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Drawing on the theoretical foundation of obsessive-compulsive spectrum disorder, this article develops an expanded conceptualization and new measure of consumers' proclivity to buy compulsively. Compulsive buying is defined as a consumer's tendency to be preoccupied with buying that is revealed through repetitive buying and a lack of impulse control over buying. This measure includes dimensions of both obsessive-compulsive and impulse-control disorders. By measuring income-dependent items or consequences of compulsive buying separately from the compulsive-buying scale, we develop a measure that has a strong theoretical foundation, well-documented psychometric properties, and an ability to be applied to general consumer populations.

> Unlike alcohol and drug abuse, society condones heavy consumption of products; it fuels our economy. However, for many consumers, compulsive buying has become a significant problem. (April Lane Benson, 2005)[1]

It has been over 20 years since the issue of compulsive-buying behavior was introduced to the consumer research literature (Faber, O'Guinn, and Krych 1987). This pioneering research has helped to awaken researchers' interest in a troubling issue in consumer behavior. The incidence of compulsive buyers was estimated to range between 2% and 8% of consumers in the United States 15 years ago (Faber and O'Guinn 1992). More recently, 5.8% of U. S. consumers were estimated to be compulsive buyers (Koran et al. 2006). However, other researchers believe that these estimates are too low and that there is an increasing tendency by consumers to buy compulsively in both the United States and other developed countries (Muller and de Zwaan 2004; Neuner, Raab, and Reisch 2005). The continuous stream of research articles, books, television documentaries, and Web sites addressing compulsive buying and the problems it creates shows that the issue remains of concern (Benson 2007; Chaker 2003; McElroy, Phillips, and Keck 1994; Mellan and Christie 1997). Therefore, it is imperative that we are able to accurately measure the tendency of consumers to be compulsive buyers.

Researchers have offered various definitions of compulsive buying: "chronic repetitive purchasing" (O'Guinn and Faber 1989, 155); "impulsive and/or compulsive buying of unneeded objects" (Ninan et al. 2000, 362); and "excessive or poorly controlled preoccupations, urges or behaviors regarding . . . spending" (Black 2001, 17). These definition excerpts contain dimensions of both obsessive-compulsive behaviors (i.e., preoccupation with buying, repetitive buying) as well as lack of impulse control (i.e., the lack of control over the urge or impulse to buy). Therefore, in this article, compulsive buying is defined as a consumer's tendency to be preoccupied with buying that is revealed through repetitive buying and a lack of impulse control over buying. However, none of the existing compulsive-buying scales adequately measures both of these dimensions. Ironically, while several scales purport to measure compulsive buying, only one scale actually includes items tapping the obsessive-compulsive dimension (i.e., preoccupation and/or repetitiveness) in the measure itself (Monahan, Black, and Gabel

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[1]April Lane Benson, moderator of special session presented at the Association for Consumer Research Conference, San Antonio, TX; personal communication, September 30, 2005, San Antonio, TX.

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1996), while excluding the impulsive dimension. All other scales focus solely on impulse-control problems and are more appropriately positioned as scales measuring consumers' tendencies to buy impulsively. Consequently, despite the nomenclature, no existing scale includes items such that both dimensions are measured within the same scale. Thus, these scales do not adequately measure consumers' compulsive-buying tendencies.

To be classified as a psychiatric disorder, a behavioral problem or disorder must result in harm to the individual or others (*Diagnostic and Statistical Manual of Mental Disorders* [DSM-IV-TR 2000], the standard reference text for psychiatric diagnoses [American Psychiatric Association 2000]). For this reason, diagnostic scales (which result in a yes or no conclusion) often include the consequent harm within the measure itself. In the context of compulsive-buying behavior, harm primarily has been considered as financial (e.g., extreme indebtedness; Faber and O'Guinn 1992; Lejoyeux et al. 1997) or emotional (Edwards 1993; Valence, d'Astous, and Fortier 1988) consequences of compulsive buying. While damage to family relationships and social- or work-related consequences have also been mentioned, they have not been studied as outcomes of compulsive buying (Dittmar 2004; Faber and O'Guinn 1992; McElroy, Keck, et al. 1994). Regardless, harm or adverse consequences should be classified as outcomes, rather than as dimensions of a compulsive-buying tendency per se. From the perspective of construct validity, a compulsive-buying tendency and the consequence effects of such behavior should be measured separately (DeVillis 2003; Tian, Bearden, and Hunter 2001).

In contrast to other measures of consumer compulsive buying (Edwards 1993; Faber and O'Guinn 1992; Lejoyeux et al. 1997), we separately measure multiple adverse consequences of compulsive buying, including financial, emotional, and behavioral. Thus, our measure focuses on identifying underlying behavioral tendencies rather than potential consequences of such behavior. Moreover, public concern with compulsive buying is not confined to people previously identified with a psychiatric disorder (Greenway 2006). Indeed, there is a widespread belief that there are many consumers who, although not identified psychiatrically as suffering from a buying disorder, nevertheless may be compulsive buyers (Chaker 2003). These people have similar underlying precursors and experience similar emotional and social consequences as do psychiatrically identified compulsive buyers. However, their financial resources are ample, such that their compulsive buying may not lead to financial harm. Due to their dependence on financial consequences and income-related items, existing scales are unable to identify these compulsive buyers.

Therefore, the contributions of the present research are (1) using an emerging theory from the psychiatric literature that allows for an expanded conceptualization of the compulsive-buying construct by incorporating both obsessive-compulsive and impulse-control dimensions, (2) developing a measure of compulsive buying, accounting for both of these dimensions in the measure itself, and (3) validating the scale with actual and self-reported consumer purchase data. Also, the compulsive-buying measure itself furthers our understanding of consumer-buying behavior in that it (1) does not require a previous diagnosis of a psychiatric disorder, as do other existing scales, (2) excludes consequences of the behavior from the scale itself, (3) excludes items that may be related to a consumer's income level from the scale, and (4) shows that potentially more consumers might exhibit compulsive-buying tendencies than were previously identified.

THEORETICAL CLASSIFICATION OF COMPULSIVE BUYING: OBSESSIVE-COMPULSIVE SPECTRUM DISORDER

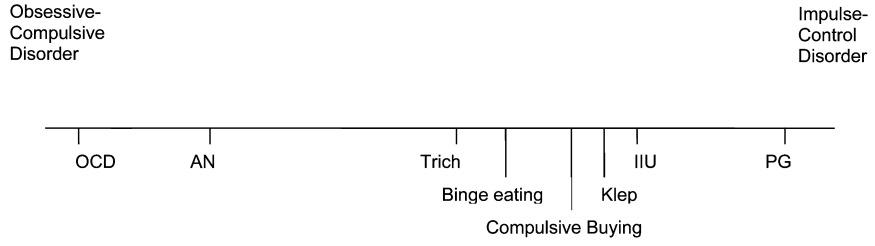
Today, many researchers believe that compulsive buying should be considered as exhibiting elements of both obsessive-compulsive and impulse-control disorders, calling this theory obsessive-compulsive spectrum disorder (Hollander and Allen 2006; Hollander and Dell'Osso 2005; McElroy, Phillips, et al. 1994). Other conditions within this category include Internet addiction, pathological gambling, and kleptomania. Our definition and measure of compulsive buying are based on this emerging theoretical foundation. Prior to this development, compulsive buying ironically had been considered an impulse-control disorder, which is classified in psychiatry as a separate disorder from obsessive-compulsive disorder (Black 1996; Faber and O'Guinn 1992).

An impulse-control disorder (ICD) is characterized by irresistible impulses to perform harmful behaviors. On the other hand, obsessive-compulsive disorder (OCD) is an anxiety disorder, with obsessions (thoughts, preoccupations) and compulsions (behavior) that cause distress and anxiety, consume large amounts of time, and interfere with an individual's everyday functioning (McElroy, Keck, et al. 1994). The rationale for classifying compulsive buying as an obsessive-compulsive spectrum disorder is that, like OCD, the consumers' thoughts are preoccupied with buying and repetitive buying behavior is performed to reduce anxiety. Moreover, like ICD, these consumers lack control over the urge to buy. Both disorders involve an urge to perform an act followed by a loss of control over the urge (Hollander and Dell'Osso 2005). Recognizing this overlap, it is argued that compulsive buying should be classified as a disorder with elements of both OCD and ICD.

Figure 1 illustrates obsessive-compulsive spectrum disorder by showing obsessive-compulsive disorder at one end of a continuum and impulse-control disorder at the other end. Represented on the figure are multiple disorders thought to contain elements of both OCD and ICD. Figure 1 represents disorders not currently classified together in the DSM-IV-TR 2000 (American Psychiatric Association 2000). However, a growing number of researchers believe that these disorders are similar enough to be contained within the obsessive-compulsive spectrum disorder. Some disorders are more closely aligned with OCD, and others

FIGURE 1

OBSESSIVE-COMPULSIVE SPECTRUM DISORDERS



NOTE.—Adapted from Hollander (1999, 40). Although the disorders shown on this figure are not scaled, those closer to obsessive-compulsive disorder are thought to be more aligned with this disorder, while those closer to impulse-control disorder are thought to have more characteristics of impulse-control disorder. OCD = obsessive-compulsive disorder; AN = anorexia (keeping body weight extremely low through starving oneself and/or exercise); Trich = trichotillomania (pulling out significant quantities of one's hair to relieve tension experienced prior to the act); Klep = kleptomania (impulsive stealing that causes relief or pleasure even though one can afford stolen items); IIU = impulsive Internet usage; PG = pathological gambling.

are more closely aligned with ICD (Hollander 1999). There is no research that positions the disorders at an exact point in relation to each other.

Nevertheless, there is evidence for considering compulsive buying as an obsessive-compulsive spectrum disorder. McElroy (1994) found that 80% of her identified compulsive buyers had lifetime diagnoses of anxiety disorders (OCD is classified as an anxiety disorder in DSM-IV-TR 2000), and 40% had impulse-control disorders. Also, Christenson et al. (1994) found that 67% of compulsive buyers were diagnosed with OCD and 96% were diagnosed with ICD. Clearly, there is overlap between the two disorders, and characteristics of both disorders should be included in a conceptualization and measurement of compulsive buying.

Thus, our definition and measurement of compulsive buying includes the extent to which consumers' buying behaviors are repetitive (characteristic of OCD) and lack impulse control (characteristic of ICD). We consider both of these dimensions as reflecting the underlying consumer tendency to be preoccupied with buying. To document the need for a new measure of compulsive buying, the limitations of the six existing scales are discussed next (see table 1).

EXISTING COMPULSIVE-BUYING SCALES

Clinical Screener for Compulsive Buying

In their seminal research, Faber and O'Guinn (1992) developed their compulsive-buying scale, the clinical screener, to be a diagnostic or classification scale (i.e., yes/no) for inclusion in a future edition of the DSM. The screener has been used widely in consumer research and has sparked substantial interest in this important topic. However, the measure does have some limitations that reduce its applicability. One shortcoming of the screener is that it does not contain any items tapping the obsessive-compulsive dimension of buying, as it focuses only on the impulse-control dimension. For example, item 1a states: "If I have any money left at the end of the pay period, I just have to spend it" (a lack of impulse control).

The scale also contains four items that are either income dependent or address financial consequences of spending and, thus, cannot identify those consumers who have higher incomes and can afford their compulsive spending. These individuals may be suffering from emotional or other consequences, and it is also important to identify them. The clinical screener was presented originally as a one-factor measure; however, exploratory factor analysis conducted in the present research (see study 2) found a two-factor solution: items 2b, "Bought things even though I couldn't afford them"; 2c, "Wrote a check when I knew I didn't have enough money in the bank to cover it"; and 2f, "Made only the minimum payments on my credit cards" (all of which appear to be income-related questions) load on the first factor. Items 1a, "If I have any money left at the end of the pay period, I just have to spend it"; 2a, "Felt others would be horrified if they knew of my spending habits"; 2d, "Bought myself something in order to make myself feel better"; and 2e, "Felt anxious or nervous on days I didn't go shopping" load on the second factor. There seems to be substantial face validity for this two-factor solution.

In the clinical screener, an algorithm is used to identify a consumer as a compulsive buyer. Weights from the βs estimated from logistic regression are assigned to each item, and a weighted final score is calculated to determine whether the person can be diagnosed as a compulsive buyer. However, if low-income consumers answer "very often" to three income-related questions (2b, 2c, 2f) while at the same time strongly disagreeing with item 1a and answering "never" to items 2a, 2d, and 2e, the clinical screener would classify them as compulsive buyers. Two of the income-related questions in the screener (2c, writing a check with insufficient funds; 2f, making only the minimum credit card payments) do not refer to buying. It is possible that consumers could have written checks or used a credit card to pay for utilities, a doctor's bill, or other essential purchases. Yet, such people would be classified as compulsive buyers without exhibiting

any compulsive-buying tendencies. Thus, unless consumers have already been identified with a buying disorder, the clinical screener may misclassify some of them as compulsive buyers, because of its dependence on income-related items and the weights assigned to those items in the scoring algorithm.

Limitations of Other Scales

Sole Focus on Either Obsessive-Compulsive or Impulse-Control Dimension. Similar to the clinical screener, no other existing compulsive-buying scale measures both the obsessive-compulsive and impulse-control dimensions of the behavior. Monahan et al. (1996) focus exclusively on the obsessive-compulsive dimension, while Christenson et al. (1994), d'Astous (1990), Edwards (1993), Lejoyeux et al. (1997), and Valence et al. (1988) include only items tapping into the lack of impulse-control dimension. Based on the current theoretical thinking that compulsive-buying behavior contains characteristics of both obsessive-compulsive and impulse-control disorders, these measures do not adequately represent the whole domain of the construct, as does the scale developed in the present research.

Including Consequences of the Behavior in the Measure. Several scales include consequences of the behavior (many of them financial) in the measure itself (d'Astous 1990; Edwards 1993; Lejoyeux et al. 1997; Valence et al. 1988). Harmful consequences should not be measured as a part of identifying consumers who have compulsive-buying tendencies but independently as outcomes of the behavior. The present scale overcomes this limitation by measuring consequences independently of the compulsive-buying construct. Moreover, we define and measure harm more broadly than just financial debt to include other consequences, such as hiding purchases, returning purchases, and engaging in family arguments caused by buying.

Limited Applicability. Several existing scales have used small samples in which the respondents must be either prescreened or previously diagnosed as compulsive buyers by psychiatrists or psychologists (Christenson et al. 1994; Lejoyeux et al. 1997; Monahan et al. 1996). As such, they cannot be used to measure the compulsive-buying tendencies across a variety of consumer segments. Moreover, two scales (Christenson et al. 1994; Monahan et al. 1996) are to be administered in a personal interview format, further limiting applicability to consumer behavior research using either large samples or survey format. In contrast, the scale reported here is based on three large and very different samples of consumers, providing evidence that the scale could be used to measure the compulsive-buying tendencies across a variety of populations and settings.

Wording Problems. One scale contains items referring to shopping (Edwards 1993), and a second scale refers exclusively to shopping (Monahan et al. 1996), rather than to buying. Two scales contain double-barreled items (d'Astous 1990; Valence et al. 1988). As the construct of interest is buying, rather than shopping per se, the present scale refers exclusively to buying as the behavior of interest. Care has also been taken to develop items that are not ambiguous or double-barreled.

Inadequate Validity and Reliability and Their Assessment. Several published scales have inadequate psychometric properties (d'Astous 1990; Valence et al. 1988) or do not assess the scale's validity and reliability (Christenson et al. 1994; Monahan et al. 1996). The present scale is rigorously tested using three samples, multiple analytical approaches, and nomological correlates to show its psychometric properties.

STUDY 1: DEVELOPMENT OF THE COMPULSIVE-BUYING SCALE

After examining each of the scales described in table 1, we surveyed previous research on obsessive-compulsive disorders, impulse-control disorders, compulsive buying, and impulsive buying. Using the theoretical foundation of obsessive-compulsive spectrum disorder, we focused on the two previously discussed dimensions within this spectrum.

Compulsive-Buying Dimensions

Researchers agree that compulsive buyers have an obsession (i.e., preoccupation) with buying and a compulsion that leads them to engage in repetitive buying (e.g., Faber and O'Guinn 1992; Hirschman 1992; Kyrios, Frost, and Steketee 2004). Similarly, we expect compulsive buyers to exhibit this obsessive-compulsive buying dimension by buying both more frequently and in larger amounts than average buyers.

The urge to buy may lead one to a retail outlet where a wide array of products encourages consumers to assuage their urge regardless of the need for a product. Repeating this behavior to regulate arousal as well as the element of making frequent unplanned and unneeded purchases of products, signifying a lack of impulse control, is included in the impulsive-buying dimension.

Item Selection

Initially, a list of 121 potential items was developed based on a review of over 300 research articles, over 100 popular press articles, and brainstorming exercises using the construct definition and its two dimensions. Next, three consumer researchers examined the 121 items individually and judged whether each item either measured one of the dimensions of compulsive buying or was an overall measure of the compulsive-buying tendency. Care was taken to exclude items that measured either precursors or consequences of compulsive buying. Using these criteria and eliminating items that were double-barreled, ambiguous, or had other wording problems (e.g., shopping instead of buying), the initial list was narrowed to 15 items.

TABLE 1

EXISTING SCALES OF COMPULSIVE BUYING

Developer/date	Scale name	Scale strengths and characteristics	Limitations
d'Astous 1990; Valence et al. 1988	Compulsive-buying measurement scale (13 items)	α between .78–.92; compulsive group scored significantly higher than normal group; acceptable fit measures of GFI = .92, AGFI = .87, RMSQR = .06	Focus on impulse-control dimension (eight items; e.g., "When I have money, I cannot help but spend part or the whole of it"); consequences of buying (three items, e.g., "At times, I have felt guilty after buying a product"), positive feelings (one item), and general buying behavior (one item). No items address the obsessive-compulsive dimension (preoccupation and repetitiveness). Two items deal with shopping, not buying; Four items are double-barreled (e.g., "There are some things I buy that I do not show to anybody because I fear people will think I did a foolish expense or I wasted money"). Some low reliability scores; authors found one and four factors; Cole and Sherrell (1995) found three factors with low α = .69, .81, and .61, respectively; factor loadings in confirmatory low (.22, .55, and .39).
Faber and O'Guinn 1992	Compulsive-buying scale/ clinical screener (seven items)	Able to correctly classify 88% of compulsives and noncompulsives based on scale score; self-identified compulsives score much lower (meaning more compulsive) than control samples; good fit measures in confirmatory factor analysis: GFI = .96, AGFI = .91, RMSQR = .05 (Cole and Sherrell 1995)	Focus on impulse-control dimension (four items; e.g., "If I have any money left at the end of the pay period, I just have to spend it"), financial consequences (one item), social consequences (one item), positive feelings (one item). No items address the obsessive-compulsive dimension. One item refers to shopping rather than buying, and three items deal with outcomes of compulsive buying. Two items have no direct link to buying (e.g., "I made only the minimum payments on my credit card"; "I wrote a check when I knew I didn't have enough money in the bank to cover it") and appear to be income-related. Little traditional reliability/validity testing; Cole and Sherrell (1995) used confirmatory analysis specifying a one-factor solution: α = .76; average variance extracted was low (.33); factors loadings for four of seven items were low (.44, .50, .37, and .56).
DeSarbo and Edwards 1996; Edwards 1993	Compulsive-buying scale (13 items)	α = .91; fit measures approach acceptable fit: GFI = .912, AGFI = .855, RMR = .041	Focus on impulse-control dimension (seven items, e.g., "I buy things even when I don't need anything"; "I feel driven to shop and spend, even when I don't have the time or the money"); positive feelings (three items, e.g., "I feel 'high' when I go on a buying spree"), negative feelings (one item); consequences (two items, e.g., "I feel guilty or ashamed after I go on a buying binge"). Five items refer to shopping, not buying. Lack of items addressing the obsessive-compulsive dimension. In confirmatory factor analysis, four of five factors have only two items; three factors seem very similar—tendency to spend, compulsion to spend, and dysfunctional spending; little reliability/validity information available.

TABLE 1 (*Continued*)

Developer/date	Scale name	Scale strengths and characteristics	Limitations
Christenson et al. 1994	Minnesota impulsive disorder interview (MIDI) (four core questions; five follow-up questions)	Interview format with additional exploring phenomenological and descriptive aspects of their compulsive buying; used with compulsive buyers vs. a control group; no reliability/validity testing available	Focus on impulse-control dimension. Because of format, difficult to use with large samples; designed for use with patients already diagnosed with compulsive buying; also used to assess kleptomania, trichotillomania, and other impulse-control disorders.
Monahan et al. 1996	Modified existing Yale-Brown obsessive-compulsive scale—shopping version (10 items)	Conducted in person with prediagnosed compulsive buyers to measure the severity and change (after treatment) in compulsive buying; five questions deal with preoccupations, and five deal with behaviors	Exclusive focus on the obsessive-compulsive dimension (i.e., existing obsessive-compulsive scale is modified to pertain specifically to shopping). All items focus on shopping, not buying (e.g., "How much of your time is occupied by thoughts of shopping?"). Originally used during clinical drug trials; low α = .65 and .70; low test-retest reliability was .59; very small sample ($N = 9$) prevents an adequate assessment of validity and reliability. Limited applicability due to the in-person format and its clinical nature.
Lejoyeux et al. 1997	Questionnaire about buying behavior (19 items)	Seven factors—impulsivity; urges to shop and buy; emotions felt before, during, and after purchasing; postpurchase guilt and regret; degree of engagement of short-term gratification; tangible consequences of buying; and avoidant strategies	Focus on consequences of buying, many of them financial (10 items, e.g., "Do you regularly regret your purchases?"; "Has any of your purchases ever resulted in problems with your bank?"), impulse-control dimension (six items, e.g., "Do you buy something on the spur of the moment at least once a month?"), positive feelings (two items), negative feelings (one item). No items address the obsessive-compulsive component (preoccupation and repetitiveness). All items are yes/no, thus preventing assessing a degree or strength of each relationship. Few psychometric properties of factors available; α = .80 and .88 (low for a 19-item scale); authors mention high degree of homogeneity in items that do not capture full dimensionality of compulsive buying; later found two dimensions. Limited applicability to general population, as the scale was designed for use with psychiatric patients.

NOTE.—GFI = goodness of fit index, AGFI = adjusted goodness of fit index, RMSQR = root mean square error, RMR = root mean square residual.

Sample and Data Analyses

For extra course credit, 352 undergraduate students (54% female, average age 21) completed a survey that included these 15 items. Additional variables (frequency of buying clothing and accessories, average amount spent per shopping trip) were also measured.

Exploratory Factor Analysis. Principal component exploratory factor analysis with oblique rotation (Promax) was used on the 15 compulsive-buying items. Items were retained if they loaded .50 or more on a hypothesized factor, did not load .50 or more on more than one factor, and their item-to-total correlation in reliability analysis exceeded .40 (Hair et al. 1998). Using these criteria, six items were eliminated. The remaining nine items all loaded on the two hypothesized factors, together explaining 69% of the total variance (see table 2).

Confirmatory Factor Analysis. Based on our definition of compulsive buying, we concluded that obsessive-compulsive buying behaviors and impulse-control buying behaviors are reflective measures (i.e., revealed behaviors) of the underlying compulsive-buying tendency (Jarvis, MacKenzie, and Podsakoff 2003). The two dimensions are also highly correlated ($\rho = .77$). After specifying the latent measurement model, confirmatory factor analysis was used on the remaining nine items to investigate the dimensionality of the construct (Arnold and Reynolds 2003). An additional three items were removed because of large error covariances with other items or because their error terms loaded significantly on multiple dimensions (Bollen 1989). Six items

TABLE 2

NINE ITEMS RETAINED FROM THE EXPLORATORY FACTOR ANALYSIS IN STUDY 1

Dimensions of compulsive buying	Preoccupation with buying	Impulsive buying
Obsessive-compulsive buying:		
"My closet has unopened shopping bags in it."	.72	.05
"Others might consider me a 'shopaholic.'"	.63	.19
"I buy something for myself almost every day."	.91	−.06
"Much of my life centers around buying things."	.91	−.06
Impulsive buying:		
"I buy things I don't need."[a]	−.09	.82
"I buy things I did not plan to buy."[a]	.02	.82
"I buy things without thinking."[a]	.11	.80
"I am a bit reckless about what I buy."[a]	.05	.84
"I consider myself an impulse purchaser."	.01	.84

NOTE.—All items were measured on a 7-point Likert scale, anchored at 1 = strongly disagree and 7 = strongly agree, except the items denoted by [a], which were measured on a 7-point scale, anchored at 1 = never, and 7 = very often.

remained in the final set, and all dimensions exhibited item and construct reliabilities above the recommended levels (Bagozzi and Yi 1988). Table 3 displays the final items and their standardized factor loadings. Construct reliabilities for the individual dimensions as well as correlations among the two dimensions are shown below the table. Coefficient alpha for the scale was .84. The confirmatory model showed a good fit with the data ($\chi^2(8) = 11$, $p > .10$; NFI = .99, IFI = 1.00, CFI = 1.00, RMSEA = .03).[2] The standardized factor loadings of these dimensions on the second order factor, compulsive-buying tendency, are .99 for the obsessive-compulsive buying dimension and .78 for the impulse-control dimension.

STUDY 2: VALIDATION OF THE COMPULSIVE-BUYING SCALE

Study 2 was conducted to (1) validate the new scale with a consumer sample that was more heterogeneous in age and (2) compare the current scale with the clinical screener. A random sample of 1,200 university staff members was chosen from a directory and sent a survey through campus mail containing the compulsive-buying scale with other measures needed to assess the validity of the scale. After 2.5 weeks, a reminder e-mail message was sent to the entire sample. A total of 555 surveys were returned, for a response rate of 46%. Among the respondents, 92.7% were female; the average age was 47 years (age range 20–77 years); the average household income was $55,000; 61.5% were married; 20% had a high school diploma, 42% had attended college, while 27% had received a college degree. Each participant was paid $10.

Four respondents did not answer all compulsive-buying questions and were excluded from further analysis. The six compulsive-buying items were measured on 7-point scales. The scale was first evaluated by examining the factor loadings obtained in confirmatory factor analysis (table 3). All item loadings were at or above .50 and were comparable in magnitude to those achieved in study 1. Correlations between the two compulsive-buying scale dimensions and their reliabilities were also similar (see table 3). The fit indices confirm a good model fit ($\chi^2(8) = 37.86$, $p < .01$; NFI = .97, IFI = .97, CFI = .97, RMSEA = .08). The standardized factor loadings of the two compulsive dimensions were similar to those achieved in study 1 (.73 for the obsessive-compulsive and .82 for the impulse-control dimensions).

Since one objective of this study was to investigate the overall construct of compulsive buying, further validation tests were performed on the scale as a whole rather than on its individual dimensions (Tian et al. 2001). A composite index (compulsive-buying index or CBI) was formed by summing the individual scores for the six items (Carver 1989). The average value for the compulsive-buying index was 15.39, SD = 6.44 (possible range 6–42), and the median value was 14. Compulsive buying significantly correlated with gender (women had a higher compulsive-buying tendency than men; $\rho = .10$, $p < .05$), age (the compulsive-buying tendency decreased with age; $\rho = -.17$, $p < .01$), and education (compulsive buying was inversely related to education; $\rho = -.11$, $p < .05$). Income did not correlate with the compulsive-buying index ($\rho = -.03$, $p > .10$),

TABLE 3

SIX ITEMS RETAINED FROM THE CONFIRMATORY FACTOR ANALYSIS

Dimensions of compulsive buying	Standardized item loading		
	Study 1	Study 2	Study 3
Obsessive-compulsive buying; α = .75 (.77) [.78] in study 1 (2) [3]:			
"My closet has unopened shopping bags in it."	.69	.50	.61
"Others might consider me a 'shopaholic.'"	.77	.88	.83
"Much of my life centers around buying things."	.71	.83	.79
Impulsive buying; α = .80 (.78) [.84] in study 1 (2) [3]:			
"I buy things I don't need."[a]	.70	.75	.83
"I buy things I did not plan to buy."[a]	.81	.77	.82
"I consider myself an impulse purchaser."	.76	.69	.70

NOTE.—All items were measured on a 7-point Likert scale, anchored at 1 = strongly disagree, and 7 = strongly agree, except the items denoted by [a], which were measured on a 7-point scale, anchored at 1 = never, and 7 = very often. Correlation between the two dimensions is .77 (.60) [.72] in studies 1 (2) [3]. Overall reliability (α) for the scale as a whole is .84 (.81) [.84] in studies 1 (2) [3].

[2] NFI = normed fit index, IFI = incremental fit index, CFI = comparative fit index, RMSEA = root mean square error of approximation.

confirming that the compulsive-buying tendency is independent of income. Internal consistency reliability for the scale as a whole was .81, while measures for the individual dimensions displayed reliabilities .77 for obsessive-compulsive buying and .78 for impulsive buying, similar to study 1 (table 3).

Nonresponse Bias

To evaluate nonresponse bias, the entire sample was split into early and late respondents (Armstrong and Overton 1977). Everyone who responded to the survey before the reminder e-mail message was classified as an early respondent (91%). People who returned the survey after the reminder message were categorized as late respondents (9%). The sample demographic characteristics as well as the compulsive-buying scale and its correlates were evaluated across both sets of respondents. The early and late respondents were not significantly different (p-values $> .05$) with regard to their compulsive-buying tendency or any other variables used to assess the validity of the scale.

Response Bias

Because compulsive buying is a sensitive issue (e.g., Mick [1996] referred to it as a dark-side consumer variable), the scale may be subject to socially desirable responses. Using the 33-item Crowne and Marlowe (1960) social desirability scale, the correlation between social desirability and compulsive buying was significant ($\rho = -.21$, $p < .01$). The more likely a consumer responded in a socially approved way, the less likely she would report compulsive-buying tendencies. Since the negative correlation implies that compulsive buying may be underestimated in the study, we used social desirability as a control variable in our analyses.

Nomological Validity

Nomological validity of the compulsive-buying scale was assessed to verify that the compulsive-buying construct linked to other theoretical constructs as expected. We investigated the relationship of compulsive buying with (1) previously identified precursors of the construct and (2) the consequences or outcomes of compulsive buying. Existing research has identified a positive link between compulsive buying and precursors such as materialism (Faber and O'Guinn 1992), depression and stress/anxiety disorders (Aboujaoude, Gamel, and Koran 2003; Black 1997), and negative feelings about one's self or one's life (Aboujaoude et al. 2003; Dahl, Honea, and Manchanda 2003; Kacen and Friese 1999). Researchers have also found a negative relationship between compulsive buying and self-esteem (Dittmar 2004). Our measure of compulsive buying correlates with these consumer traits and states as expected (see table 4).

Materialism. Materialism was measured using a short-form 9-item scale (Richins 2004). Internal consistency reliability for these data was .86. There was a significant correlation between materialism and the compulsive-buying index ($\rho = .51$, $p < .01$), indicating that materialistic consumers were more likely to exhibit a compulsive-buying tendency.

Self-Esteem. Self-esteem was measured with a 10-item self-esteem scale (Rosenberg 1965) with an internal consistency reliability of .89. The correlation between self-esteem and compulsive buying was negative, as expected ($\rho = -.08$, $p < .05$), indicating that the lower the respondents' self-esteem, the higher their compulsive-buying tendencies.

Depression, Anxiety, and Stress. Depression, anxiety, and stress were each measured with seven items from the 21-item depression-anxiety stress scale (Lovibond and Lovibond 1995). The internal consistency reliabilities were .89 for the depression scale, .72 for the anxiety scale, and .83 for the stress scale. As expected, all three constructs were positively correlated with the compulsive-buying index ($\rho_{\text{depression}} = .21$, $\rho_{\text{anxiety}} = .31$, $\rho_{\text{stress}} = .26$, all p-values $< .01$).

Negative Feelings. Negative feelings leading to buying were measured with three items (7-point Likert scale; $\alpha = .81$): "Having a bad day can lead me to go on a buying spree"; "I find that I buy the most when I am depressed"; "If my self-esteem were higher, I would not buy as much." Negative feelings positively correlated with the compulsive-buying index ($\rho_{\text{neg. feelings}} = .65$, $p < .01$).

Consequences of Compulsive Buying. Potential consequences of compulsive buying include (1) short-term positive feelings or a "high" associated with buying (Aboujaoude et al. 2003; Chaker 2003; Dittmar and Drury 2000), (2) remorse or guilt associated with buying, leading consumers to hide their buying behavior or purchases from others (Christenson et al. 1994; Faber and O'Guinn 1992), (3) making frequent returns of purchased items (Hassay and Smith 1996), (4) engaging in family arguments pertaining to their buying (Pirog and Roberts 2007), and (5) experiencing financial consequences of buying, such as credit card debt (Faber and O'Guinn 1992; Roberts and Jones 2001).

Positive feelings were measured using "I find buying very pleasurable," "The process of buying provides me with a lot of gratification (at least temporarily)," and "I feel excited when I go on a buying spree." The scale reliability was .82. Hiding behavior was measured using "I sneak new purchases into where I live," "I hide the things I buy from others (e.g., family, roommate, or partner)," and "I have lied about how much I buy." The scale reliability was .82. For both scales, responses were anchored at 1 = strongly disagree, and 7 = strongly agree. The correlations between the compulsive-buying index and positive feelings associated with buying ($\rho_{\text{pos. feelings}} = .59$, $p < .01$) and with hiding behavior ($\rho = .59$, $p < .01$) were positive.

We measured frequency of returning purchases by "How often do you return the things you buy?" There was a pos-

itive relationship between the compulsive-buying index and the frequency of returning purchases ($\rho = .13, p < .01$). The extent of family arguments was assessed by "How often do you argue with your family about your excessive buying?" The compulsive-buying index and family arguments were positively correlated ($\rho = .44$, $p < .01$). (Both items were anchored at 1 = never, 7 = very often.)

Financial consequences of compulsive buying were measured with two statements: the number of credit cards paid in full each month and the number of credit cards within $100 of their limit. The number of credit cards paid in full each month was negatively correlated with the compulsive-buying index ($\rho = -.11$, $p < .01$), while the number of credit cards within $100 of their limit exhibited a positive correlation with the compulsive-buying index ($\rho = .10$, $p < .05$), as expected. As mentioned earlier, depending on an individual consumer's financial resources, these two items taken alone are not necessarily consequences of compulsive buying. However, when looking at a wide variety of consequences, financial items should be examined along with other negative outcomes of compulsive buying, even though not all consumers will experience each one. Both the precursors and the potential consequences of compulsive buying correlated with the compulsive-buying index, providing support for the nomological validity of the scale.

Discriminant Validity

To assess the discriminant validity of the compulsive-buying measure, the relationship between a compulsive-buying tendency and obsessive-compulsive disorder was examined. The two constructs are similar in that they both

TABLE 4

CONSTRUCT VALIDITY TESTS AND CORRELATION COMPARISON WITH THE CLINICAL SCREENER IN STUDY 2

Validity test	No. items	Mean	SD	Reliability	Correlation with compulsive-buying index	Correlation with clinical screener (reverse coded)	Difference in classification success (*r*)
Response bias:							
Socially desirable response scale	33	.63	.14	.74	−.21***	−.30*** C	.11
Convergent validity:							
Clinical screener (reverse scored)	7	−1.99	1.66	.80	.62***	. . .	
Discriminant validity:							
OCD	30	2.93	.67	.82	.29***	.21*** B	.09
Nomological validity:							
1. Traits and states							
Materialism	9	2.81	1.17	.86	.51***	.52***	−.01
Self-esteem	10	5.70	1.03	.89	−.08*	−.04	.05
Negative feelings	3	1.98	1.30	.81	.65***	.59*** B	.09
Depression[a]	7	.39	.47	.89	.21***	.20***	.01
Anxiety[a]	7	.27	.35	.72	.31***	.26*** A	.06
Stress[a]	7	.70	.51	.83	.26***	.23***	.04
2. Consequences:							
Positive feelings	3	3.46	1.59	.82	.59***	.46*** C	.14
Hiding behavior	3	1.72	1.20	.82	.59***	.49*** C	.14
Returning items	1	2.65	1.31	NA	.13***	.11**	.02
Family arguments	1	1.38	.92	NA	.44***	.44***	.00
Credit cards paid in full each month	1	1.08	1.51	NA	−.11**	−.27*** C	−.19
Credit cards within $100 of limit	1	.42	1.02	NA	.10**	.20*** C	−.12
3. Self-reported buying behavior:							
Frequency of buying[b]	1	1.54	.75	NA	.37***	.23*** C	.17
$ amount spent per buying occasion	1	68.18	56.47	NA	.09**	.08**	.01
Demographics:							
Age	1	47.30	10.28	NA	−.17***	−.17***	.00
Income	1	3.27	1.21	NA	−.03	−.22*** C	−.22
Education	1	3.33	1.03	NA	−.11**	−.10**	.01

NOTE.—All correlation tests were performed controlling for social desirability bias (except for reported correlation with the social desirability; first row). NA = not applicable. Difference in the two correlations is significant at A = $p < .10$, B = $p < .05$, and C = $p < .01$.

[a]These constructs were measured on a 0–3 scale.

[b]Frequency of buying was measured on a 1–5 scale, where 1 = less than once a month, 2 = about once a month, 3 = about once in 2 weeks, 4 = about once a week, and 5 = more than once a week.

*Difference in the two correlations is significant at $p < .05$.

**Difference in the two correlations is significant at $p < .01$.

***Difference in the two correlations is significant at $p < .001$.

contain the compulsive component and, hence, should be positively correlated (Scherhorn, Reisch, and Raab 1990). Nevertheless, the constructs are not measuring identical tendencies, and, hence, the correlation should not be high. We used the 33-item Maudsley Obsessive-Compulsive Inventory (Hodgson and Rachman 1977) to measure obsessive-compulsive disorder ($\alpha = .82$). The correlation between the compulsive-buying index and obsessive-compulsive disorder was positive and significantly less than one ($\rho = .29$, $p < .01$), indicating that the two constructs are related but conceptually distinct. Since OCD is also a precursor to compulsive buying, the significant correlation between the OCD measure and the compulsive-buying index offers further evidence of the scale's nomological validity.

Comparison with the Clinical Screener

Next, the new measure was compared with the most frequently used compulsive-buying measure in consumer research, the clinical screener, using the algorithm provided by Faber and O'Guinn (1992). We reverse-scored the screener for easier comparison to the compulsive-buying index (i.e., high numbers indicate a high compulsive-buying tendency).

Assessing Convergent Validity. The first objective was to assess the convergent validity of the new scale. The correlation between the compulsive-buying index and the clinical screener was positive, $\rho = .62$, $p < .01$ (95% confidence interval .59–.65). Since the clinical screener and the compulsive-buying scale both contain items referring to the loss of impulse control, such correlation is expected and provides evidence of convergent validity of the two scales. However, the obsessive-compulsive items are only present in the compulsive-buying scale, while financially based items are only present in the clinical screener. Thus, as expected, the correlation is not higher. Further comparison of the compulsive-buying index and the clinical screener indeed shows that the index correlates to a significantly greater degree with obsessive-compulsive disorder than does the clinical screener ($\rho = .29$ vs. .21, $p < .05$; table 4).

Evaluating the Performance of Each Measure. A second purpose of comparing the compulsive-buying index with the clinical screener was to assess how both scales correlate with precursors and consequences of compulsive buying relative to each other. In addition to containing validation results for the compulsive-buying index, table 4 reports correlations between various characteristics and the compulsive-buying index alongside the clinical screener. To test the significance of the differences, we used a test of dependent correlations (Cohen and Cohen 1983). First, note that the clinical screener is affected by social desirability bias significantly more than the new measure ($\rho = -.21$ vs. $-.30$, $p < .01$). Second, in addition to obsessive-compulsive disorder, the new compulsive-buying index correlates to a significantly greater degree than the clinical screener with characteristics of compulsive buyers, such as experiencing negative feelings that lead to buying, anxiety, hiding behavior, short-term positive feelings associated with buying, and self-reported frequency of buying clothing and accessories for self. As expected, given its confounding with respondents' incomes, the clinical screener shows significantly stronger correlations than the compulsive-buying index for variables related to financial consequences (i.e., credit card debt and income). Differences in correlations for all other variables do not significantly differ between the two measures of compulsive buying. Overall, for the nonconfounded variables, the new measure either outperforms or performs equally well compared to the clinical screener.

A way to interpret the practical importance of the comparisons in table 4 is shown by the differences in classification success in the last column. Using the concept of the binomial effect-size display (BESD; Rosenthal and Rosnow 1991), the differences in correlations have been converted to an estimate of effect size r. Binomial in this situation refers to whether the research results can be cast into dichotomous results such as improved versus not improved. Positive values indicate that the compulsive-buying index performs better than the clinical screener for a specific variable. The improvement in the performance of the new measure versus the clinical screener is computed as $.50 + r/2$, whereas the relative performance of the clinical screener is $.50 - r/2$. For example, the correlation of .09 for negative feelings would be interpreted as providing a 54.5% classification success rate for the compulsive-buying index versus a 45.5 success rate for the clinical screener. For the hiding-behavior variable ($r = .14$) the range of classification success rate would be 57% to 43% in favor of the compulsive-buying index. The substantive significance of these differences in classification performance is addressed in the next section.

To further evaluate the performance of the two compulsive-buying scales, we compared their explanatory power in predicting the examined variables. We ran three regressions for each variable, using the compulsive-buying index, the clinical screener, and both as predictors of each variable, respectively (while controlling for social desirability in each regression). Table 5 shows adjusted R^2 for each regression and the p-value for the predictors. For all variables in bold (12 of 16), the new scale explains more additional variance in the outcome variable than the clinical screener. The one exception is the first bold line showing that the new scale is subject to less social desirability bias than the clinical screener. Further, for OCD, self-esteem, stress, returning items, and frequency of buying, the clinical screener is an insignificant predictor when the new scale is also included in the model. The only variables for which the clinical screener performs noticeably better are the two financial (credit card) items and family arguments (likely linked with financial difficulties). As discussed above, the screener is confounded with the financial debt variables; hence, such a relationship is expected. Finally, for depression, there is barely any difference between the explanatory powers of the two measures. Overall, the new scale explains additional

TABLE 5

COMPARING EXPLANATORY POWER OF COMPULSIVE-BUYING INDEX (CBI) AND CLINICAL SCREENER (CS) IN STUDY 2

Predicted variable	Regression 1: Adj. R^2: CBI only (p-value for CBI)	Regression 2: Adj. R^2: CS only (p-value for CS)	Regression 3: Adj. R^2: CBI and CS (p-values for CBI and CS)
Social desirability	.040 ($p_{CBI} < .01 p_{CBI} < .01$)	.087 ($p_{CS} < .01$)	.087 ($p_{CBI} > .10$; $p_{CS} < .01$)
OCD	.067 ($p_{CBI} < .01$)	.035 ($p_{CS} < .01$)	.07 ($p_{CBI} < .01$; $p_{CS} > .10$)
Materialism	.296 ($p_{CBI} < .01$)	.290 ($p_{CS} < .01$)	.35 ($p_{CBI} < .01$; $p_{CS} < .01$)
Self-esteem	.108 ($p_{CBI} < .05$)	.105 ($p_{CS} > .10$)	.10 7 ($p_{CBI} < .10$; $p_{CS} > .10$)
Negative feelings	.426 ($p_{CBI} < .01$)	.352 ($p_{CS} < .01$)	.48 ($p_{CBI} < .01$; $p_{CS} < .01$)
Depression	.138 ($p_{CBI} < .01$)	.140 ($p_{CS} < .01$)	.157 ($p_{CBI} < .05$; $p_{CS} < .01$)
Anxiety	.152 ($p_{CBI} < .01$)	.132 ($p_{CS} < .01$)	.148 ($p_{CBI} < .01$; $p_{CS} < .05$)
Stress	.207 ($p_{CBI} < .01$)	.191 ($p_{CS} < .01$)	.21 ($p_{CBI} < .01$; $p_{CS} < .10$)
Positive feelings	.345 ($p_{CBI} < .01$)	.202 ($p_{CS} < .01$)	.36 ($p_{CBI} < .01$; $p_{CS} < .01$)
Hiding behavior	.323 ($p_{CBI} < .01$)	.230 ($p_{CS} < .01$)	.34 ($p_{CBI} < .01$; $p_{CS} < .01$)
Returning items	.043 ($p_{CBI} < .01$)	.032 ($p_{CS} < .10$)	.03 ($p_{CBI} < .05$; $p_{CS} > .10$)
Family arguments	.160 ($p_{CBI} < .01$)	.205 ($p_{CS} < .01$)	.23 ($p_{CBI} < .01$; $p_{CS} < .01$)
Credit cards paid in full	.022 ($p_{CBI} < .01$)	.087 ($p_{CS} < .01$)	.09 ($p_{CBI} > .10$; $p_{CS} < .01$)
Credit cards within $100 of limit	.007 ($p_{CBI} > .10$)	.041 ($p_{CS} < .01$)	.040 ($p_{CBI} > .10$; $p_{CS} < .01$)
Frequency of buying	.129 ($p_{CBI} < .01$)	.039 ($p_{CS} < .01$)	.138 ($p_{CBI} < .01$; $p_{CS} > .10$)
Amount spent per occasion ($)	.004 ($p_{CBI} < .05$)	.002 ($p_{CS} > .10$)	.001 ($p_{CBI} > .10$; $p_{CS} > .10$)

NOTE.—All analyses were conducted controlling for social desirability bias, except for predicting social desirability bias itself (first row). For all bold variables, the new scale explains more additional variance in the outcome variable than the clinical screener.

variance in most variables after accounting for the clinical screener.

Classification into Compulsive and Noncompulsive Buyers. A third comparison was to compare those respondents classified as compulsive buyers using both the compulsive-buying index and the clinical screener. To do so, we used a yes/no categorization so that each respondent of the compulsive-buying index was classified as either a compulsive or noncompulsive buyer. To determine an appropriate cutoff point for the compulsive-buying index, we examined the relationship between the compulsive-buying index and important nomological correlates, such as negative feelings, hiding purchases, arguing with family about buying, and self-reported frequency of buying. This analysis reveals that the value of these variables dramatically increases when the compulsive-buying index reaches 25 (see fig. 2). Indeed, for some variables, the inflection point occurs even before the index reaches 25. Thus, all respondents who on average agreed with the compulsive-buying statements (i.e., those who on average scored higher than the midpoint four on a 7-point scale on the six scale items; thus achieving a value of compulsive-buying index of 25 or more) were classified as compulsive buyers.

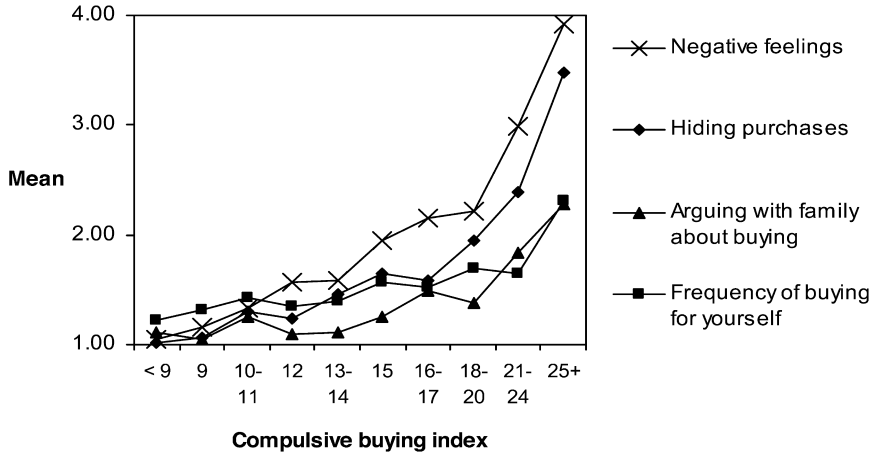
Respondents who achieved a score of 24 or below were classified as noncompulsive buyers. Besides denoting the inflection point in the graph, the cutoff point of 25 or greater for the index value represents a natural divider between those respondents who on average agreed with the statements and those people who were neutral or disagreed with the compulsive-buying statements. Such a cutoff point is reasonable, given that the scale items are strong statements and the mean index score was 15.39 (SD = 6.44).

In comparison, according to the item weights used in the clinical screener scoring algorithm, any consumer who answers at the midpoint of the clinical screener questions would be classified as compulsive. Other concerns with the clinical screener scoring, such as a possibility of false positives (i.e., consumers classified as compulsive buyers based solely on their answers to the income-dependent questions), were discussed earlier.

We found that 8.9% of the university staff sample fit into

FIGURE 2

INFLECTION POINT FOR COMPULSIVE-BUYING INDEX (CBI): STUDY 2



NOTE.—Based on their compulsive-buying index, the respondents were divided into 10 groups that were about equal in size. The values of the compulsive-buying index for each of the 10 groups are shown on the *X*-axis. The last group (CBI ≥ 25) represents the compulsive buyers.

the compulsive-buying category using the compulsive-buying index, while 5.0% were classified as compulsive buyers using the clinical screener (a difference of 3.9 percentage points). Although a 3.9 percentage points classification improvement may seem relatively small, this difference is statistically significant ($\phi = .075, \chi^2(1) = 3.12, p < .04$; one-tailed; Rosenthal and Rosnow 1991). Substantively, if this difference were applied to the general population, potentially an additional 390,000 more people per 10 million consumers might be classified as having a tendency to be compulsive buyers—not a trivial number.

Table 6 displays the differences between these two measures side by side. The average value on the compulsive-buying index for the smaller group of compulsive buyers classified by the clinical screener, 26.11, is less than the average value for the compulsive buyers based on the new measure, 29.86. Further, both groups display similar precursors for compulsive buying and are similar in terms of their age and education. However, the compulsive-buying group using the new index has a substantially higher average household income than the group obtained by the clinical screener. This income difference is a reasonable explanation for why the compulsive-buying index group has a less extreme average score using the clinical screener algorithm (.16 compared to 2.79). The cutoff point for being classified as a compulsive buyer using the clinical screener is ≥ 1.34. As higher-income consumers are less likely to experience financial harm, they are less likely to achieve a high score on the clinical screener relative to lower-income consumers. Thus, the clinical screener, unlike the new compulsive-buying scale, is less likely to identify higher-income consumers as compulsive buyers, even though they may exhibit similar or even stronger compulsive-buying tendencies and negative emotional consequences.

Both groups of compulsive buyers self-report buying clothing and accessories with similar frequency ($M_{CBI} = 2.31$, $M_{CS} = 2.11$) and spending similar amounts per shopping trip ($M_{CBI} = \$81.78$, $M_{CS} = \$67.28$). If anything, the results for the compulsive-buying index are stronger than for the clinical screener. Both groups of compulsive buyers also show a similar pattern of other consequences of their buying, such as returning purchased items and arguing about their buying with family members.

The key point of these findings is that the new compulsive-buying measure classifies a substantially larger percentage of consumers as compulsive buyers than the clinical screener, even though both groups exhibit similar buying tendencies and experience similar psychological harm. This difference is statistically significant and translates into an estimate that a substantively larger number of consumers might have a tendency to be compulsive buyers. The primary reason for the inability of the clinical screener to identify these additional people is its confounding of the financial consequences and income-related items with compulsive-buying tendencies. Despite higher income levels, the consumers identified by the new scale still display compulsive-buying tendencies and therefore are vulnerable. Thus, it is important that they be identified.

STUDY 3: VALIDATING THE COMPULSIVE-BUYING INDEX WITH ACTUAL PURCHASE DATA

The next step was to validate the new scale using actual purchase data that are not simply self-reported. For this validation, we conducted a third study using a national consumer sample of respondents from 42 states. Moreover, to

TABLE 6

COMPULSIVE BUYERS—COMPARISON OF THE COMPULSIVE-BUYING INDEX (CBI) AND CLINICAL SCREENER (CS) IN STUDY 2

Characteristic/trait/behavior	Mean (SD) compulsive buyers (CBI ≥ 25; $N = 49$)	Mean (SD) compulsive buyers (CS; $N = 28$)
Compulsive-buying index	29.86 (4.09)	26.11 (7.80)
Clinical screener algorithm score	.16 (2.39)	2.79 (1.07)
Consumer traits/states:		
OCD	3.33 (.71)	3.18 (.80)
Materialism	4.07 (1.39)	4.31 (1.29)
Self-esteem	5.44 (1.59)	5.16 (1.80)
Negative feelings	3.93 (1.78)	4.08 (1.71)
Depression	.69 (.71)	.92 (.80)
Anxiety	.53 (.53)	.65 (.54)
Stress	1.03 (.72)	1.20 (.67)
Consequences:		
Positive feelings	5.35 (1.31)	5.00 (1.76)
Hiding behavior	3.48 (1.85)	3.26 (1.89)
Returning items	2.84 (1.71)	2.57 (1.77)
Family arguments	2.29 (1.58)	2.71 (1.78)
Credit cards paid in full each month	.78 (1.05)	.32 (.72)
Credit cards within $100 of limit	.53 (.94)	.93 (1.39)
Demographic characteristics:		
Age	43.33 (11.52)	40.89 (10.70)
Income	3.29 (1.21)	2.38 (.70)
Education	3.06 (.92)	3.07 (.86)
Shopping behavior characteristics:		
Frequency of shopping for clothing	2.31 (1.02)	2.11 (1.10)
Average spent per shopping trip ($)	81.78 (69.71)	67.28 (61.71)

NOTE.—An overlap between the two groups exists, which eliminates the ability to do mean significance testing (i.e., they are not independent).

evaluate the scale's performance in predicting consumer-buying behavior, we obtained both actual and self-reported consumer purchase data. Matching these purchase data with the consumers' responses to the questions from the compulsive-buying scale allowed us to show that the new measure correlates with both actual and self-reported purchase behavior.

Procedure

An e-mail message was sent to a sample of 1,490 customers of an Internet women's clothing retailer alerting them to the survey. After accounting for bounce-back messages, an invitation to participate with the link to the survey was sent to 1,310 customers. Technical problems reduced the final number of potential respondents to 1,294. From this set, 309 people completed the survey, a response rate of 23.9%. In the sample, 98.5% of respondents were women, 63% were married, the average age was 53 years (range 28–75 years), and average household income was $82,000. The survey contained questions about general shopping and buying behavior on the Internet and at bricks-and-mortar stores, the compulsive-buying scale, questions about individual consumer characteristics, and demographic questions. As an incentive, the respondents had a choice of receiving $10 or free shipping on their next order to the Internet retailer (value up to $24.95).

Results

Assessing psychometric characteristics of the measure, reliability (Cronbach's alpha) for the scale was .84, and all six items displayed standardized factor loadings above .50. Individual construct dimension reliabilities were .78 for obsessive-compulsive buying and .80 for impulse-control buying. Standardized factor loadings of all items, the standardized regression weights of these dimensions on the higher-order factor (.71 for both obsessive-compulsive and impulse-control dimensions), as well as the intercorrelations between the dimensions were comparable to those obtained in studies 1 and 2 (see table 3). Thus, the scale performed similarly in all three studies, using very different respondent samples. Three respondents did not answer all compulsive-buying questions and were removed from further analysis. The mean value of the compulsive-buying index was 17.13 (SD = 7.27) with a median of 16 and range of 6–42.

Self-Reported Spending. Respondents reported how much on average they spent at their top-five retail stores and their top-five Internet stores per month (in dollars) for clothing and accessories for themselves as well as how frequently (per month) they bought from each of these stores. Their estimates were summed across all five Internet stores and separately across all five retail stores, and the two summed amounts were used in further analysis.

TABLE 7

CORRELATIONS FOR ACTUAL AND SELF-REPORTED PURCHASE DATA IN STUDY 3

	Compulsive-buying index	Actual total amount ($)	Actual total no. of purchases	Actual no. of purchases over $100	Actual highest amount	Self-reported Internet spending	Self-reported Internet frequency	Self-reported retail spending	Self-reported Internet frequency
Compulsive-buying index	**1**								
Actual total amount ($)	**.19****	1							
Actual total no. of purchases	**.18****	.92**	1						
Actual no. of purchases over $100	**.18****	.91**	.88**	1					
Actual highest amount of purchase	**.17***	.69**	.44**	.59**	1				
Self-reported Internet spending	**.24****	**.24****	**.24****	**.36****	**.12**+**	**1**			
Self-reported Internet frequency	**.19****	−.01	.03	.05	−.05	.50**	1		
Self-reported retail spending	**.20****	.00	.02	.10	−.02	.51**	.29**	1	
Self-reported retail frequency	**.27****	−.03	.00	.00	−.09	.27**	.56**	.46**	1

NOTE.—$N = 177$. The table shows partial correlations obtained after controlling for social desirability bias. Bold numbers denote the correlations of interest.
+$p < .10$.
*$p < .05$.
**$p < .01$.

To validate the compulsive-buying measure with respondents' self-reports of buying behavior, correlations between the two were examined first. We again calculated partial correlations after controlling for social desirability bias. As expected, the higher the respondents scored on the compulsive-buying index, the more frequently they bought clothing and accessories on the Internet ($\rho_{\text{Internet}} = .19$, $p < .01$) and from the retail stores ($\rho_{\text{retail}} = .24$, $p < .01$). Moreover, the average monthly amount spent at the top-five retail ($\rho_{\text{retail}} = .14, p < .01$) and top-five Internet stores ($\rho_{\text{Internet}} = .19$, $p < .01$) increased significantly with increases in the compulsive-buying index.

Next, we performed the same validation using the compulsive-buying scale in a bivariate manner to confirm the versatility of the scale's use. Consumers were divided into compulsive and noncompulsive buyer categories, using the cutoff value of 25 or greater for the index as previously discussed. In this way, 49 respondents (or 16%) could be classified as compulsive buyers. Using the general linear model and controlling for social desirability bias, compulsive and noncompulsive buyers were compared on their self-reported buying frequency and amount spent per month for clothing and accessories. Compulsive buyers reported buying more frequently per month from both Internet and retail stores than noncompulsive buyers ($M_{\text{com./Int.}} = 3.69$, $M_{\text{noncom./Int.}} = 2.31$; $F(1, 296) = 4.44$, $p < .05$, $r = .12$); ($M_{\text{com./ret.}} = 4.82$, $M_{\text{noncom./ret.}} = 1.57$; $F(1, 296) = 23.68$, $p < .01$, $r = .27$). Compulsive buyers also spent more money on their purchases ($M_{\text{com./Int.}} = \$284$, $M_{\text{noncom./Int.}} = \$182$; $F(1, 292) = 3.94$, $p < .05$, $r = .12$); ($M_{\text{com./ret.}} = \$318$, $M_{\text{noncom./ret.}} = \$169$; $F(1, 296) = 9.08$, $p < .01$, $r = .17$). Thus, the respondents' self-reported data further validated the compulsive-buying index used either as a continuous or bivariate measure of their compulsive-buying tendencies.

Actual Spending Data. As mentioned, we obtained actual customer purchase data for the period 2001–4 from the Internet retailer and matched the purchase data with the survey data. For this period, the variables examined included the total dollar amount spent at the Internet retailer in question, total number of purchases from the retailer, total number of purchases over $100, and the highest amount of any purchase from this retailer. Because some of the respondents were new customers who had purchased only once from the retailer within 2004, we limited our analysis to those respondents who had purchased at least twice from the retailer. The resulting sample size of this matched data set was 177 respondents. Our expectations were that the compulsive-buying scale would correlate positively with actual purchase data. However, since the data are for consumer purchases from only one Internet retailer as opposed to their total online and bricks-and-mortar purchases, we did not expect high correlations. Moreover, since the purchase data reflect their actual Internet buying behavior from this store, these measures should positively correlate with their self reports of Internet spending. Since Internet and traditional retail stores are different retail channels, we do not expect the actual Internet purchase data to correlate with self-reported retail store spending. Indeed, the six interitem correlations for the actual purchase data in table 7 correlate highly among themselves with an internal consistency $\alpha = .94$. Similarly, the six self-reported spending interitem correlations correlate among themselves with an internal consistency, $\alpha = .82$.

Table 7 shows that as compulsive-buying tendency increases, so does actual spending: total amount spent at the surveyed Internet retailer ($\rho = .19$, $p < .01$), total number (i.e., frequency) of purchases ($\rho = .18$, $p < .01$), total number of purchases over $100 ($\rho = .18, p < .01$), and the high-

est amount spent on any purchase ($\rho = .17$, $p < .05$). Thus, we were able to validate the compulsive-buying index with actual consumer purchase data.

Moreover, examining the correlations between actual purchase data at this retailer and self-reported Internet spending shows that as the self-reported Internet spending increases, so do the actual totals: total spending ($\rho = .24$, $p < .01$), total number of purchases ($\rho = .24$, $p < .01$), total number of purchases over \$100 ($\rho = .36$, $p < .01$), and the highest amount on any purchase ($\rho = .12$, $p < .10$). However, the self-reported frequency of buying from the top-five Internet stores did not correlate with the actual purchase data. The most likely reason for this finding is that the store sells only one brand of clothing; thus the overall frequency of buying on the Internet cannot predict consumer purchase behavior from this single-brand store. Indeed, 45% of the matched respondents did not even list this particular store as one of the top-five Internet sites where they shopped. Finally, as anticipated, Internet purchase data did not significantly correlate with consumer self-reported bricks-and-mortar store spending.

Validation of the Cutoff Point for Classifying Compulsive Buyers. To further validate the compulsive-buying index cutoff point used to separate compulsive and noncompulsive buyers, figure 3 shows the relationships of the same variables (negative feelings, hiding behavior, arguing with family about buying, and frequency of buying) with the compulsive-buying index, as figure 2 does for study 2. Figure 3 demonstrates that the value of these variables jumps up when the compulsive-buying index reaches 25. For some variables, the inflection point occurs even earlier, confirming that the cutoff point of 25 is appropriate.

DISCUSSION

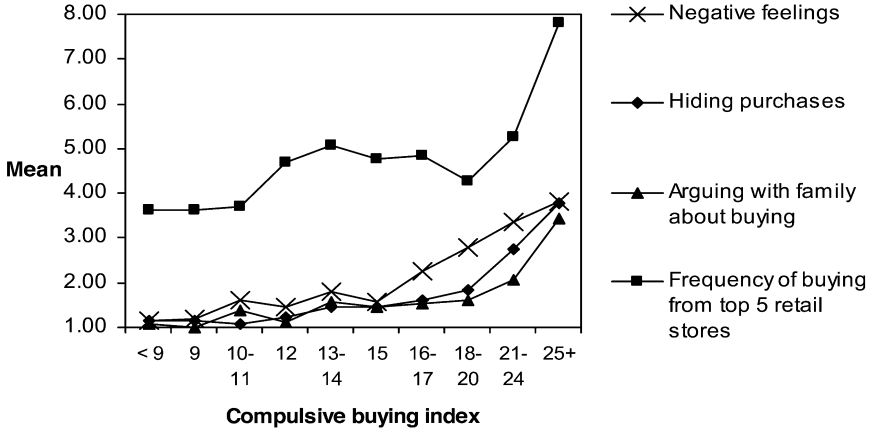
One objective of this research was to demonstrate that, consistent with the obsessive-compulsive spectrum disorder theory, the consumer compulsive-buying tendency contains elements of both obsessive-compulsive and impulse-control disorders. A second objective was to show that consequence effects of compulsive buying as well as income-dependent items should be disentangled from the construct definition and measurement. Our methodological contribution is the development and validation of a compulsive-buying scale that incorporates both obsessive-compulsive and impulse-control dimensions, while excluding consequence effects and income-related items. Substantively, finding a potentially larger percentage of consumers who might exhibit a compulsive-buying tendency is a significant contribution to consumer research. This result is consistent with the beliefs of other researchers that the incidence of compulsive buying is greater than prior estimates (e.g., Muller and de Zwaan 2004). Finally, to our knowledge, by using actual purchase data, this is the first research showing that classified compulsive buyers in the sample on average indeed spent more than the noncompulsive buyers.

Developing the Compulsive-Buying Scale

A key contribution of the present research is conceptualizing, developing, and validating a new measure of compulsive buying. In this article, we have identified limitations of existing compulsive-buying scales that render them invalid or inappropriate for assessing the extent of the compulsive-buying tendency in a general population of consumers (see table 1). Besides incorporating both characteristics of obsessive-compulsive behavior and the impulse-control dimensions of buying, our compulsive-buying scale over-

FIGURE 3

INFLECTION POINT FOR COMPULSIVE-BUYING INDEX: STUDY 3



NOTE.—The respondents were divided into the same 10 groups as in study 2. The values of the compulsive-buying index are shown on the *X*-axis. The last group (CBI ≥ 25) represents the compulsive buyers.

comes these limitations. By separating consequence effects of compulsive buying from the construct definition and its measure, compulsive buying is defined and measured only in terms of the underlying consumer behavioral tendencies. We separately measure potential consequences of compulsive buying but treat them as outcomes instead of components of compulsive buying. Our results confirm that the compulsive-buying scale is a reliable and valid measure, and it correlates with other theoretical constructs, such as consumer traits, states, and consequences, as expected.

We recommend using the compulsive-buying scale when needing a valid and reliable measure that can be applied to a general population of consumers (not solely to buyers with a previously identified buying disorder). The scale is easy to administer (mail, Internet, or face-to-face surveys), easy to score, and easy to interpret. Moreover, due to its continuous nature, the scale permits researchers to differentiate between multiple levels of compulsive buying and allows classification of respondents as either compulsive or noncompulsive buyers.

Identification of a Potentially Larger Consumer Segment Affected by Compulsive Buying

In contrast to previous research, we argue that compulsive buying should not be defined or measured in terms of its consequences (e.g., the extent of financial harm incurred by the compulsive buying). Thus, separating the consequences of compulsive buying from the measure itself allows us to demonstrate that this buying disorder may affect a larger percentage of consumers than has been identified previously. Using the new scale, in study 1, 15.5% of student respondents were classified as compulsive buyers. In study 2, 8.9% of university staff respondents were classified as compulsive buyers, while in study 3, the Internet sample, the compulsive-buying estimate was 16%. Using the more conservative figure from study 2 of 8.9% and comparing it to the 5% classified using the clinical screener, we showed how that estimate substantively translates into potentially 390,000 additional consumers per 10 million exhibiting compulsive-buying tendencies.

Public Policy Implications

The current research also has important public policy implications. As our findings suggest, the compulsive-buying tendency may affect a larger percentage of consumers than what has been previously documented. Moreover, compulsive buying appears to be increasing and spreading from the United States to Europe and elsewhere. Thus, many people worldwide are either currently affected or are at risk of becoming so and may consequently experience negative emotional, social, economic, or even legal consequences because of their compulsive-buying tendencies. Public policy officials should work on determining what can be done to stem this increasing trend as well as to establish help programs for affected consumers. Concerted efforts could be made to publicly inform consumers of the characteristics of compulsive buying and problems it may cause (e.g., using public service announcements that lead consumers to helpful Web sites). The Web sites could provide links to compulsive-buying chat rooms, to symptoms lists and outcomes, self-help books, and free online content.

Research Limitations and Future Research Directions

Limitations of the present research should be considered when using the compulsive-buying scale and interpreting the results. In the first study, a student sample was used. To overcome this limitation, a more heterogeneous population with respect to age and education was used in the second study, while focusing more on women, a segment that previously has been identified as more prone to compulsive buying. Nevertheless, the sample of university staff used in the second study may not be representative of all consumers, while the national sample employed in the third survey reported an above-average income and also is not necessarily representative of the general population. Thus, future research should continue to validate the scale with other consumer samples. We also recommend validating the scale in other countries, with both developed and emerging economies.

There are ample opportunities and need for future research in the area of compulsive buying. For example, most research on compulsive buying focuses on the bricks-and-mortar environment. However, with Internet marketing gaining in importance, additional studies of compulsive buying on the Internet should be undertaken. The Internet makes it easy to buy quickly and to buy 24 hours a day. Are compulsive buyers more likely to satisfy their urges to buy on the Internet as opposed to a bricks-and-mortar retail environment? Does the Internet encourage compulsive buying? Most Internet sellers regularly send customers e-mails to remind them of new merchandise and sales, possibly making it harder to resist buying from these sources. Also, since hiding behavior is related to compulsive buying, does buying on the Internet make it easier or more difficult to hide purchases (e.g., having the purchase sent to one's workplace)? Likewise, studying compulsive buying on Internet auction sites would explore the relationship with pricing variables such as reference prices and bidding behavior.

Another buying venue, television shopping, has been cited as a medium that encourages compulsive buying (Lee, Lennon, and Rudd 2000). So far, television shoppers have not been studied within a compulsive-buying context. Using the new scale with television shoppers would expand its scope into yet another retail environment that is growing in popularity (Beres 2003). In sum, compulsive buying across different retail channels should be examined in the future, including the motivations to shop in a particular retail context.

Compulsive buying needs to be studied with a larger array of other disorders shown in figure 1. Faber et al. (1995) have found a relationship between compulsive buying and binge eating. Is there also a relationship between compulsive buying and pathological gambling, anorexia, and other sim-

ilar disorders? It is also important to study acquisition and disposition behaviors (Frost et al. 1998). In terms of acquisition, McIntosh and Schmeichel (2004) found that collecting is an addiction for some people and is used to bolster self-esteem (Benson 2000). Likewise, the lack of ability to dispose of products—hoarding—should be examined. Hoarding and compulsive buying have been found to exist in the same people. Indeed, these disorders may be linked in an obsessive-compulsive context termed "compulsive acquisition" (Frost et al. 1998, 661). Because of independence from income, the present scale may help identify whether different hoarding and disposition patterns exist for affluent compulsive buyers versus those who may be forced to dispose of products (e.g., resell) due to their strained financial situation. Finally, compulsive-buying consequences other than the financial deserve more attention in future research, as they should affect consumer well-being regardless of their income. We hope that by providing a more accurate and widely applicable measurement of consumers' compulsive-buying tendencies, we stimulate more research in this area across a variety of different contexts.

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