

Effects of shopping addiction on consumer decision-making: Web-based studies in real time

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Background and aims: Most research into compulsive buying has focused on its *causes*: questionnaires have been used to study its association with various factors assumed to be important in its etiology. Few studies have dealt with the *effects* of being a compulsive buyer on shopping decisions. Also, processes underlying compulsive buying are dynamic but questionnaires give access only to a retrospective view of them from the standpoint of the participant. The aim of the current study was to investigate the decision processes underlying compulsive buying. *Methods:* Two simulated shopping experiments, each with over 100 participants, were used to compare the decision processes of compulsive shoppers with those of non-compulsive shoppers. This approach allowed us to measure many features of consumer decision-making that are relevant to compulsive shopping. *Results:* Compulsive shoppers differed from general shoppers in six ways: choice characteristics, searching behavior, overspending, budget-consciousness, effects of credit card availability, and emotional responses to overspending. *Conclusions:* Results are consistent with the view that compulsive buying, like other behavioral addictions, develops because the cognitive system under-predicts the extent of post-addiction craving produced by emotional and visceral processes.

Keywords: compulsive buying, addictive shopping, materialism, behavioral addiction

INTRODUCTION

Shopping can be an important source of self-expression, self-definition or therapy. However, if it becomes uncontrolled or excessive, it becomes problematic. Compulsive buying is an uncontrollable urge that repeatedly compels a person to buy in order to bring temporary relief from psychological distress arising from depression (Black, 2007; Desarbo & Edwards, 1996; Faber, O'Guinn & Krych, 1987; Ridgway, Kukar-Kinney & Monroe, 2008) or low self-esteem (Coopersmith, 1990; D'Astous, 1990; Lee, Lennon & Rudd, 2000; O'Guinn & Faber, 1989; Ridgway et al., 2008; Scherhorn, Reisch & Raab, 1990; Yurchisn & Johnson, 2004).¹ As a result, compulsive shoppers buy items that they do not need and cannot afford (Lejoyeux, Mathieu, Embouazza, Huet & Lequen, 2007; McElroy, Keck, Pope & Hudson, 1994; McElroy, Satlin, Pope, Keck & Hudson, 1991; Ridgway et al., 2008). Typically, they feel guilty about succumbing to their urges and often suffer financial harm (Christenson, Faber, de Zwaan & Raymond, 1994; O'Guinn & Faber, 1989; Roberts & Jones, 2001; Roberts & Tanner, 2000).

Research has focused on the *causes* of compulsive buying: questionnaires have been used to study its association with various factors assumed to be important in its etiology (e.g., low self-esteem, materialism, impulsiveness, frugality, attitude to money, anxiety, and depression). There is also some research, cited above, on the undesirable *long-term outcomes* of compulsive buying, such as feelings of guilt and financial harm. However, few studies have dealt with the *effects* of being a compulsive buyer on the processes of consumer choice during shopping. Here, we focus on those effects.

Previous research has found that 48% of compulsive shoppers' decisions to buy are most often made while visiting shops but only 24% of non-compulsive shoppers' decisions to buy are made during this time. Furthermore, 23.4% of compulsive shoppers used the item they had bought less than they expected in contrast to 14.4% of non-compulsive shoppers. Finally, brand of the product influenced 45% of the buying decisions of compulsive shoppers' buying decisions but only 28% of those of non-compulsive shoppers (Lejoyeux et al., 2007; Lo & Harvey, 2011).

Although researchers have identified "buying style" differences between compulsive shoppers and non-compulsive shoppers (Lejoyeux et al., 2007), information about processes underlying buying decisions is difficult to obtain from questionnaires: the processes are dynamic but questionnaires give access only to a retrospective view of them from the standpoint of the participant. Our experimental approach, using a web-based simulated shopping environment (Lo, 2009; Lo & Harvey, 2011; Maimaran & Wheeler,

¹ Compulsive buying is triggered by an internal urge arising from an individual's psychological needs whereas impulsive buying occurs when an external shopping environment stimulates an individual to suddenly buy (Desarbo & Edwards, 1996).

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2008),² enabled us to investigate the decision processes underlying compulsive buying.

EXPERIMENT 1 METHOD

We examined various aspects of shoppers' choice behavior: search behavior, payment method, type of product selected, and overspending (together with its associated emotional consequences). Our aim was to investigate how buying preferences, behavioral consequences of those preferences, and the emotional reactions to those consequences are influenced by a tendency towards compulsive shopping behavior.

Participants

A sample of 150 participants was recruited from internet discussion forums (college subject pools, the Google discussion forum, the Yahoo knowledge forum, community overview-ebay, and the campus discussion forum). Here and in Experiment 2, respondents were classified as invalid if they failed to complete the study or had already completed it previously. Participants were informed that, by registering and participating to the entire experiment, they would be entered into a prize-draw lottery with a first prize (equivalent to approximately £30) and prizes for five runners-up (equivalent to approximately £15).

Valid respondents ($n = 111$) were 26% male and 74% female. Two of the 29 male respondents and eight of the 82 female respondents exceeded Faber and O'Guinn's (1992) cut-off of -1.34 signifying clinically significant compulsive buying behavior.

Instrument

We employed Faber and O'Guinn's (1992) Compulsive Buying Scale (CBS). It reliably distinguishes compulsive buyers from other shoppers (Faber, Christenson, de Zwaan & Mitchell, 1995; Magee, 1994; Manolis & Roberts, 2008; Roberts, 1998; Roberts & Jones, 2001) and has been externally validated against shopping behaviors characteristic of compulsive buying (Lo & Harvey, 2011).

Experimental design and procedure

The experimental design was based on an internet shopping cart. This approach allowed an individual's buying processes to be observed by measuring search behavior, duration of shopping, total number of items purchased, choice preferences, and so on. Participants also rated their mood in certain specific situations. Mood interacts with choice preferences and external conditions to influence decision processes and choice outcomes (Cryder, Lerner, Gross & Dahl, 2008; Gardner, 1985; Han, Lerner & Keltner, 2007; Isen, 1984; Isen, Labroo & Durlach, 2004). This is likely to produce differential effects on moods of compulsive and

non-compulsive shoppers. For example, we know from previous research that compulsive shoppers tend to choose designer brands (Lejoyeux et al., 2007; O'Guinn & Faber, 1989), such as a Gucci or a Louis Vuitton handbag, more than non-compulsive shoppers. Hence, they are more likely to run out of money and be forced to make alternative choices. As a result, their mood and choice outcomes may change from their initial state in a way that would not be observed in non-compulsive shoppers.

The experiment comprised an introduction stage, a registration stage, a questionnaire stage, and a shopping stage (Figure 1). The introduction stage gave a detailed description of the experiment, its ethics approval and the reward scheme. The registration stage was used to record participants' demographic information. The questionnaire stage discriminated compulsive shoppers from the general population and recorded data from Rosenberg's (1965) self-esteem scale.

In the shopping stage, participants interacted with the simulated online shopping cart environment. Participants did not use real money but were assigned a realistic budget comprising limited cash and credit. Specifically, before their shopping trip, each participant was allocated the same amount of cash (equivalent to £900) and credit (equivalent to £1100). Also, they already had outstanding credit (equivalent to £180) to be paid next month. Participants could purchase as much as they wanted within their cash or credit limit. They were asked to use their usual shopping habits during their shopping trip. Each product could be selected only once. If they did not want to purchase any products, they could log out immediately.

The first screen (Figure 1) showed the three categories of product (wallets, digital cameras and MP3 players). Participants selected a category or decided to terminate their shopping trip. Selecting a category led to a display showing photographs of all products in that category, together with their prices. Participants could select an item by clicking on its picture. After doing so, they had a choice of adding the item to their shopping cart, finding out more about its physical or symbolic characteristics, or returning to the first screen. After finding out more about a product, they could add it to their shopping cart or return to the first screen. After adding an item to their shopping cart, they returned to the first screen. When they decided that they had added all the products they wanted to their shopping cart, they saw a check-out screen that displayed the price for each product and the total cost of their shopping trip. At that point, they could drop items from their shopping cart if they noticed that they had overspent. Otherwise they moved on to a payment screen. If they had sufficient cash or credit to pay, they could log out. Otherwise they were told to drop items from their cart until the total cost was within their budget.

Products of different value permitted study of the relationship between materialism and the choices of compulsive buyers. The wallet category included six products, the digital camera category comprised four products, and MP3 player category contained four different items. The total set of items comprised 14 products, and consisted of seven high price items (i.e., materialistic items which included both designer and luxury brands) and seven low price items (i.e., mundane brands). The seven low price items included two wallets, three digital cameras, and two MP3 players. Compulsive shoppers prefer to buy designer brands (Lejoyeux et al., 2007; O'Guinn & Faber, 1989) and they are unlikely to be frugal with their money (Mowen, 2000). Thus, we used

² Our design used various check-points to record participants' actions and the web design was similar to real online shopping. Thus, our simulated shopping experimental environment was highly realistic for participants. This improved design distinguishes our work from earlier studies.

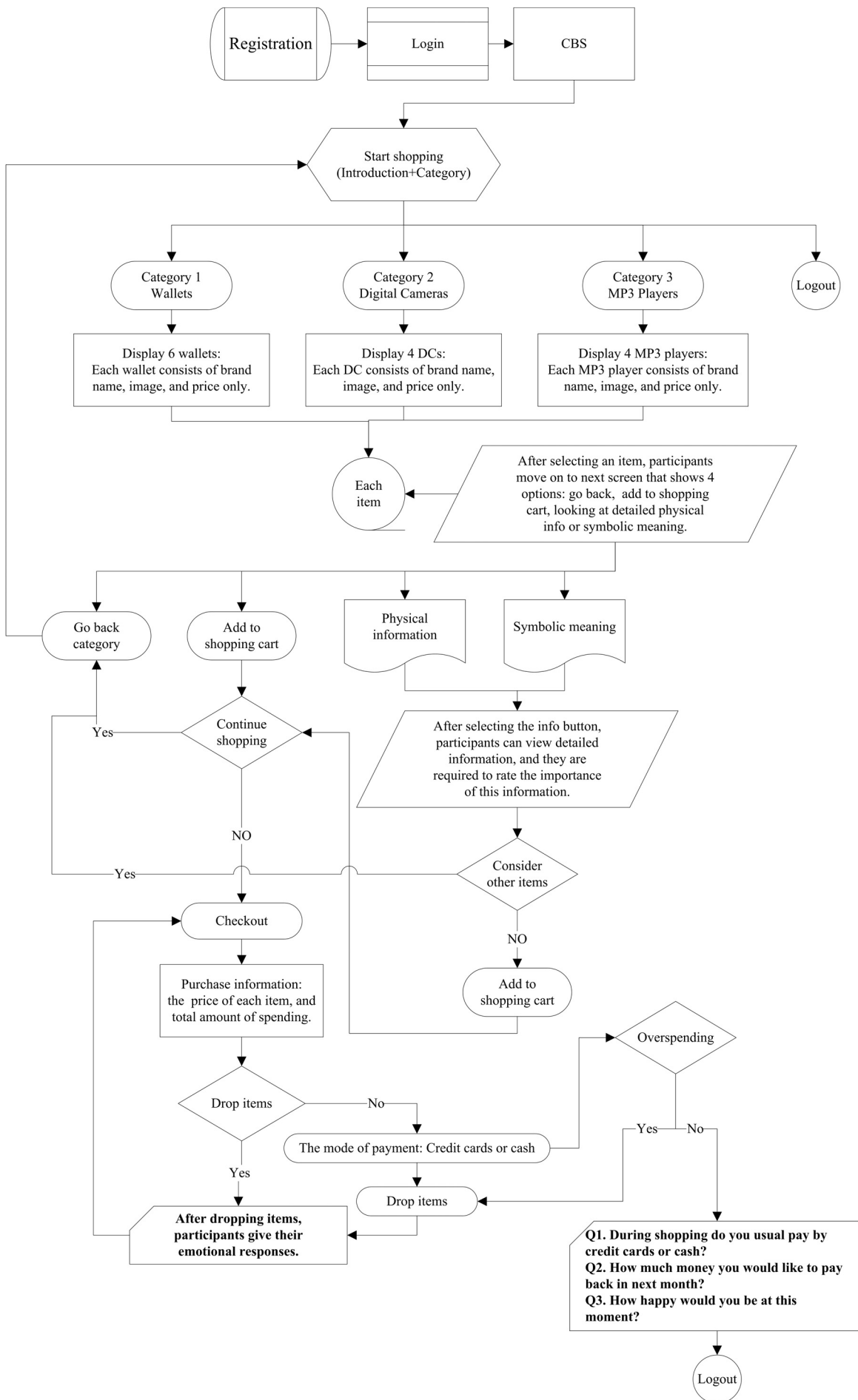


Figure 1. Experiment 1: Flowchart

brand and price to examine shoppers' choices and spending preferences.

There were several check points in the shopping section (Figure 1). Each check point indicates a record of data and behavioral test points (e.g., start time, end time, total amount of expenditure, paying habits, searching behavior, emotional responses, and so on). Each check point allowed us to study differences between compulsive and non-compulsive shoppers. For instance, the "start time" and the "end time" were used to calculate the duration of shopping in order to understand whether compulsive shoppers spend less time on shopping trips. The total amount of expenditure was used to calculate whether shoppers overspent, and to test the emotional consequences of overspending.

To examine the emotional consequences of overspending, two types of situation were studied. One was when shoppers dropped items, without being explicitly told that they had overspent, because they had become aware that they could not afford them all. The other was when shoppers had to drop items after being explicitly told that they had overspent. When participants had overspent but showed no sign of being aware of this, the system warned them that they must drop items and continued to do so until they could afford their purchases. If they did not want to drop items from their shopping cart, they had to stop shopping. After dropping items, participants clicked one of fifteen buttons to signify their mood on a scale ranging from extremely happy to extremely unhappy. This design feature revealed whether participants were aware of their budget and enabled identification of any differences in emotional response to overspending between compulsive shoppers and non-compulsive shoppers.

Information search allows consumers to develop knowledge about brands and products so that they can evaluate them and make choices (Bei & Widdows, 1999; Brucks, 1985; Gaschler & Frensch, 2007; Loibl, Soo Hyun, Diekmann & Batte, 2009; Simonson, Huber & Payne, 1988). We examined whether the thoroughness, duration, and likelihood of search differ between compulsive and non-compulsive shoppers.

Not all information was immediately available to participants in the initial catalogue. Each item showed only three messages: price, brand name and product image. Participants could view more detailed information about the physical characteristics and symbolic meaning of a product by clicking the appropriate information button. The system recorded each of these search actions. Their sum provided a measure of breadth (thoroughness) of search. Search duration was estimated by the difference between the "start time" and "end time" of shopping. Likelihood of search was given by the proportion of shoppers who made search actions.

RESULTS

Materialistic choices and self-esteem

Compulsive shoppers' purchases were more materialistic than those of non-compulsive shoppers: approximately 70% of compulsive shoppers purchased materialistic items whereas only 6% of the other participants did so (Fisher's exact test; $p < .001$). Compulsive shoppers also had lower

levels of self-esteem than other shoppers ($M_{ncs} = 35.35$, $M_{cs} = 31.00$. $t = 2.69$, $p < .01$). These analyses imply that materialism and self-esteem are factors that influence compulsive shoppers' craving to buy.

Overspending

Nineteen of the 111 participants overspent: they had to drop items from their shopping cart and rate their emotional response to having to do so. Of the 10 compulsive shoppers, six overspent. In contrast, only 13 of the 101 non-compulsive shoppers did so (Fisher's exact test; $p = 0.013$).

Only 17% of the compulsive shoppers who overspent were disappointed by the situation whereas 77% of the normal shoppers who overspent were (Fisher's exact test; $p < .05$). Furthermore, most of these non-compulsive shoppers (69%) were aware that they could not afford contents of their cart without a system warning (whereas all compulsive shoppers needed a warning). Although they dropped items spontaneously from their shopping cart, their overspending still affected their mood.

These analyses indicate three things. First, overspending had little effect on the mood of compulsive shoppers but was a key feature that affected the mood of non-compulsive shoppers. Second, only non-compulsive shoppers noticed their overspending: they were more conscious of their spending budget. Third, people had strong emotional reactions to what was happening within the experiment, even though they were not using actual money: they were able to "suspend disbelief" and treat the scenario as a representation of real world spending.

Search characteristics

Seventy-four of the 111 participants purchased products. Of these, only 22% of compulsive shoppers searched for information whereas 66% of non-compulsive shoppers did so (Fisher's exact test; $p = 0.012$). However, there was no difference between the two groups in the breadth (number of items searched) or length (duration) of search.

Paying habits

There was no difference in mode of payment (cash versus credit cards) between compulsive and non-compulsive shoppers. Most shoppers intended to payback their balance in full in the following month (NCS: 97%; CS: 100%).

Number of people buying nothing

There was no evidence that those with a greater tendency to shop compulsively were less likely to buy nothing.

EXPERIMENT 2

Here we used a different design to reveal additional differences between compulsive and non-compulsive shoppers. We demonstrate that the findings of Experiment 1 are robust and unaffected by major variations in experimental procedure.

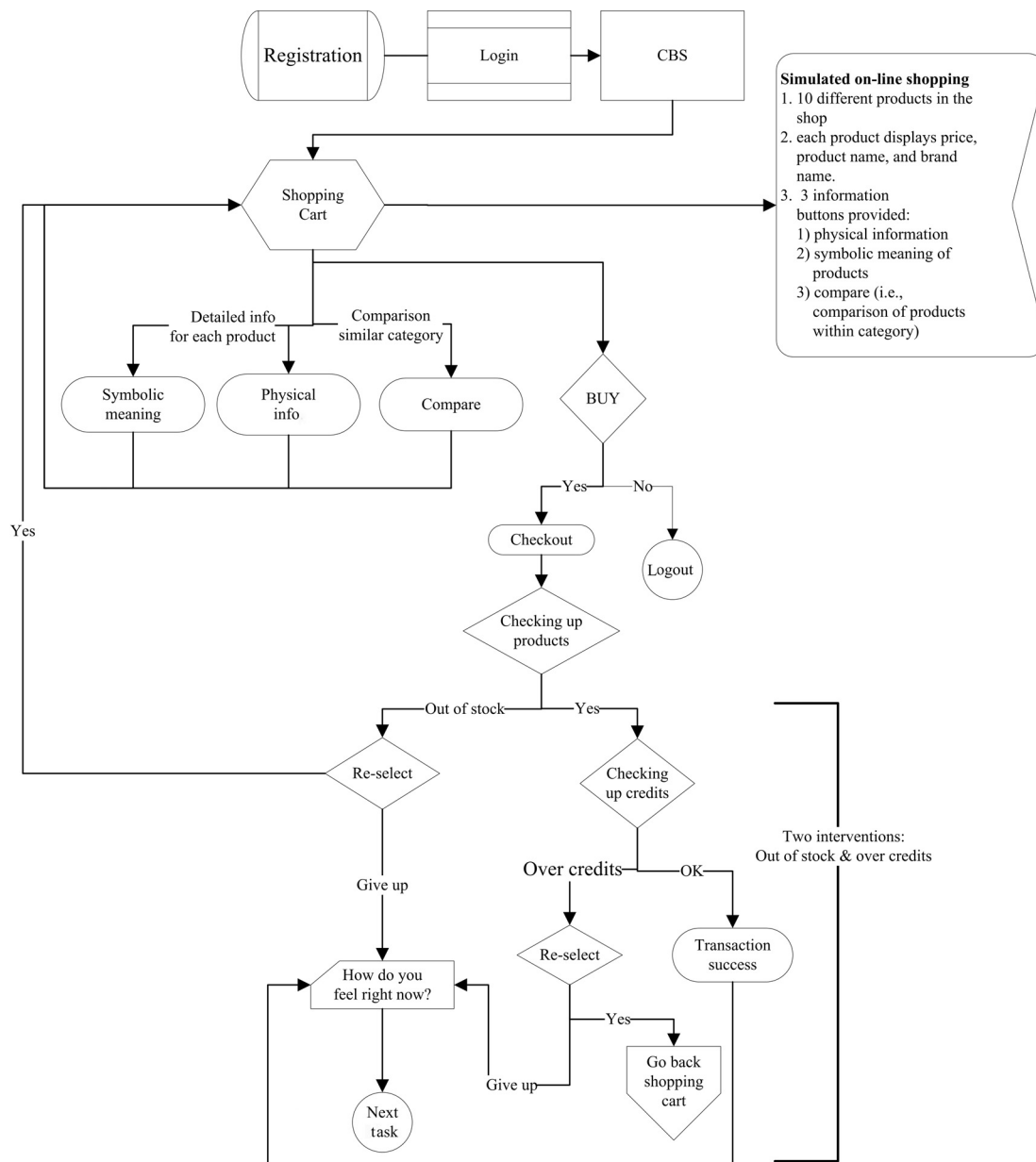


Figure 2. Experiment 2: Flowchart for Task One

METHOD

Participants

One hundred and fifty participants were recruited in the same way as before. Valid respondents ($n = 103$) were 44.66% male and 55.34% female. Three of 46 male respondents and seven of 57 female respondents were classified as compulsive shoppers according to Faber & O’Guinn’s (1992) criterion.

Design and procedure

The registration section was again used to record participants’ demographic information and to distinguish compulsive shoppers from other participants using Faber and O’Guinn’s (1992) CBS. This time, however, several items were added to it: participants were asked to provide information about the number of credit cards they possessed, their monthly spending on essential goods, and their current mood. The first two of these items were used to elicit infor-

mation about each shopper’s spending in their real life, thereby allowing us to increase the “realism” of the experiment. The third item facilitated our testing of individual differences in emotional responses.

The shopping section comprised two tasks. The first (Figure 2) examined search behavior and emotional responses to shopping events. The second (Figure 3) investigated budget-consciousness and credit card usage; the aim was to reveal whether compulsive shoppers are aware of their budget and the effects of debt. Overall, the experimental design was similar to but somewhat more realistic than that of Experiment 1. For instance, participants could decide the quantity of each product they would like to buy, they could view detailed information about each product or they directly compare similar products.³ They might also discover that their chosen product was out of stock (Figure 2).

³ Characteristics of product similarity included quality, price, and the attributes of function, but products differed in brands.

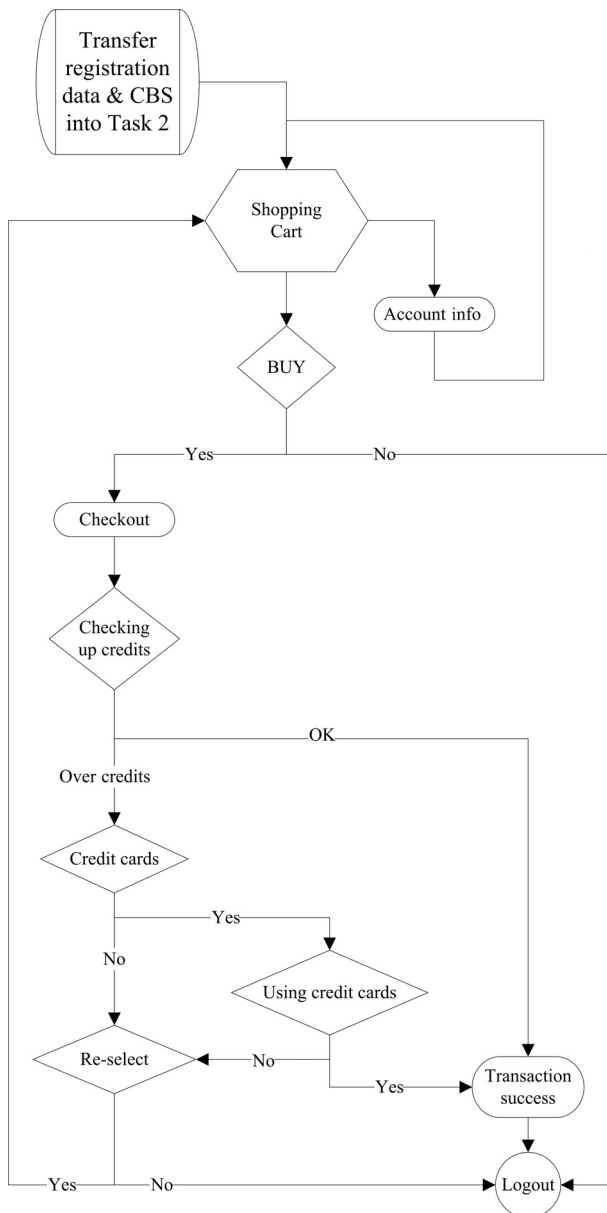


Figure 3. Experiment 2: Flowchart for Task Two

In task one, there were two triggers for measuring emotional responses. These were system messages that informed participants that the goods they wanted to purchase were out of stock or that they had overspent (Figure 2). The system checked storage first, and then checked spending. Participants were required to re-select items if the selected products were out of stock or if they had overspent. After re-selection, they rated their emotional response and these data were recorded. Given that participants' moods were recorded in the registration section, it was possible to study how they were changed by shopping gratification or frustration.

After finishing the first task, participants' demographic and CBS data were automatically transferred into the second task (Figure 3). This focused on whether participants were concerned with their account information and whether availability of credit cards altered their purchasing decisions. Thus, participants could check their account information before adding an item to their shopping cart. If they did, we recorded this action.

To examine the effects of availability of credit cards, participants who had overspent were given three options: paying by credit card, re-selecting items, or giving up their purchases. However, whether participants could pay by credit card depended on whether they said they had credit cards in the registration stage. Thus, participants without credit cards who had overspent had only two choices: re-selecting or giving up their purchases. Participants who had not overspent went directly to the check-out section.

RESULTS

Comparing information across similar products

Participants could compare information across similar products by clicking the button labeled "Compare". Only 20% of compulsive shoppers compared information across similar products whereas 41% of normal shoppers did so (Fisher's exact test; $p < .05$). This finding is consistent with the search results in Experiment 1.

Checking detailed information

For each product, two types of detailed information were available: physical information (e.g., material, functional description) and symbolic meaning (e.g., economy, upper class, celebrity, success). Eighty percent of compulsive shoppers but only 61% of non-compulsive shoppers did not check either type of detailed information (Fisher's exact test; $p = .017$). More specifically, only 20% of compulsive shoppers checked symbolic meaning and none of them were interested in the physical features of the product (Fisher's exact test; $p = .022$). In contrast, 43% of non-compulsive shoppers checked physical information, while only 14% of them checked symbolic meaning (Fisher's exact test: $p < .001$). These results imply that non-compulsive shoppers purchase products because they intend to use them: functional descriptions of products are more important for them than their symbolic meaning. However, compulsive shoppers search for little information: they just want to buy.

Emotional consequences

Each individual's responses to emotional triggers were recorded during their shopping. These triggers were provided by two interventions: overspending and product out of stock. Both of these had potentially negative emotional consequences (e.g., frustration).

Seventy-four participants experienced these triggers: products were out of stock for 14 of them and 60 of them overspent. The effects of products being out of stock on mood did not differ significantly between compulsive and non-compulsive shoppers. However, after overspending, the mood of non-compulsive shoppers was lower than that of compulsive shoppers ($Mcs = 5.17$, $Mncs = 3.46$; $t(6.18) = 3.39$; $p = .014$), even though the moods of the two groups had not been different at the beginning of the experiment.

The effect of credit card availability

Fifty-nine participants overspent (their cash ran out) but had credit cards. They had three options: paying by credit card, re-selecting, or giving up purchases. Payment was made by

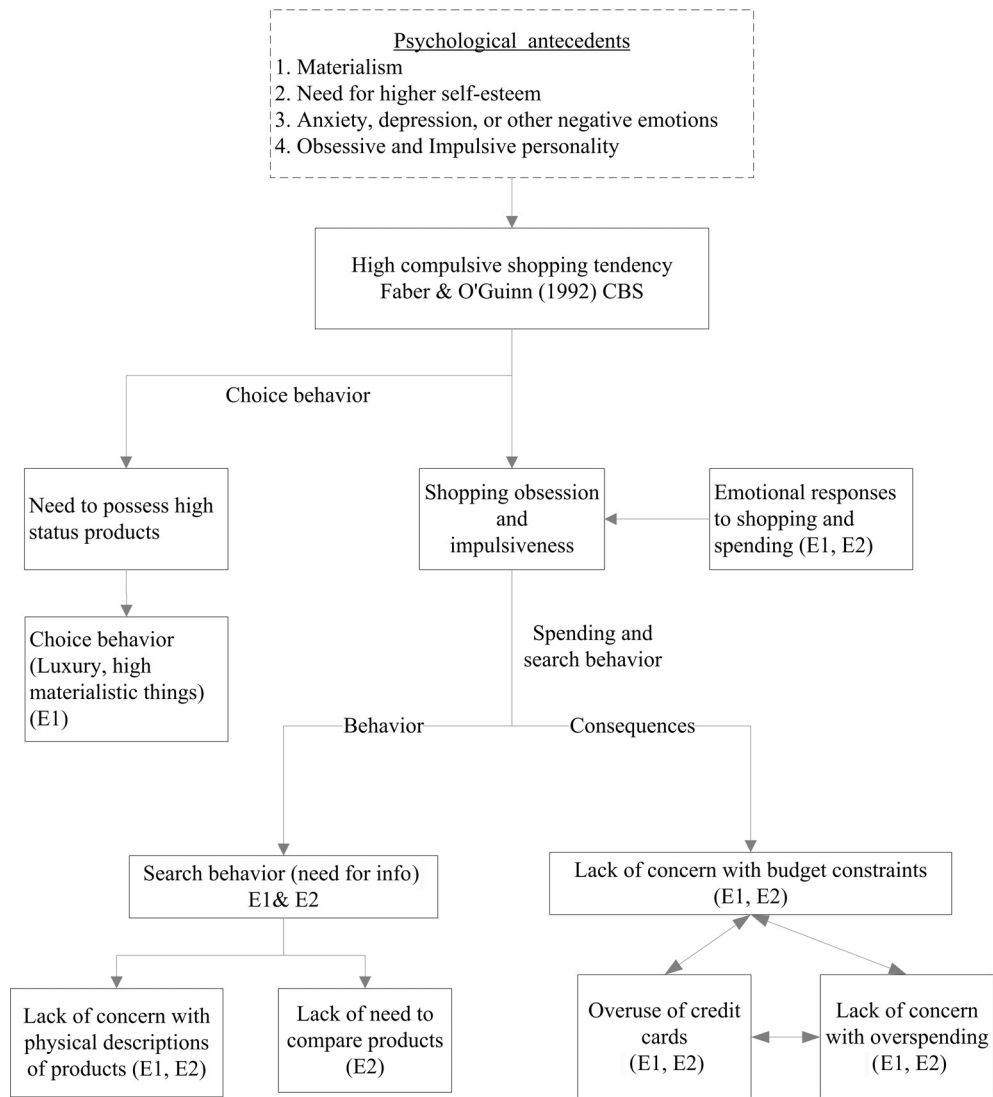


Figure 4. An interpretative summary the experimental results

Note: Codes in boxes signify the sources of evidence as Experiment 1 (E1) and Experiment 2 (E2). Concrete lines (–) show path relations. Dashed squares show findings derived from other studies. Concrete squares show factors manipulated in the experimental work.

credit card by 80% of compulsive shoppers but by only 22% of non-compulsive shoppers (Fisher’s exact test; $p = .017$; two-sided). This implies that credit card availability enables compulsive shoppers to satisfy their desires for purchasing, to ignore their budget constraints, and, hence, to overspend more than other shoppers (Lo & Harvey, 2011). Conversely, non-compulsive shoppers are more concerned with their budgets and tend to prefer not to buy rather than to incur credit card debt.

Budget-consciousness

Eighty percent of compulsive shoppers but only 41% of non-compulsive shoppers failed to check their account information (Fisher’s exact test; $p < .05$). This implies that non-compulsive shoppers were more concerned with their budgets than compulsive shoppers.

GENERAL DISCUSSION

The novel design of the present study revealed differences in choice behavior between compulsive and non-compulsive shoppers that have not been previously identified by questionnaire methods. Our web-based shopping approach also has a degree of external validity: web-based shopping is increasingly common and our participants’ emotional reactions to overspending suggest that they interacted with our simulation in much the same way as they would had done if they had they been actually purchasing products from the site.

Figure 4 provides an interpretative summary of our findings. It indicates that compulsive shoppers have a craving to shop but tend to ignore the consequences of satisfying that craving: they are addicted to the process of shopping (Hassay & Smith, 1996).

Elster (1999) listed psychological properties that are common to addictions as euphoria and pleasure, dysphoria

and withdrawal, craving, tolerance, objective harm, crowding out of other activities, mood alterations, desire to quit, denial, struggle for self-control, and relapse. Compulsive shopping has these properties. For example, our finding that overspending does not depress moods of compulsive shoppers in way it depresses those of non-compulsive shoppers, indicates tolerance.

In addicts, a desire for immediately obtaining the object of the addiction co-exists with a desire not to want that object in the long-term: smokers pay hundreds of dollars to smoking clinics to stop them wanting the object of their desire; overweight people pay health farms to impose diets on them; compulsive shoppers pay for therapy to alleviate their problems. From a simple economic perspective, someone should want something (because it has positive utility for them) or they should not want it (because it does not). How can we explain their wanting and not wanting of the same thing? Thaler and Shefrin (1981) suggest that we could regard economic agents as having multiple selves, a farsighted planner and a myopic doer.

Others suggest that we should distinguish hot (emotionally influenced) decision-making from cold (non-emotional) decision-making. When people are faced with a temptation, hot cognition both makes it difficult for them to resist and prevents them from appreciating how much they want it is influenced by the state that they are in. However, when they are not faced with temptation, cold cognition both makes it less desirable and prevents them from understanding how desirable it is when they are in a hot state (Loewenstein, 1999).

We saw in Experiment 2 that only in compulsive shoppers were good moods maintained after buying too many expensive products. Their emotions were not dampened by overspending; they were in a 'hot' state.

Loewenstein's (1999) approach can also explain the development of addictions. Before being addicted, people's cold cognition under-predicts the extent of their post-addiction craving produced by hot cognition (Badger et al., 2007). As a result, initial controlled use is followed by loss of control and, later, by a desire to quit (Elster & Skog, 1999). This is the same sequence that characterizes the development of compulsive buying behavior: the spending of compulsive shoppers initially provides symptomatic relief from their psychological needs (Black, 2007; D'Astous, 1990; Desarbo & Edwards, 1996; Faber et al., 1987; O'Guinn & Faber, 1989; Scherhorn et al., 1990); later their behavior becomes irrepensible; finally, they encounter its inevitable harmful consequences and develop a desire to quit (O'Guinn & Faber, 1989; Christenson et al., 1994; Roberts & Jones, 2001; Roberts & Tanner, 2000).

This account interprets behavioral addictions in terms of individuals' failure to perceive the strength of post-addiction cravings and, as a consequence, a failure to control them. It is reasonable to suppose that there may be people with the converse problem whose cold cognition exaggerates the level of craving they will experience during hot cognition. We should expect such people to subject their behavior to too high a degree of control. Over-control such as this would be revealed in terms of an abnormally frugal ("tightwad") lifestyle. Scales to measure this trait (Lastovicka, Bettencourt, Shaw, Hughner & Kuntze, 1999; Mowen, 2000) have been developed but there has been no demonstration that scores on them vary inversely with those on

Faber and O'Guinn's (1992) CBS scale. Other behavioral addictions (to food, gambling, sexual activity) characterized by under-control also appear to have counterparts that are characterized by over-control (anorexia, extreme risk aversion, celibacy).

LIMITATIONS AND FUTURE STUDIES

Generality of our findings may be affected by a number of factors. The number of products and brands we used was limited and determined by the particular hypotheses we wished to test. We did not take account of participants' real-life income though, as Lo and Harvey (2011) and others have shown, income of compulsive shoppers falls largely within the low to medium range. Finally, the sample of compulsive shoppers in our two experiments was not large. Compulsive buying is usually defined in such a way that about 10% of the general population are compulsive buyers. To recruit more compulsive shoppers from the general population, a large sample study would need to be conducted.

Our interpretation of our findings (Figure 4) suggests some future lines of research. For example, cultural differences in materialism suggest that compulsive shopping should be more evident and its effects stronger in more materialistic societies.

CONCLUSIONS

Compared to normal shoppers, compulsive shoppers are more materialistic in their choice of products; they are more likely to overspend but less likely to notice their overspending or to emotionally react to the effects of it; they are less likely to search for additional information about the physical characteristics or symbolic meaning of products that they are considering as possible purchases; they are less conscious of their budget limits when shopping; they are more likely to resort to payment by credit card when the cash that they have available is insufficient for the purchases that they want to make. All these features reflect the reduced levels of behavioral control associated with shopping addiction. Given that we know that compulsive shoppers acknowledge the harmful consequences of their behavior and want to inhibit it (e.g., Christenson et al., 1994), our findings are consistent with Loewenstein's (1999) view that outside situations in which desirable products are available to buy, compulsive shoppers underestimate the extent of their craving to purchase those products when they are in such situations.

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