after standardization. Measures of financial self-efficacy, financial autonomy, financial community—trust, financial community—support, and financial altruism correlate positively with hedonic utility. Consistent with previous research, financial materialism correlates negatively with hedonic utility, though the absolute values of the correlation of financial materialism with hedonic utility are lower than are the correlations of financial self-efficacy, financial autonomy, financial community—trust, and financial community—support with hedonic utility. Financial altruism and financial materialism weakly but positively correlate.

Measurement Models, Means, and Standard Deviations

We constructed measurement models for each latent variable to assess the goodness of fit of the observed variables that are predicted to, in the aggregate, comprise the latent variables. The six latent variables in this analysis are financial self-efficacy, financial autonomy, financial community—trust, financial community—support, financial materialism, and financial altruism.[13] Analysis used EQS (version 6.1). Table 3 reports seven measures of model fit for the latent variables. Results for Cronbach's alpha, the percentage of variance explained, χ^2 ratio, Bentler-

[11] The results for the six-item materialism instrument do not qualitatively differ from those reported, though the reliability of the six-item measure is lower.
[12] Kline (2005) argues that correlations greater than 0.85 indicate a discriminant validity problem.
[13] To simplify the analyses, covariances among error terms were not included in the measurement models.

TABLE 2

Study 1: Pearson Correlations
(n = 687; t = two-tailed; p ≤ 0.05 in bold)

Variables	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Financial Autonomy (Reversed)	**0.433**[a]	**0.124**[a]	**0.206**[a]	−0.041	**0.173**[a]	**0.235**[a]	**0.140**[a]
2. Financial Self-Efficacy		0.011	**0.160**[a]	−0.020	0.071[c]	**0.157**[a]	**0.128**[a]
3. Financial Community—Trust			**0.493**[a]	0.040	**0.191**[a]	**0.247**[a]	**0.131**[a]
4. Financial Community—Support				**0.116**[a]	**0.523**[a]	**0.262**[a]	**0.151**[a]
5. Financial Materialism					**0.090**[b]	−0.053	**−0.107**[a]
6. Financial Altruism						**0.243**[a]	**0.175**[a]
7. Satisfaction with Life							**0.729**[a]
8. Vitality							

[a] Significant at ≤0.01.
[b] Significant at ≤0.05.
[c] Significant at ≤0.10.

TABLE 3

Study 1: Model Fit for Measurement Models
(n = 687)

Construct	# of Items	Cronbach's Alpha	% of Var. Explained	χ^2 Ratio (df)	NNFI	NFI	CFI
Financial Autonomy (reversed)	4	0.745	56.72%	4.6(18)	0.97	0.97	0.97
Financial Self-Efficacy	6	0.932	78.36%	5.4(20)	0.96	0.96	0.97
Financial Community—Trust	3	0.803	57.63%	7.7(17)	0.91	0.93	0.93
Financial Community—Support	4	0.774	60.20%	4.6(18)	0.97	0.97	0.97
Financial Materialism	4	0.802	62.88%	4.4(18)	0.97	0.97	0.98
Financial Altruism	5	0.779	55.26%	4.7(19)	0.96	0.96	0.97

NNFI = Bentler-Bonett Non-Normed Fit Index;
NFI = Bentler-Bonett Normed Fit Index; and
CFI = Comparative Fit Index.

Bonett Non-Normed Fit Index (NNFI), Bentler-Bonett Normed Fit Index (NFI), and the Comparative Fit Index (CFI) generally indicate adequate to good model fit. While the χ^2 ratio for the financial community—trust variable is relatively high, the other four measures of financial community—trust fit are adequate to good. Table 4 presents means and standard deviations for the

TABLE 4

Means and Standard Deviations

	Study 1 (n = 176)		Study 2 (n = 340)	
Construct (a)	**Mean (b)**	**SD (c)**	**Mean (d)**	**SD (e)**
Financial Autonomy (reverse coded)	18.61	3.67	22.22	4.94
Financial Self-Efficacy	25.32	6.75	31.50	8.52
Financial Community—Trust	13.75	3.86	NA	NA
Financial Community—Support	20.11	3.28	24.03	4.00
Financial Materialism	15.45	4.39	16.29	5.37
Financial Altruism	25.39	3.89	23.97	4.18
Satisfaction with Life	23.74	6.63	18.16	4.11
Vitality	27.66	7.06	26.82	5.32

See Appendix B for variable scaling.

measured variables (Study 1 values in columns b and c).[14,15]

Structural Model

Multivariate normality. We tested the multivariate normality of the data. Results indicated multivariate nonnormality (Mardia's [1970] coefficient = 10.2) which primarily results from nonnormality in the financial altruism measure. Transformations reduced but did not eliminate the nonnormality. Therefore, in addition to a maximum likelihood model, we ran an SEM that is robust to heterogeneous kurtosis (HK) (Kano et al. 1990). Although the model fit statistics varied slightly, the results of the SEMs are very similar. We report the results from the heterogeneous kurtosis (HK) model, which provides the lowest (i.e., most conservative) fit statistics among the tested models.

Consistent with Figure 2, we implemented financial self-efficacy, financial autonomy, financial community—support, and financial community—trust as independent variables in the SEM, financial values (financial materialism and financial altruism) as meditating variables, and the two measures of hedonic utility as latent dependent variables. We tested the hypotheses, and all possible links among the variables, following procedures recommended for SEMs (e.g., Kline 2005).

Structural model fit. We evaluated multiple overall, relative, and absolute goodness-of-fit indices to evaluate the SEM. We evaluated two indices of overall model fit. The Root Mean Square Error of Approximation (RMSEA) is a parsimony-adjusted index that corrects for model complexity. RMSEA values less than 0.05 indicate excellent fit, values between 0.05 and 0.10 suggest adequate fit, and values greater than 0.10 suggest poor fit (Browne and Cudeck 1993) (observed RMSEA = 0.072). The Average Absolute Standardized Residuals (AASR) indicates the level of unexplained variance in the model (Bentler 1980) with a value less than 0.05 indicating

[14] Because of scaling differences within the Study 1 data set on some variables, we report means for a subset of the Study 1 data.

[15] Due to a programming error, instrument scaling differences existed within cohorts of Study 1 data collection on the measures of financial materialism, satisfaction with life, and vitality (see Appendix B). In addition, scaling differences existed between constructs. Accordingly, we standardized all measures before conducting SEM analysis.

acceptable unexplained variability (observed AASR = 0.026).

We considered three measures of incremental (relative) fit, which compare the proposed to a baseline model (Kline 2005). The CFI ($0 \leq CFI \leq 1$) is less sensitive to sample size and sampling error than other incremental fit indices (Hu and Bentler 1999). CFI indices greater than 0.90 generally indicate good incremental fit; the observed CFI = 0.966. Other incremental fit indices reported include the Bentler-Bonett NFI and the Bentler-Bonett NNFI which are both more sensitive to sampling error but less sensitive to sample size. Good fit on these indices requires a score of 0.90; the observed NFI = 0.957 and the observed NNFI = 0.920.

We evaluated absolute model fit using the Goodness-of-Fit Index (GFI) and the Adjusted Goodness-of-Fit Index (AGFI). These indices estimate the proportion of variability in the sample covariance matrix explained by the model (Joreskog and Sorbom 1984). GFI values of 1 indicate perfect fit while those greater than 0.90 indicate good fit (observed GFI = 0.980; observed AGFI = 0.940).

Statistical power. We also evaluated the statistical power of the analysis (MacCallum et al. 1996);[16] the likelihood of Beta error, assuming a medium effect size, is less than 1 percent.[17] Finally, a large number of model iterations can indicate a nonlinear, badly specified, or unreasonably constrained model, or a model that omits critical parameters (Henri 2007). In Study 1, the model converged in nine iterations.

Figure 3 presents the SEM that best fits the Study 1 data. Model fit was improved by allowing financial self-efficacy and financial autonomy to form a latent construct, which we labeled financial competence. Financial community—support and financial community—trust formed a latent construct, which we labeled financial community.

Study 1 results support four of the five hypotheses. Hypothesis 1 is not supported; the path from financial competence to financial materialism is not significant. Consistent with H2 and H3, the paths from financial competence to financial community (H2) and from financial community to financial altruism (H3) are positive. Consistent with H4 and H5, the paths from financial materialism (H4) and financial altruism (H5) to hedonic utility are negative and positive, respectively. We also tested whether adding paths improved model fit;[18] three paths improved model fit: these are direct, positive paths from:

1. Financial community to financial materialism; however, SDT would not support the addition of this path to the model.
2 and 3. Financial competence (2) and financial community (3) to hedonic utility.

Study 2 Method

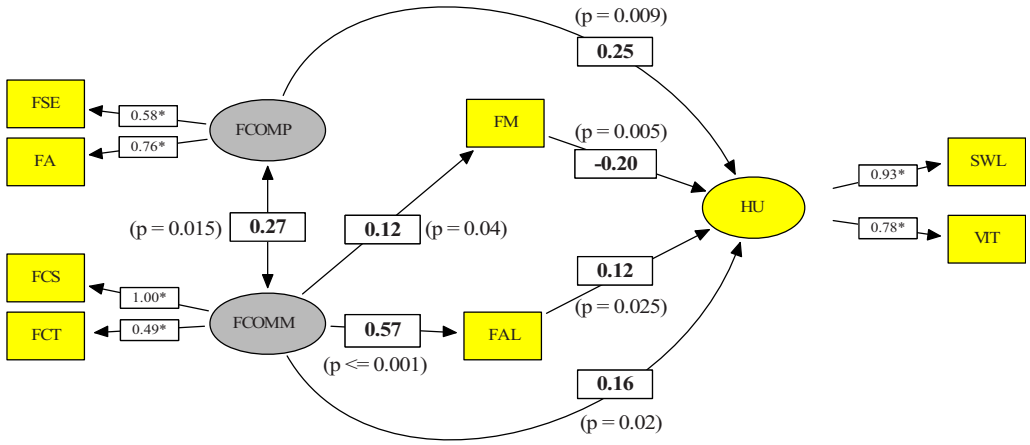
The Study 1 results provide some support for our extension of SDT to the financial domain: the data support four of the five hypotheses; however, Study 1 gives rise to a potential validity concern related to mono-operationalization bias (Shadish et al. 2002). Specifically, Study 1 does not vary, i.e., it confounds, the presentation order of the financial value and hedonic utility instruments. Although there were sometimes intervening instruments in Study 1, the materialism measure always appeared before the financial value measures; these measures always preceded the

[16] Statistical power (i.e., $1 - \beta$ error) is the long-run likelihood of correctly rejecting the null hypothesis (Cohen 1969, 1988, 1992; Kraemer and Thiemann 1987).

[17] As an additional test of the adequacy of the sample size, the number of observations per parameters is 86 (688/8) which far exceeds the recommended values of five to ten observations per parameter (Henri 2007; Kline 2005).

[18] We also tested for the presence of equivalent models (Kline 2005), i.e., models that fit the data as well as the presented model. We found that the double arrow between financial community and financial competence can be a single arrow in either direction without diminishing model fit. We present the double arrow since we have no theoretical basis for predicting unidirectional causality in this relationship (cf. Kline 2005).

FIGURE 3
SEM Results for Study 1



FSE = financial self-efficacy;
FA = financial autonomy;
FCS = financial community—support;
FCT = financial community—trust;
FCOMP = financial competence;
FCOMM = financial community;
FM = financial materialism;
FAL = financial altruism;
SWL = satisfaction with life;
VIT = vitality; and
HU = hedonic utility.

hedonic utility measures. Hence, it is conceivable that instrument presentation order effects may have affected responses to the financial need belief, financial value, or hedonic utility measures.

Therefore, Study 2 addresses two main research questions:

1. Does instrument order influence the relations hypothesized in Figure 1?
2. Do the results of Study 1 replicate to a different participant sample?

Data and Measures

The primary focus of Study 2 was a measurement issue, i.e., instrument order. We measured financial self-efficacy, financial autonomy, financial community—support, financial materialism, and hedonic utility using the same measures as Study 1. To reduce instrument length, we measured financial altruism with a four-item (not five) measure[19] and omitted the financial community—trust instrument.

[19] Specifically, we omitted the "Donating money to charity is a waste of money" item from the financial altruism measure in Study 3.

TABLE 5

Study 2: Presentation Order Conditions

Instrument Order	**Condition 1**	**Condition 2**	**Condition 3**	**Condition 4**
1st	HU	HU	NWFA	PWFA
2nd	PWFA	NWFA	HU	HU
Instrument Order	**Distracter**	**Distracter**	**Distracter**	**Distracter**
3rd	NWFA	PWFA	PWFA	NWFA

Hedonic utility (HU) = SWL, vitality;
PWFA = positively worded financial need and value instruments (FSE, FCS, FAL); and
NWFA = negatively worded financial need and value instruments (financial autonomy, FM).

Research Design and Manipulation of Presentation Order

We split the instruments into three groups for purposes of manipulating presentation order: (1) hedonic utility, (2) "positive" financial need and value measures (financial self-efficacy, financial community—support, financial altruism), and (3) "negative" financial value measures (financial autonomy, financial materialism). We considered the financial autonomy and financial materialism instruments as "negative" because: (1) the financial autonomy measure is stated in negative terms (see Appendix A), and (2) the financial materialism instrument negatively correlates with hedonic utility (Burroughs and Rindfleisch 2002). The order of completion of the instruments was a between-participant variable with four levels (see Table 5). In addition, participants completed an eight-item distracter task, consisting of correctly identifying the definitions of capitalized vocabulary words used in sentences, to separate the second from the third set of instruments.[20] Participants were randomly assigned to conditions.

Study 2 Results

General Linear Model (GLM) Test of Presentation Order

Using a GLM, we tested for the between-participants' main effect of instrument presentation order, and for the interaction of presentation order with financial values.[21] If instrument presentation order affects responses, we will observe either a main effect for instrument presentation order or an interaction effect of presentation order with financial value constructs. Neither the main effect of presentation order nor the interaction of presentation order with financial value was significant ($p \geq 0.238$).[22] Accordingly, the results suggest that responses to the financial need, financial value, and hedonic utility measures are invariant across presentation orders.[23]

[20] For example: "Melanie was positive that she was right and will ABJURE her friends to agree with her."

[21] The measurement models and correlations among variable results in Study 2 approximate those of Study 1; for parsimony, we omit them.

[22] In Study 2, statistical power equals 0.94 (assuming: medium effect size, $\alpha = 0.05$ and $n = 340$; using G*Power 3 software [Änderung 2008]). Hence, the likelihood of Beta error, i.e., of incorrectly failing to reject the null hypothesis, is 6 percent.

[23] For completeness, we also included main effects for the within-participant effects of hedonic utility and financial attitudes, though these factors are of little theoretical or practical interest. These effects are statistically significant ($p \leq 0.05$) but merely indicate differing mean responses to the instruments.

SEM: Structural Model

In Study 2, we tested the same hypotheses as in Study 1; all five hypotheses were supported. We also tested for additional paths in the model; none were significant. We applied the same metrics of model fit to Study 2 as in Study 1; the measures of model fit, for the Study 2 data, ranged from adequate to excellent.[24]

Supplemental Study 1 and 2 Results: Financial Well-Being

For a subset of the Study 1 sample (n = 175), we collected data on a five-item version (Cronbach's = 0.88; see Appendix A, Panel D) of the eight-item personal financial well-being scale (source: Personal Finance Employee Education Foundation 2009). In Study 2, we shortened this to a two-item measure (Cronbach's = 0.97; see Appendix A, Panel D). Both versions of the financial well-being instrument positively correlated with satisfaction with life and vitality ($0.390 \leq r \leq 0.401$). Seven of the eight correlations of financial well-being with financial need beliefs were significant, while the remaining correlation was marginally significant ($0.147 \leq r \leq 0.505$). However, the financial well-being instruments were uncorrelated with financial materialism and financial altruism ($p \geq 0.175$). Accordingly, the data suggest that the construct of financial well-being more closely relates to one's financial need beliefs and hedonic utility than to one's financial values.

DISCUSSION

Results Summary

The results of Study 2 suggest that instrument presentation order does not influence the relations among financial needs, financial values, and hedonic utility. Table 6 and Figure 4 sum-

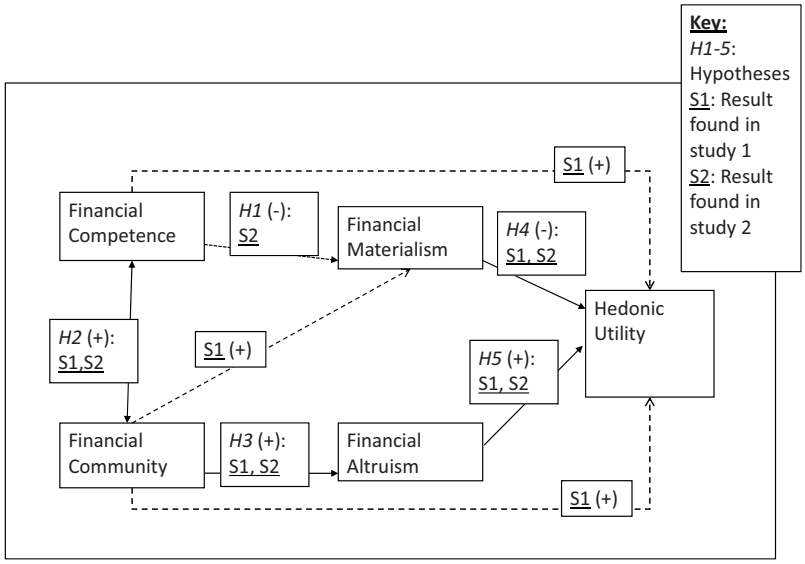
TABLE 6

Summary of Hypothesis Tests

Hypotheses	Study 1	Study 2
H1: Financial competence (i.e., financial self-efficacy and financial autonomy) will negatively correlate with financial materialism.	Not Supported	Supported
H2: Financial competence (i.e., financial self-efficacy and financial autonomy) will positively correlate with financial community.	Supported	Supported
H3: Financial community will positively correlate with financial altruism.	Supported	Supported
H4: Financial materialism will negatively correlate with hedonic utility.	Supported	Supported
H5: Financial altruism will positively correlate with hedonic utility.	Supported	Supported
Additional Paths	**Study 1**	**Study 2**
Financial community → financial materialism	Supported	Not Supported
Financial competence (i.e., financial self-efficacy and financial autonomy) will positively correlate with hedonic utility.	Supported	Not Supported
Financial community will positively correlate with hedonic utility.	Supported	Not Supported

[24] In Study 2, the number of observations per parameter was 48.6 (340/7). We found no equivalent models in Study 2.

FIGURE 4
Summary of SEM Results



marize the results of Studies 1 and 2. In Figure 4, the four solid lines indicate paths that were supported in both studies; the four dashed lines indicate paths that were supported in either Study 1 or 2 but not both.

To summarize, four of the five hypotheses (i.e., H2 through H5) were supported in both studies, while H1 was supported in Study 2 but not 1. Three unpredicted paths obtained in Study 1; none obtained in Study 2.

These studies lay a theoretical and empirical groundwork, based in extensions of SDT, for a more complete account of the unreliability of financial incentives as motivators. As a framework for creating operational measures, we posited that financial need beliefs influence financial values which, in turn, influence hedonic utility (see Figures 1 and 2). We developed hypotheses based on the relations among these measures and constructed measures to test these hypotheses. Specifically, we created four new financial need belief measures (i.e., financial self-efficacy, financial autonomy, financial community—support, and financial community—trust) and one new financial value measure (i.e., financial altruism) in support of our theoretical and empirical extension of SDT to the financial domain.

The results are largely consistent with our extension of SDT to the financial domain. Beliefs of the extent of one's financial needs predict financial values which, in turn, predict hedonic utility. Beliefs that one is financially competent lead to lower levels of financial materialism and higher levels of hedonic utility. Beliefs that one's community will support one's financial needs lead to higher levels of financial altruism and hedonic utility. In short, financial needs and values are multidimensional with disparate influences on hedonic utility. These results make the seemingly anomalous results of the existing financial incentives literature—which usually assumes that financial needs and values are unidimensional—comprehensible.

Implications for Financial Incentives and Accounting Controls

We find considerable variability in the strength of participants' financial altruism and financial materialism values. For example, in Study 2, 95 percent confidence intervals indicate that financial altruism ranges from 12 to 28 (the upper limit of the scale) and that financial materialism ranges from 8 to 37. Accordingly, variability in the strength of participants' value for financial rewards may explain the sometime failure of incentives; some individuals may insufficiently value financial rewards to compel their acting to obtain them. For example, evidence suggests that financial incentives are less effective in complex, creative, and heuristic tasks (McGraw 1978). One possible reason for this effect may be that individuals who have low levels of financial materialism may more frequently choose more complex, creative jobs. If this is true, then the "incentivizing" influence of financial incentives may decline as the work that is intended to be "motivated" by accounting control systems is increasingly complex and heuristic (i.e., principle- not rule-based).

We also find some evidence of greater between-individual differences in financial materialism than financial altruism values. Specifically, the between-participant variance in financial materialism is greater than that of financial altruism in Study 1 (Levene's test $p = 0.024$); in Study 2, this difference is in the same direction and approaches significance (Levene's test $p = 0.141$). Hence, financial altruism values may be a more reliable, i.e., less variable, between-participant motivator than is financial materialism.

The potential interactions of financial altruism and financial materialism are an important though largely unexplored topic that is of great importance to understanding the effects and effectiveness of accounting control systems. It is possible that financial altruism values may correlate with intrinsic and identified motivation and that financial materialism values may correlate with extrinsic and introjected motivation. Proponents of SDT argue that extrinsic motivations reliably undermine intrinsic motivation (Ryan and Deci 2000; Deci and Ryan 1985). Alternatively, some argue that under certain conditions, extrinsic and intrinsic motivation can synergistically combine to increase overall motivation (Amabile et al. 1994; Amabile 1993). While beyond the scope of this paper, the issue of the relation of financial altruism and financial materialism is both theoretically and practically consequential, with important implications for the design of accounting control systems and the (in)effectiveness of financial incentives.

Implications for Theory

The results of the tests of hypotheses largely support our application and extension of SDT to financial need beliefs and values; in 17 of 18 possible correlations, financial need beliefs and values that SDT argues fulfill core psychological needs positively predicted hedonic utility. In contrast, financial materialism, which SDT assumes does not fulfill a core psychological need, either negatively predicted (in one case) or did not correlate with (in three cases) hedonic utility. Accordingly, most of our results support our extension of SDT to predict that financial needs and financial values differentially affect hedonic utility.

The results suggest that financial needs and financial values are complex, multidimensional constructs, with divergent implications for hedonic utility. SDT, and the reported results, suggest several explanations for the inability of financial incentives to reliably motivate behavior. Specifically, financial incentives may fail to motivate because: (1) financial need beliefs and financial values differ in both strength and type, (2) some individuals likely do not sufficiently value financial rewards to compel acting to obtain them, and (3) financial materialism values generally do not satisfy core human psychological needs and have higher within-individual variance, which makes them a less reliable motivator than financial altruism. While our results are correlational (not causal), they suggest the potential value of SDT in future research investigating the unreliability of financial incentives (e.g., Engelberg and Sjoberg 2006; Tang et al. 2005; Furnham and Argyle 1998).

Relationship to the Bonner and Sprinkle (2002) Model

Bonner and Sprinkle's (2002) model posits that financial incentives influence effort, which influences task performance (i.e., incentive → effort → task performance). Our results suggest that financial need beliefs and financial values may also mediate the decision to pursue or to forego financial incentives. For example, we speculate that individuals who are higher in financial materialism, and perhaps financial altruism, values are more likely to: (1) choose jobs and tasks that include performance-contingent financial incentives, and (2) exert more effort to achieve performance-contingent financial incentives. These speculations are partially consistent with, and extend, Bonner and Sprinkle's (2002) model since Bonner and Sprinkle (2002) argue that individual differences influence the effect of financial incentives on effort, and of effort on task performance.

Libby et al. (2002) argue the importance of identifying and explicating the causal processes whereby financial rewards influence behavior. Based on SDT, we propose a set of mediating processes, i.e., financial value beliefs and financial values, in addition to effort (Bonner and Sprinkle 2002), whereby financial incentives influence, or may fail to influence, behavior. Financial values appear to be complex, multidimensional constructs with disparate influences on hedonic utility.

Limitations

Our design is correlational and cross-sectional; it does not include random assignment of participants to financial need beliefs, financial values, or levels of hedonic utility; furthermore, this design does not investigate the development of financial need beliefs or financial values. One important area for future research is increasing understanding of the developmental processes that give rise to financial need beliefs, and financial altruism or financial materialism values (cf. Kasser et al. 2004; Grable and Joo 1999; Garman et al. 1999). For example, research leaves unexplored the effects and effectiveness of differing approaches to financial and accounting education. The effect of accounting, finance, and financial literacy education on financial altruism and financial materialism is an important though largely unexplored topic for accounting research.

An additional limitation of our method, and historically of SDT, is a focus on individuals' hedonic utility and not organizational controls or task outcomes. Accounting research investigating financial incentives most frequently focuses on task performance outcomes; research investigating organizational control systems has often focused on job performance and job satisfaction outcomes. Evidence across multiple studies suggests that employees' core need satisfaction, job performance, and job satisfaction positively correlate (Baard et al. 2004; Deci et al. 2001; Gagné et al. 2000; Ilardi et al. 1993; Kasser et al. 1992). For example, a recent comprehensive review of the relation between job performance and job satisfaction suggests the existence of a modest, positive relation among these constructs (Judge et al. 2001; $r = 0.30$, range $= 0.03$ to 0.57: $n = 54{,}417$) with considerable variability across tasks and organizations (see also Warr 2007). Research investigating the relation among human need satisfaction, individual happiness, job performance, and job satisfaction in accounting contexts is important to understanding the effects and effectiveness of alternative motivators in accounting control systems (cf. Jenkins et al. 2008).

Conclusion

We extend SDT to offer an alternative, perhaps more comprehensive, account of the inability of financial incentives to reliably motivate desired behavior in accounting control systems. Individuals' financial needs and financial values differ in strength and type. These differences will likely lead some individuals to fail to act "incentivized" when offered financial rewards. Further, financial altruism values contribute to hedonic utility while financial materialism values contribute

either negatively or not at all to hedonic utility. In addition, larger individual differences may exist in financial materialism than financial altruism. Hence, altruistic financial values may be a more effective and reliable motivator than are materialistic financial values.

Future accounting research will benefit from more frequently asking, i.e., *measuring* rather than *assuming*, both why, and the extent to which, individuals value, or fail to value, financial rewards. For example, the common research design of manipulating the presence or absence of a financial reward and observing its effects on task performance would seem to omit four potential moderating influences on the value of financial rewards: the (1) source, and (2) strength of financial needs, and the (3) source, i.e., financial altruism or financial materialism, and (4) strength of financial values. Omitting these moderators may explain the observed inability of financial incentives to reliably motivate desired task performance that is found in the financial incentives literature.

These possibilities leave us excited about the future of accounting research that investigates financial needs and financial values as measured, multidimensional, rather than assumed, unidimensional constructs. Could there be a more laudable set of goals for accounting scholars and professional accountants than:

1. improving the hedonic utility of accountants' clients and financial literacy program participants by articulating the nature of functional and dysfunctional financial needs and values,
2. increasing human happiness by articulating how financial values influence psychological health,
3. empirically demonstrating why financial rewards and the accounting control systems in which they are often embedded, often fail to achieve organizational objectives, and
4. conceptualizing and designing accounting control systems that achieve *both* organizational control objectives *and* increase individual happiness?

The framework, model, constructs, and measures that we develop and validate herein offer a starting point for these explorations.

APPENDIX A
CONSTRUCTS AND INSTRUMENTS

Panel A: Financial Need Beliefs

Financial Self-Efficacy

Definition: The belief that one is capable of successfully managing the financial events in one's life.

1. I am good at managing my money.
2. I am satisfied with my ability to manage my money.
3. Compared to other people, I think I do pretty well at making financial decisions.
4. I am pretty skilled at making financial decisions.
5. I budget my money very well. ⊩
6. I use my money very carefully. ⊩⊩⊩ Adapted from the Money Ethics Scale (MES; see Tang 1992, 1993, 1995).

Financial Autonomy (reverse-scored)

Definition: The belief that one's financial decisions are volitional choices that reflect one's interests and beliefs.

1. My financial life is out of control.
2. I do not have a choice about making money decisions.

3. I make financial decisions because I have to, not because I want to.
4. In making financial decisions, I feel pushed, forced, and pressured.

Financial Community—Trust ð

Definition: The belief that significant others can be trusted and relied upon to help with one's financial issues and problems.

1. I can rely on other people to help me when I am in financial need.
2. I can depend on other people for help with money problems.
3. I trust that the people I care most about will keep their financial commitments to me.ð ð Omitted from Study 2.

Financial Community—Support

Definition: The belief that financial resources can contribute to supporting communities and interpersonal relationships.

1. I am willing to help the people I care most about financially if they need it.
2. I feel that I can talk about money problems with my close friends and loved ones.
3. Money is valuable because it can help you support the people that you love.
4. The people I care most about are willing to help me financially if I need it.

Panel B: Financial Values

Financial Materialism: Possession-Defined Success (Richins and Dawson 1992)

Definition: A desire for financial wealth, economic luxury, and economically based expansion of individual power; for example, through enhanced mating opportunities, or greater social position or rank.

1. I admire people who own expensive homes, cars, and clothes.
2. Some of the important achievements in life include acquiring material possessions.
3. The things I own say a lot about how well I'm doing in life.
4. I like to own things that impress people.

Financial Altruism

Definition: A desire to use financial resources to enhance one's community or interpersonal relationships.

1. Donating money to charity is a waste of money. (reversed) ð
2. Either now or in the future, I intend to donate money to causes that I care about.
3. Money can be used for acts of kindness.
4. Money is useful because it can help make the world a better place.
5. Money, wisely used, can help build communities.ð Omitted from Study 2.

Panel C: Hedonic Utility

Satisfaction with Life (Diener et al. 1985)

Definition: A cognitive measure of hedonic utility, subjective well-being, or happiness.

1. In most ways, my life is close to ideal.
2. If I could live my life over, I would change almost nothing.
3. I am satisfied with my life.
4. The conditions of my life are excellent.
5. So far, I have gotten the important things I want in life.

Vitality (Ryan and Frederick 1997; Bostic et al. 2000)

Definition: An affective measure of hedonic utility, subjective well-being (SWB), or happiness.

1. I feel alive and vital.
3. Sometimes I feel so alive I just want to burst.
4. I have energy and spirit.
5. I look forward to each new day.
6. I nearly always feel alert and awake.
7. I feel energized.

Panel D: Financial Well-Being

Source: Shortened from eight-item scale available at Personal Finance Employee Education Foundation (2009).

1. How satisfied are you with your present financial situation?
2. How do you feel about your current financial condition?
3. What is your level of financial stress today? (reversed)
4. How often—find yourself just getting by financially and living paycheck to paycheck? (reversed)
5. How often—want to go out to eat, go to a movie or do something else and do not go because you cannot afford it? (reversed)Note: For Study 2, we only used items 1 and 2 above to measure financial well-being.

APPENDIX B
CONSTRUCTS, NUMBER OF MEASURED ITEMS, AND SCALES FOR STUDIES 1 AND 2

	Study 1 (n = 688)		Study 2 (n = 335–338)	
Construct	**# of Items**	**Scales**	**# of Items**	**Scales**
Financial Autonomy (reversed)	4	1–6	4	1–7
Financial Self-Efficacy	6	1–6	6	1–7
Financial Community—Trust	3	1–7	NA	
Financial Community—Support	4	1–6	4	1–7
Financial Materialism	4	n = 512: 1–6 n = 176: 1–7	4	1–7
Financial Altruism	5	1–6	4	1–7
Satisfaction with Life	5	n = 512: 1–7 n = 176: 1–5	5	1–5
Vitality	6	n = 512: 1–7 n = 176: 1–5	6	1–5

Scales: 1 to 6: 1 = Strongly Disagree, 6 = Strongly Agree.
1 to 7: 1 = Strongly Disagree, 4 = Neither Agree nor Disagree, 7 = Strongly Agree.
1 to 5: 1 = Strongly Disagree, 3 = Neither Agree nor Disagree, 5 = Strongly Agree.

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