Experimental evidence for the influence of cognitions on compulsive buying

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ARTICLE INFO

Article history:
Received 4 December 2013
Received in revised form 23 May 2014
Accepted 10 July 2014
Available online 18 July 2014

Keywords:
Compulsive buying
Oniomania
Cognitions
Experimental

ABSTRACT

Background and objectives: Compulsive buying is a disabling condition, where individuals are unable to resist or control their buying behavior, leading to substantial social and financial problems. Cognitive models implicate the role of beliefs as one factor in buying behavior, for example, “this item is unique and will help me improve my life”. Methods: This study experimentally examined the contribution of such beliefs to the disorder, in individuals who compulsively buy (N = 18) and in non-clinical controls (N = 17). Participants were presented with photographs of idiosyncratically appealing and unappealing items, in the context of imagined scenarios that either minimized or maximized aspects relevant to hypothesized “compulsive buying beliefs” (i.e., beliefs that acquisition can compensate for negative feelings, beliefs regarding uniqueness and lost opportunities, and emotional reasons for buying). Results: It was found that individuals who compulsively buy demonstrated stronger urges to purchase than control participants, regardless of context, but the overall strength of these urges was responsive to manipulations of beliefs about consumer items said to be associated with compulsive buying. Limitations: The main limitation of the study was a small sample size, potentially reducing power. Conclusions: Nonetheless, these findings provide insights into the processes underlying compulsive phenomena, in particular supporting the role of cognitions in compulsive buying.

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1. Introduction

While not recognized as a separate clinical disorder in the DSM (American Psychiatric Association, 2013), compulsive buying is a chronic and debilitating problem, which is associated with adverse social, emotional and financial problems including marital conflict, bankruptcy, theft, embezzlement and even suicide attempts (Christenson et al., 1994). Core features of compulsive buying include preoccupations about buying, urges to buy which are experienced as irresistible, loss of control over buying, and maintenance of excessive buying despite adverse consequences (Dittmar, 2005a; McElroy, Keck, Pope, Smith, & Strakowski, 1994). Buying behavior is time-consuming and repetitive (McElroy et al., 1994). Studies indicate that it is usually performed in response to negative events or feelings (Miltenberger et al., 2003), and it gives a sense of euphoria, relief, or a “buzz” (Kellett & Totterdell, 2008; Miltenberger et al., 2003). Compulsive buying is commonly comorbid with other psychiatric disorders, such as Major Depressive Disorder, Binge Eating Disorder, Obsessive Compulsive Disorder, and Hoarding Disorder (e.g., Black, Repertinger, Gaffney, & Gabel, 1998; Christenson et al., 1994; Mitchell et al., 2002; Mueller et al., 2007, Mueller, Mitchell, Black, et al., 2010). As studies from the US and Germany estimate that between 5.8 and 8% of the population are affected (Koran, Faber, & Aboujaoude, 2006; Mueller, Mitchell, Crosby, et al., 2010; Neuner, Raab, & Reisch, 2005), it is important to establish the validity of psychological models of the disorder that may serve as a basis for intervention.

The cognitive model of buying (Frost, Kyrios, McCarthy, & Mathews, 2007; Kellett & Bolton, 2009; Kyrios, Frost, & Steketee, 2004), regards erroneous beliefs, particularly regarding the nature of objects and the psychological benefits of buying, as being particularly important to the etiology and maintenance of compulsive...
buying, along with other factors such as decision-making difficulties and negative mood (see also the etiological buying model by Ertelt, Marino, & Müller, 2011). Specifically, the beliefs concern the consequences of buying—that buying objects will compensate, reward, or neutralize negative feelings, or that buying will lead to emotional security—and to specific perceptions about the objects themselves—that objects are unique and one is responsible for the objects, and that not purchasing will lead to a loss of opportunity. Questionnaire-based research has supported this model, finding that the severity of buying relates strongly to such beliefs, over-and-above any contribution of age, mood, OCD symptoms, decision-making fears, and perfectionism; where the beliefs are measured with the Buying Cognitions Inventory (BCI; Kyrios et al., 2004).

While previous studies have examined the relationship between compulsive buying symptoms and such cognitions, or between buying and more general beliefs about self and materialism (e.g., Dittmar, 2005a, 2005b; Dittmar, Long, & Bond, 2007), they have been limited to questionnaire-based (Kyrios et al., 2004) or qualitative (Sohn & Choi, 2012) methodologies, with consequent limitations on statements of direction of effect and causality. Therefore, to strengthen evidence for the role of such cognitions in compulsive buying, we utilized an experimental methodology comparing a control sample with a clinical group. In particular, the two groups of participants were shown a series of images of subjectively appealing or neutral consumer items; and presented with scenarios designed to minimize or maximize buying-relevant beliefs in response to essential and non-essential consumer items, whilst tracking the resulting urge to buy. It was expected that compulsive buyers would report greater urges to buy non-essential items than controls, and that all participants would show greater urges to buy when object-beliefs are maximized, but that this effect would be greater for participants with compulsive buying.

2. Method

2.1. Participants

Participants were recruited via advertisements placed around universities, public libraries and notice boards, and through responses to media publicity including newspaper articles and television and radio interviews. All participants in the experimental studies had been involved in a larger questionnaire-based study (Moulding, Kyrios, & Zabel, in preparation) and completed two memory-based tasks detailed elsewhere (Kyrios, McQueen, & Moulding, 2013). Participants completed an initial screening questionnaire to determine suitability for inclusion, subsequently completed a range of additional questionnaires, and were invited to participate in the experimental studies. A small reimbursement of financial aspects of buying; alpha was .81 in the current study.

2.2. Questionnaires

2.2.1. Altman self-rating mania scale

(AMS; Altman, Hedeker, Peterson, & Davis, 1997) is a 5-item scale assessing the severity of manic symptoms. The scale has satisfactory validity, and Chronbach’s alpha was acceptable (.68) in the current study.

2.2.2. Borderline screening measure

(BSM; Hyler et al., 1989) is a widely-used 9-item scale measuring borderline personality tendencies, and is a valid measure; alpha was .81 in the current study.

2.2.3. Compulsive buying scale

(CBS; Faber & O’Guinn, 1989) is the standard 7-item screening measure for CB and has demonstrated good reliability and validity (Faber & O’Guinn, 1989, 1992). Two of the seven items pertain to emotional reactions to shopping, while the remaining five relate to financial aspects of buying; alpha was .95 in the current study.

2.2.4. Compulsive acquisition scale

(CAS; Frost et al., 1998) is an 18-item scale that measures the extent to which individuals acquire and feel compelled to acquire possessions. The CAS-Buy subscale has demonstrated satisfactory reliability in previous research (Frost, Steketee, & Williams, 2002; Kyrios et al., 2004), and had an alpha of .96 in the current study.

2.2.5. Depression anxiety stress scales

(DASS; Lovibond & Lovibond, 1995) is a 42-item scale measuring depression, anxiety and stress over the previous week. Excellent two-week test-retest reliability for a clinical sample, as well as high discriminant validity between the 3 subscales (depression, anxiety, stress) have been reported (Lovibond & Lovibond, 1995). Alpha was .97 (depression), .94 (anxiety), and .96 (stress).

2.2.6. Buying cognitions inventory

(BCI; Kyrios et al., 2004). The BCI measures cognitions considered relevant to compulsive buying, using 36 items rated on a 7-point Likert scale. Four separate but intercorrelated cognitive domains have been identified: Compensation; Reasons to Buy; Uniqueness and Loss of Opportunity; Control/autonomy in buying. Reliability ranged from .86 (uniqueness) to .94 (compensation) for the subscales in this study.
2.3. Procedure

Following the questionnaires and demographics, participants undertook a task to identify idiosyncratically-appealing consumer items. In this task, photographs of consumer items were shown in pairs on a computer, and participants selected which of the two items they would be more likely to buy. This procedure was used to rank 56 items from eight categories (body care items, accessories, sports equipment, kitchen items, clothes, jewelry, footwear, electronic leisure items; derived from Dittmar, Beattie, & Friese, 1996). An iterative implementation of a merge-sort algorithm was used to rank-order the items by preference based on participants’ selections from, on average, 225 pairs of items. Following this, participants underwent two memory-based experiments described elsewhere (Kyrios et al., 2013), before the experimental task below.

In the experimental task, participants were randomly shown their four middle- and four highest-ranked items, and asked to rate, on a visual analogue scale (VAS), the urge they would have to buy the item if looking at it in a store at that moment (this serves as a rating of “initial urge”), along with estimating the regular retail price (RRP) of that item. Participants were then randomly assigned to either a “beliefs maximized” (MaxB) or “beliefs minimized” (MinB) group. All participants were presented with a scenario in which they would be shopping for a list of essential items needed for the week, but would have insufficient funds available to buy all the items required; such that it would be necessary for the participant to decide which items they would buy, and which they would forego.

Participants were then presented with a single item from their list of essentials, shown at a standard retail price, and asked to decide if they would buy it. Following each presentation of an essential item, participants were presented with a scenario in which they enter a favorite store and see one of the eight non-essential items noted above. The item was displayed as being available at a variation of the RRP the participant had nominated, along with a vignette that described a situation corresponding to a buying-cognition (beliefs that acquisition can compensate for, or neutralize, negative feelings; beliefs regarding uniqueness and lost opportunities; emotional reasons for buying, and beliefs about memory; beliefs and concerns about control of spending behaviors), with the content intended to either maximize or minimize the belief according to the condition. For example, in the minimized-belief “uniqueness/lost opportunity” vignette, the object was shown at 100% of RRP with the description, “The price tag on the item is the normal retail price. You can remember times when you have seen it on sale cheaper than that. There are lots of these items on the shelf” (minimized). In contrast, in the maximized-belief version of the “uniqueness/lost opportunity” vignette, the object was shown at 40% of RRP with the description:

The sign under the display says: ‘Massive price reduction!! 60% off for this week only!’ A shop attendant tells you that it is a clearance sale and there won’t be any more in stock once it is sold out. Several other shoppers have been looking at it and a couple of them look like they are about to make a decision to buy it. It is the last of these items in store — it almost looks lonely.

Participants rated their urge to buy and whether they would choose to buy the item at that time. This process was repeated until each of the vignettes had been shown with both one middle-ranked and one high-ranked item. Following the completion of the four computer tasks, participants were debriefed and discomfort was checked.

3. Results

3.1. Validity of groups and manipulation

All analyses were performed using R (R Development Core Team, 2005), with the NLME package (Pinheiro, Bates, DebRoy, & Sarkar, 2005). As noted elsewhere (Kyrios et al., 2013) and supporting the validity of the groups, the CB group reported significantly more symptoms on the compulsive buying measures ($M_{CBS} = -2.75, M_{NCS} = 1.23; F(1,31) = 70.55, p < .0001; CAS-buy, $M_{CBS} = 61.12, M_{NCS} = 31.75, F(1,29) = 43.52, p < .0001). Not surprisingly, the CB group also demonstrated greater levels of depression, $F(1,31) = 7.83, p = .009$ ($M_{CBS} = 11.88, M_{NCS} = 3.72); anxiety, $F(1,31) = 7.48, p = .010$ ($M_{CBS} = 8.88, M_{NCS} = 2.39$); and stress, $F(1,31) = 9.17, p = .005$ ($M_{CBS} = 17.24, M_{NCS} = 7.78$).

Prior to performing analyses on the studies, the four scenarios was analyzed to provide validity that they reflected the beliefs. Specifically, differences between the urge to buy in the scenario versus the initial urge were calculated, and correlated with the factors of the BCI (see Table 1). This analysis suggests that while the individual scenarios failed to demonstrate significant correlations with their corresponding BCI factors they did correlate with the BCI Total; as such the scenarios are suggested to be tapping into general BCI cognitions but did not relate uniquely to the particular subscale, which is consistent with the high overlap between cognitions noted by Kyrios et al. (2004). The one exception to this was the “control over buying” scenarios, which demonstrated the reverse pattern of correlation with BCI scores to that expected (i.e., correlated only with one scale, and in the minimized rather than maximized condition). Given these findings, results for all the scenarios excluding the “control over buying” vignette were pooled, and the different cognitions targeted by the vignettes were not analyzed as a separate factor.

3.2. Scenario ratings

For the hypotheses, analyses utilized ANOVAs to test significance of terms in linear mixed-effects (LME) models built using a hierarchical stepwise reduction approach. Linear mixed-effects models are an extension of the standard linear model, which are robust for unbalanced data (Pinheiro & Bates, 2000). For each

| Table 1 |
| Correlation of the Buying Cognitions Inventory (BCI) with the scenarios. |
| Compensation scenario | MinB | MaxB | Emotional reasons scenario | MinB | MaxB | Uniqueness scenario | MinB | MaxB | Control over buying scenario | MinB | MaxB |
| BCI Compensation | .15 | .49* | .37 | .59* | .14 | .43 | .53* | .05 |
| BCI Emotional reasons | .09 | .47 | .21 | .46 | .12 | .60* | .04 | .26 |
| BCI Uniqueness & lost opportunities | .05 | .49* | .08 | .52* | -.03 | .50* | .30 | .11 |
| BCI Control over buying | .26 | .73*** | .44 | .60* | .29 | .28 | .47 | .15 |
| BCI Total | .14 | .54* | .30 | .56* | -.13 | .53* | .34 | .17 |

Note: MinB = Minimized beliefs, MaxB = Maximized beliefs.

*p < .05; **p < .01; ***p < .001.
Compulsive buying is increasingly recognized as a significant psychological problem and social issue. Cognitive models implicate a variety of beliefs about the utility of, and attachment to, objects in compulsive buying (Kellett & Bolton, 2009; Kyrios et al., 2004). In this study, the influence of these beliefs on subjective urge to buy was examined in individuals with CB and control participants, using an experimental paradigm with subjectively appealing and neutral items in the context of a shopping trip with limited funds. It was found that individuals in the CB group reported stronger urges to buy non-essential items than NCs. Maximizing beliefs significantly increased the urge to buy. Individuals in the CB group showed less inhibition of their urge to buy non-essential items due to the financial constraints in the scenarios, and the strongest urge to buy was shown by individuals in the CB group when beliefs were maximized. In the control group, presentation of items in the context of maximized buying beliefs produced stronger urges to purchase non-essential items than in the context of minimized buying beliefs, but only at low levels of initial urges. In sum, buying cognitions increased urges for non-clinical participants only when items were relatively unappealing, but influenced individuals with compulsive buying at all levels of initial desire for the objects, with perhaps greater effects when items are appealing.

This study can be taken to provide support for the role of beliefs in compulsive buying, with the three beliefs involved comprising (a) the belief that buying objects will compensate for, or neutralize, negative emotions; (b) emotional reasons for buying; (c) uniqueness and fear of lost opportunities. A fourth factor, emphasis on personal control over buying, was excluded in the final analyses due to the poor performance of the associated vignette in the validity check, where it was compared to the questionnaire measure (BCI). Supporting the conceptualization of buying behaviors as dimensional, all participants responded with increasing urge to buy when beliefs were maximized, although individuals with existing CB tendencies were particularly susceptible to the manipulation. The reason for the greater reactivity of individuals in the CB group was not directly assessed, but it could be suggested that higher trait-like levels of buying beliefs (as assessed by the Buying Cognitions Inventory) meant that such beliefs were more easily activated by relevant situational factors, such as those that the scenarios were designed to target. However, it could also be that other factors linked to people who compulsively buy, such as greater levels of discrepancy between individual's view of themselves versus who they ought to be, or greater general materialistic values (Dittmar, 2005a, 2005b; Dittmar et al., 2007), could have also led to greater susceptibility to the manipulation in the CB

![Figure 1](image1.png)

**Fig. 1.** Group by initial urge interaction for items. Fit lines indicated for each group (±1 SD), a 45° fit line is also shown (represents if initial urge in the neutral context was to equal final urge).
group. While the validity of the vignettes was suggested by correlations with questionnaire-based measures, future studies could additionally make self-discrepancies salient to disentangle the relative merit of cognitive models of buying (e.g., Kellett & Bolton, 2009; Kyrios et al., 2004) vs. social-psychological models (e.g., Dittmar, 2005). Nonetheless, the results of this study are consistent with the use of cognitive-models that have a focus on cognitive-restructuring as part of their procedures (e.g., Ertelt, Marino, Mitchell, & Lancaster, 2009; Mitchell, 2011; Mitchell, Burgard, Faber, Crosby, & de Zwaan, 2006).

Interestingly, while individuals with CB showed greater levels of urge and greater reactivity, the slopes of the lines of initial urge to buy (i.e., unconstrained urge) and urge to buy in the scenarios were all less than one, indicating that individuals in the CB group were still influenced by the financial constraints introduced in the simulated shopping experiences, albeit to a lesser extent than the control group. An additional finding was that control participants showed a greater influence of buying beliefs for items they did not covet, suggesting that for control participants their own urge to buy overwhelms situational factors when that urge is high, whereas for buyers the effects of situational and personal factors are additive. This could indicate that for individuals without compulsive buying, situational factors such as advertising and the use of sales may be more effective when participants do not greatly desire to purchase the items in the first place. In contrast, for compulsive buyers, the urge to buy all items should be examined in treatment.

The findings of this study are generally consistent with current cognitive-behavioral models (e.g., Ertelt et al., 2011; Frost et al., 2007; Kellett & Bolton, 2009; Kyrios et al. 2004), which regard unhelpful beliefs as being important to the etiology and maintenance of compulsive buying, albeit not denying the importance of other factors such as depression. As such, this study’s findings are consistent with the continued use of CBT-based interventions, such as reviewed by Ertelt et al. (2009) and detailed in Mitchell’s (2011) treatment manual. Such interventions combine both behavioral and direct cognitive techniques to help curb compulsive buying. Behavioral techniques include helping the individual identify triggers for compulsive buying, helping them stop the behaviors once these antecedents are determined, and helping them to replace buying with less destructive alternative behaviors; along with their self-limiting their access to credit and purchasing funds (Ertelt et al., 2009; Mitchell, 2011). Consistent with the findings of this study, such treatments also aim to restructure maladaptive shopping-related beliefs and coping cognitions (Ertelt et al., 2009; Mitchell, 2011), albeit our study highlights the particular relevance of beliefs such as lost opportunities, emotional reasons for buying, and compensation beliefs. Finally, in the treatments there is also a more general focus on self-esteem, problem-solving, and decision-making (Ertelt et al., 2009; Mitchell, 2011). In addition to supporting cognitive restructuring techniques, our findings that individuals with CB are still responsive to limitations of the shopping trip might suggest that highlighting external limiting factors (e.g., finances, other values in the individual’s life) could contribute to effective treatment, and is consistent with suggestions from Mitchell’s treatment that individuals keep a limited budget for “special stores”. The finding that compulsive shoppers are responsive to situational cues regardless of the initial desire for items is also consistent with suggestions from Mitchell that individuals with CB create lists of items that are required and do not buy outside of that list, limiting the likelihood that situational factors lead them to purchase unnecessary items at all levels of initial desire.

A limitation of this research was the low number of participants in each group leading to low power for statistical analyses, which itself was partially a result of strict inclusion criteria to ensure group validity. To minimize the impact of this limitation, linear mixed effects models were used that allowed the removal of terms that did not demonstrate a strong contribution to the variance in the observed data. Such removal of terms increased the power of
the final models, reducing the probability of type two errors across the remaining terms. Nevertheless, the possibility exists when using this approach that removed terms may have shown significance with a larger sample. Thus, future studies should look to replicate these findings with larger samples. It would also be of interest to more systematically examine prior treatment histories, in case this alters the reported influence of the cognition manipulation. Finally, while care was taken to ensure the groups consisted of participants with CB and non-clinical participants through the utilization of questionnaire measures and screening questions along with statistical analyses for symptom differences, clinical interviews would have been preferable to establish group membership.

Overall, this study was the first to experimentally link buying cognitions to compulsive buying, adding strength to the previous literature that was largely based on questionnaire research and clinical experience. It supports cognitive models of compulsive buying, which suggests that buying behaviors are influenced by situational cues that tap into buying specific beliefs, such as the uniqueness and value given to objects. Future research investigating the basis for such vulnerabilities (e.g., in general beliefs, self-discrepancies, or other general factors such as perfectionism) may help to further strengthen cognitive conceptualizations. Given the role of depression in CB, it would also be of interest for future studies to examine whether larger groups divided on severity of depressive symptoms reacts differently to the manipulation. In turn, such research may have value in expanding the targets of treatments, particularly for individuals who do not respond to current interventions.

Role of funding organizations

The study was not financially supported by a sponsor.

Acknowledgments

The authors would like to thank all the individuals who participated in this study, and thank Carl Zabel who assisted in data collection.

Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.jbtep.2014.07.003.

References


Acknowledgments

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The study was not financially supported by a sponsor.

Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.jbtep.2014.07.003.

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The current work was supported by a scholarship to PM, US Army Medical Research Program (MRP) grant no. DAMD17-04-1-0305 to EMM, NIMH, and a grant from the Ivory Coast Government (no. 2012/02266) to RBB.

1 We thank an anonymous reviewer for this suggestion.