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Impulsivity, Emotion Regulation, and Mindful Attentional Focus in Compulsive Buying

Alishia D. Williams · Jessica R. Grisham

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Abstract The aims of the current study were to explore the relationship between compulsive buying (CB) and impulsivity, and to investigate the proposal that emotion regulation deficits and mindful attentional awareness may also play a role in maladaptive buying behaviours. In a community-recruited sample of 49 compulsive buyers with a mean age of 29.02 ($SD = 11.24$) and 37 healthy controls with a mean age of 25.61 ($SD = 7.38$) CB was significantly related to several domains of impulsivity and emotion regulation deficits. Furthermore, CB was associated with less dispositional mindful attentional focus, which was in turn associated with specific emotion regulation deficits. Multivariate analysis of variance (MANCOVA) controlling for general psychopathology supported significant group differences in all outcome measures, with the exception of difficulties engaging in goal-directed behaviour. Taken together, the findings suggest that CB is characterized by impulsivity, but that emotional vulnerabilities and poor regulatory processes may also play a role in either the development or maintenance of CB. Limitations and future directions are discussed.

Keywords Compulsive buying · Pathological buying · Impulsive-compulsive buying disorder · Emotion regulation · Mindfulness

Introduction

Compulsive buying (CB) is characterized by a preoccupation with buying or impulses to buy that are experienced as irresistible, intrusive, uncontrollable, and is associated with frequent buying of more than can be afforded, of items that are not needed, or shopping for longer periods of time than intended (McElroy et al. 1994). These behaviours do not occur in the context of mania, and result in harmful consequences including marked distress, marital and social conflict, and significant financial debt (McElroy et al. 1994; O'Guinn and Faber 1989).

CB has been reported to affect men and women equally with estimated prevalence data collected in the United States indicating that approximately 5.8% of males and females report clinically significant CB behaviours (Koran et al. 2006). Similarly, a recently published study in Germany reported an estimated point prevalence of 6.9% across the genders (Mueller et al. 2010). To date, long-term follow-up studies of CB are absent, but research suggests that the course is either chronic or recurrent (Christenson et al. 1994), highlighting the severity of the condition.

Current diagnostic issues centre on the question of whether CB should be classified as a disorder of impulsivity or compulsivity. Grant and Potenza (2006) argue that impulsive and compulsive behaviours are not necessary diametrically opposed and highlight the fact that both behaviours can occur simultaneously in the course of a disorder, or can occur at different times within the same

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disorder. It has been suggested that CB may fit within the proposed obsessive–compulsive spectrum disorders (OCS), representing an intermediate disorder between OCD at the compulsive end and Pathological Gambling (PG) at the impulsive end. However, several important distinctions between these disorders have been highlighted. In compulsive disorders the intrusive thoughts or urges are typically egodystonic and prompt behaviours that are distressing or embarrassing, whereas in impulsive disorders these intrusions are generally egosyntonic and prompt behaviours that are, at least in the initial stages, pleasurable or gratifying. The compulsions in OCD are typically justified through some belief-driven explanation, whereas the repetitive behaviours performed in ICDs often lack a cognitive explanation, appear automatic, or are reported to be performed as a way to alleviate or induce particular feelings or sensations (Radomsky et al. 2007). In addition, individuals with OCD demonstrate a tendency towards risk-aversion which is associated with an overestimation of harm, harm avoidance, excessive doubt, and anticipatory anxiety (Rasmussen and Eisen 1991). Finally, risk-seeking, approach behaviours, overconfidence, and a tendency to underestimate harm are more characteristic of the impulse-control disorders (Dell’Osso et al. 2006).

Surprisingly few studies have systematically examined impulsivity or inhibition-related functions in the context of CB. DeSarbo and Edwards (1996) showed that impulsivity predicted higher scores on a questionnaire assessing CB. Lejoyeux et al. (1997) found that individuals who met criteria for depression and compulsive buying scored higher on a self-report measure of impulsivity than depressed patients without CB problems. Finally, Billieux et al. (2008) found that negative urgency, the tendency to experience strong or rash reactions in the context of negative affective states was a significant predictor of buying tendencies and therefore suggested that a high level of urgency may be related to a poorer ability to deliberately suppress prepotent responses and therefore proposed that CB may be maintained if urges to buy are associated with increased difficulty resisting strong impulses. Interestingly, Cyders et al. (2007) have demonstrated that positive urgency, or the tendency to act rashly while in a positive mood, is a predictor of problem gambling behaviours. Therefore positive urgency may also play a role in CB.

There is also a higher prevalence rate of Axis I disorders in CB compared to that reported in epidemiological samples (de Zwaan 2011). In particular, CB is associated with depression and anxiety (Lejoyeux et al. 1997; McElroy et al. 1994) and has been documented to occur in response to negative affective states (Miltenberger et al. 2003). Therefore it has been proposed that purchasing behaviours may serve as a maladaptive means of alleviating negative emotions in vulnerable individuals (Christenson et al. 1994;

McElroy et al. 1994). Buying behaviours may also create cognitive arousal that deflects attention away from one’s mood, and therefore negatively reinforce purchasing behaviours. Accordingly, poor affect regulation appears to be another important factor relevant to understanding CB. However, it is currently unknown whether individuals with CB have general or specific deficits in emotion regulation abilities. Findings from a recent study in PG may, however, provide some indication of the likely deficits in CB. Williams et al. (in press) compared a group of treatment-seeking pathological gamblers to a mixed Axis I clinical group and a healthy control group on measures of emotion regulation. Notably, pathological gamblers reported limited access to effective emotion regulation strategies compared to both comparison groups.

The concept of mindfulness has increasingly been featured in models of psychopathology (Chambers et al. 2009) and recent evidence suggests that it may also contribute to understanding impulsive behaviours such as PG, and by extension, CB. Mindfulness has been broadly defined as a process of bringing attention to moment-to-moment experience (Kabat-Zinn et al. 1992). Attentional problems have been implicated in self-control difficulties, risk-taking, and gambling problems (Specker et al. 1995). It has therefore been suggested that mindful attentional awareness may facilitate adaptive functioning by overriding habitual or automatic responses that are characteristic of disorders of impulse-control (Bishop et al. 2004). Indeed, Lakey et al. (2007) found that in a sample of pathological gamblers, those higher in dispositional mindfulness made more advantageous choices during a gambling task and appeared better able to learn reward and punishment contingencies when compared to gamblers with lower dispositional mindfulness. The authors suggested that mindfulness may inhibit gambling behaviours and promote more self-controlled behavioural responses by influencing the poor decision-making processes and impulsive reactions that typically lead to problematic outcomes in PG. It is likely that a similar process is operating in CB, and therefore warrants investigation.

Aims

The first aim of the current study was to replicate Billieux et al. (2008) findings regarding the relationship between CB and the different facets of impulsivity and to extend their findings by investigating the potential role of positive urgency in CB. It was hypothesized that positive urgency would correlate with CB and be associated with maladaptive emotion regulation strategies. Considering the link between CB and PG, based on the findings of Williams et al. (in press) and Lakey et al. (2007) it was also hypothesized that CB would be associated with specific deficits in emotion

regulation similar to those observed in PG, and that CB would be associated with less dispositional mindfulness. Trait mindfulness has been associated with a greater ability to understand and accept emotions, as well as to repair unpleasant mood states (Brown et al. 2007), therefore it was also expected that mindful attentional awareness (MAAS) would be inversely correlated with the use of maladaptive emotion regulation abilities.

Method

Participants

Participants were recruited from the community through advertisements placed in local newspapers and on mental health websites seeking individuals who experienced symptoms consistent with compulsive buying. All participants answered screening questions taken from the Structured Clinical Interview for DSM Disorders- Screening Module (SCID-I/NP; First et al. 2002) to establish or rule out any history of Axis I symptoms (including mania), current substance abuse, or traumatic brain injury.

Healthy Control Group. criteria for assignment to the healthy control group were (1) scores below the clinical cut-off on both the RCBS and the CBS; (2) gambling scores below the clinical range on the SOGS; and (3) no report of an Axis I disorder, current substance abuse, or lifetime brain injury or manic episode. This group included 28 females and nine males with a mean age of 29.02 (SD = 11.24).

Compulsive Buying Group. assignment to the CB group was based on scores above the clinical cut-off on both the RCBS and CBS. Due to the recognized comorbidity between buying pathology and Axis I disorders, participants were only excluded if they reported current substance abuse, or a lifetime brain injury or manic episode. This group included 45 females and four males with a mean age of 25.61 (SD = 7.38). Eighteen percent of this group self-reported being diagnosed with a current Axis I disorder (depression, $n = 4$; obsessive-compulsive disorder, $n = 2$; generalized anxiety disorder, $n = 1$; panic disorder, $n = 1$; anorexia nervosa, $n = 1$).

Measures

The Compulsive Buying Screen (CBS; Faber and O'Guinn 1992) is a validated 7-item screening instrument developed to measure compulsive buying behaviour. Lower scores on this scale indicate greater level of compulsive buying. A score less than or equal to -1.34 classifies a respondent as a compulsive buyer (Faber and O'Guinn 1992). Cronbach's alpha was .89.

Richmond Compulsive Buying Scale (RCBS; Ridgway et al. 2008). The RCBS is a validated 9-item self-report questionnaire of buying pathology. Higher scores reflect more severe buying pathology. Respondents with scores of 25 and above are classified as compulsive buyers (Ridgway et al. 2008). Cronbach's alpha was .92.

The *UPPS-P Impulsivity Scale* (UPPS-P; Lynam et al. 2007) is a 59-item inventory designed to measure five distinct aspects of impulsivity: Negative Urgency, (lack of) Perseverance, (lack of) Premeditation, Sensation Seeking, and Positive Urgency. The subscales demonstrate good psychometric properties (Cyders and Smith 2007). In the current sample, Cronbach's alpha for each of the five subscales were .90, .81, .88, .91, and .95, respectively.

The *Mindful Attention Awareness Scale* (MAAS; Brown and Ryan 2003) is a validated 15-item scale designed to assess attention to and awareness of one's emotions, thoughts, actions, and surroundings in the present moment. It does not assess other attributes associated with mindfulness such as compassion or acceptance. Higher scores reflect greater mindfulness. Cronbach's alpha was .91.

Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer 2004). The DERS is a 36-item measure that assesses six facets of difficulties in regulating emotions: nonacceptance of emotional responses, difficulties engaging in goal-directed behaviour, impulse control difficulties, lack of emotional awareness, limited access to effective emotion regulation strategies, and lack of emotional clarity. The DERS has high internal consistency, good test-retest reliability, and adequate construct and predictive validity (Gratz and Roemer 2004). Cronbach's alpha was .91, .88, .88, .91, .83 for the respective subscales.

South Oaks Gambling Screen (SOGS; Lesieur and Bloom 1987). The SOGS is a widely used 20-item measure of pathological gambling with good psychometric properties (Lesieur and Blume 1987). Scores of 5 and above are typically necessary for classification of pathological gambling. Scores of 3 or 4 indicate probable gambling, while scores of 0 to 2 represent non-problem gambling. Cronbach's alpha was .83.

Depression Anxiety Stress Scales (DASS; Lovibond and Lovibond 1995). The DASS is a validated and widely-used 21-item self-report measure of depression, anxiety and stress symptoms with good reliability and internal consistency (Henry and Crawford 2005). Cronbach's alpha was .94 for the DASS Total.

Structured Clinical Interview for DSM Disorders-Screening Module (SCID-I/NP; First et al. 2002). Questions from the SCID screening module were used to screen participants and to rule out any history of Axis I symptoms in the healthy control group.

Procedure

Eligible respondents were emailed a unique link to a secure website sponsored by The University of New South Wales that hosted the battery of electronic questionnaires. Participants received one entry into a cash draw in the value of \$100 Australian dollars in exchange for their participation.

Results

In order to analyse whether self-reported buying behaviour was related to general psychopathology, emotion regulation difficulties, and impulsivity zero-order correlations were conducted (see Table 1). Surprisingly, depression was not significantly correlated with CB, but anxiety and stress was. CB correlated with all domains of impulsivity (UPPS-P) with the exception of Sensation Seeking, and all deficits in emotion regulation strategies with the exception of (lack of) Awareness. Mindful attentional awareness was inversely related to buying pathology. In addition, Mindful attention was significantly related to all deficits in emotion regulation and impulsivity, with the exception of Sensation Seeking and Premeditation.

To investigate group differences on the above variables independent samples *t*-tests and Pearson Chi-Square were first conducted to examine whether any group differences existed in age, ethnicity, marital status, or gender. The CB group had a mean age of 25.61 (SD = 7.38) and the healthy control group had a mean age of 29.02

(SD = 11.24). This difference was not significant, $t(84) = -1.69, P > .05$. The CB group had a higher mean SOGS score of 1.97 (SD = 3.38) compared to the healthy control mean of .35 (SD = .82), $t(84) = 2.85, P < .01$. DASS Total scores were also higher in the CB group with a mean score of 39.02 (SD = 25.08) compared to 24.54 (SD = 20.79), $t(84) = 2.84, P < .01$. There were no significant differences in ethnicity, $\chi^2 = 2.22, P > .05$ or marital status, $\chi^2 = 5.65, P > .05$. There was a significant gender difference between the groups, $\chi^2 = 4.29, P = .03$, indicating a greater proportion of females in the pathological buying group. This difference is not unexpected given the greater proportion of females (80–95%) who volunteer for CB research (Koran et al. 2003).

Exploratory analyses were conducted to assess for potential gender effects. Gender did not correlate with any of the variables and there were no differences based on independent samples *t*-tests, *t*'s .39–1.52, all *P*'s $> .05$. Subsequent analyses were therefore conducted using multivariate analysis of variance (MANCOVA) controlling for gambling pathology (SOGS) and general psychopathology (DASS Total) collapsed across gender. Means and *F* values along with effect sizes are reported in Table 2. CB group scored significantly higher on all UPPS-P subscales, all *P*'s $< .05$, and all subscales of the DERS, all *P*'s $< .05$, with the exception of Goals. Finally, the CB group scored significantly lower on the MAAS, $P < .001$, indicating a greater lack of mindful attentional awareness in comparison to the healthy control group.

Discussion

The aims of the current study were to further explore the relationship between CB and impulsivity, and to investigate the proposal that emotion regulation deficits and mindful attentional awareness may also play a role in maladaptive buying behaviours.

As expected, CB was significantly related to negative urgency which is consistent with Billieux et al. (2008) proposal that negative emotions may indirectly influence compulsive buying behaviours by leading to inhibition difficulties that promote engagement in maladaptive behaviour. Positive urgency was also significantly related to buying pathology. It would seem plausible that individuals might engage in behaviours that prolong or extend positive emotional states if they demonstrate poor regulation over their emotions or lack alternative ways of responding. Indeed, positive urgency was significantly related to non-acceptance of emotions, having limited access to effective emotion regulation strategies, and poor impulse-control. Compulsive buying was also correlated with both lack of perseverance and lack of premeditation.

Table 1 Zero order correlations between primary study variables

| | CBS | RCBS | MASS |
|------------------------|--------|--------|--------|
| MASS | .56** | -.54** | |
| DASS depression | -.14 | .09 | -.15 |
| DASS anxiety | -.32 | .37** | -.29 |
| DASS stress | -.32** | .31 | -.18 |
| DERS-goals | -.41** | .38** | -.34** |
| DERS-impulse | -.46** | -.45** | -.50** |
| DERS-awareness | -.23 | .19 | -.35** |
| DERS-strategies | -.43** | .41** | -.44** |
| DERS clarity | -.37** | .38** | -.53** |
| UPPS-positive urgency | -.38** | .41** | -.34** |
| UPPS-negative urgency | -.50** | .55** | -.38** |
| UPPS-premeditation | -.41** | .31 | -.27 |
| UPPS-sensation seeking | -.17 | .21 | -.08 |
| UPPS-perseverance | -.39** | .31 | -.33** |

CBS compulsive buying screen, RCBS richmond compulsive buying scale, DASS depression anxiety stress scale, MAAS mindful attention awareness scale, DERS difficulties in emotion regulation scale, UPPS-P UPPS-P impulsivity scale. Adjusted ** $P \leq .001$

Table 2 Comparison of mean group differences on self-report measures controlling for gambling (SOGS) and psychopathology (DASS)

| | Compulsive buyers (<i>n</i> = 49) M (SD) | Healthy controls (<i>n</i> = 37) M (SD) | <i>F</i> | η^2 |
|--------------------------|---|--|-----------|----------|
| RCBS | 33.75 (5.11) | 14.75 (5.99) | 197.16*** | .60 |
| CBS | -2.84 (2.27) | 1.54 (1.29) | 80.96*** | .41 |
| DERS nonacceptance | 18.38 (6.82) | 13.35 (5.33) | 10.76** | .11 |
| DERS goals | 16.89 (4.96) | 14.86 (3.87) | 1.75 | .02 |
| DERS impulse | 18.12 (6.37) | 13.24 (4.69) | 6.67* | .06 |
| DERS awareness | 17.22 (4.81) | 14.78 (4.80) | 4.72* | .05 |
| DERS strategies | 24.77 (8.17) | 18.24 (6.66) | 9.19** | .09 |
| DERS clarity | 14.16 (4.32) | 10.45 (3.51) | 10.68** | .10 |
| UPPS-P negative urgency | 2.66 (0.55) | 2.02 (0.57) | 12.02** | .12 |
| UPPS-P positive urgency | 2.49 (0.69) | 1.87 (0.73) | 21.43*** | .20 |
| UPPS-P premeditation | 2.27 (0.63) | 1.94 (0.44) | 4.87* | .08 |
| UPPS-P sensation seeking | 2.75 (0.64) | 2.42 (0.75) | 6.39* | .07 |
| UPPS-P perseverance | 2.32 (0.54) | 1.99 (0.41) | 6.58* | .07 |
| MAAS | 2.86 (0.83) | 3.92 (0.91) | 19.13*** | .16 |

RCBS richmond compulsive buying scale, CBS compulsive buying screen, DERS difficulties in emotion regulation scale, UPPS-P UPPS-P impulsivity scale, MAAS mindful attention awareness scale, η^2 eta squared. *** $P < .001$, ** $P < .01$, * $P < .05$

This finding is also consistent with Billieux et al. (2008) who proposed that because perseverance may influence the ability to inhibit or disregard unwanted thoughts or urges (Bechara and Van der Linden 2005), compulsive buyers who are low on this variable may be more susceptible to giving into the urge to buy when prompted by the recurring thoughts that characterize the disorder. This may be particularly true when individuals also lack premeditation, or the ability to consider potential outcomes of their chosen behaviour, leading to poor decision-making abilities and a myopic focus on short-term positive consequences rather than the longer-term negative consequences (Billieux et al. 2008). As expected, CB was not related to the final dimension of impulsivity—sensation-seeking. It has been demonstrated that sensation seeking is related to certain stimulating behaviours including alcohol consumption and some forms of gambling, but in contrast to the urgency dimension of impulsivity, it is not associated with problematic levels of involvement in these behaviours (Zapolski et al. 2009).

The second aim of the current study was to investigate whether emotion regulation deficits observed in pathological gambling are similarly linked to CB. Although not directly comparable, the CB group demonstrated a similar pattern of emotion regulation deficits compared to the sample of pathological gamblers reported in Williams et al. (in press). In both studies the clinical group of interest reported greater deficits across all domains when compared to a healthy control group with the exception of difficulties engaging in goal-directed behaviour. This finding could be accounted for by the difference in the definition of goals in both groups. A component of goal-directed behaviour may actually include the act of gambling or buying,

respectively, and therefore emotional distress would be unlikely to interfere with attaining this goal.

Taken together, it appears that emotion dysregulation is a feature of CB that may help account for the continuous engagement in behaviours that are ultimately associated with negative outcomes. Negative emotions often prompt, and are subsequently reduced or alleviated by buying episodes (Miltenberger et al. 2003). This effect seems to be short-lived, with the onset of feelings of guilt, shame, and depression quickly following the buying episode and setting up a vicious cycle in the absence of more appropriate coping responses. Because emotion regulation deficits have been identified in several Axis I disorders, emotion regulation (ER) training is increasingly being incorporated into cognitive-behavioural therapies for a range of disorders with promising outcomes (Berking et al. 2008). If subsequent research supports the role of poor emotion regulation in CB it may be beneficial to incorporate explicit ER training into existing treatment packages such as Mitchell's (2011).

The current findings of the relationship of mindful attention focus to CB and to deficits in emotion regulation may have similar treatment implications. As predicted, CB was associated with less dispositional mindfulness, which was in turn associated with specific emotion regulation deficits. Research in pathological gambling has provided insight into the possible mechanism by which mindfulness may be related to problematic behaviours. Lakey et al. (2007) demonstrated that mindfulness was associated with less severe gambling outcomes and suggested that mindful attentional awareness may facilitate adaptive behavioural regulation by influencing the way in which individuals respond to their thoughts and associated urges about

gambling and related behaviours. This could be accomplished through the promotion of a more accurate assessment of gambling that highlights the risks and negative consequences rather than the potential rewards (Lakey et al. 2007). A similar process could operate in the context of CB. As reported previously, compulsive buyers in the current study reported a lack of emotional awareness and a lack of emotional clarity when compared to the healthy control group. It is possible that mindfulness strategies may be useful to increase awareness of one's emotions, thereby assisting individuals in first identifying high-risk emotional states, and secondly, recognizing when mood-related triggers are likely to prompt engagement in buying behaviours in order to provide the opportunity to react with more adaptive coping responses. Compulsive buyers also report experiencing a narrowing of attention or mental absorption during buying episodes (Faber and Vohs 2004). Mental absorption is a process that interferes with the effective processing of information required to regulate behaviour (Baumeister and Heatherton 1996). Increasing one's attentional focus through mindfulness training may be another way to 'ground' individuals to their surroundings and sufficiently increase awareness to a level where cognitive-based strategies learned in treatment can be implemented. Mindfulness training has also demonstrated efficacy in the treatment of disorders that are comorbid with both PG and CB, including depression (Teasdale 1999), anxiety (Kabat-Zinn et al. 1992), substance abuse (Bowen et al. 2009) and self-control disorders (Witkiewitz et al. 2005). Therefore mindfulness may be particularly appropriate when compulsive buyers present with multiple psychopathologies.

These suggestions should be considered in light of the limitations of the current study. Although individuals in the CB group scored within the recommended clinical range on two separate measures of compulsive buying, they did not undergo a diagnostic clinical interview. This was partially due to the fact that validated diagnostic interviews do not currently exist. A draft version of the Structured Clinical Interview for DSM-IV-TR (SCID) for impulse-control disorders not elsewhere classified does include a module for impulsive-compulsive buying disorder (First 2008), but remains to be validated and published for clinical and research use. The Yale Brown Obsessive Compulsive Scale—Shopping Version (YBOCS-SV; Monahan et al. 1996) has shown promise as an index of severity, but is not a stand-alone diagnostic tool. It should also be noted that the cross-sectional nature of the current study precludes inferences about causality. In particular, it may be that deficits in emotion regulation abilities make it more likely that individuals will engage in certain behaviours such as compulsive buying, or alternatively, that coping resources and the ability to effectively regulate one's emotions becomes

depleted following continued engagement in behaviours that are associated with adverse consequences. Future studies designed to manipulate these processes experimentally would help address this issue. Finally, given the small proportion of males in the current study the results may not generalize to men who engage in CB. Future research would benefit from a more representative sample of both genders.

Taken together, the existing research suggests that CB is characterized by impulsivity, but that emotional vulnerabilities and poor regulatory processes may also play a role in either the development or maintenance of CB. It seems that before clear decisions can be made about the correct diagnostic classification of CB additional research into these domains is needed.

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References

- Baumeister, R. F., & Heatherton, T. F. (1996). Self-regulation failure: An overview. *Psychological Inquiry*, 7, 1–15.
- Bechara, A., & Van der Linden, M. (2005). Decision-making and impulse control after frontal lobe injuries. *Current Opinion in Neurology*, 18, 734–739.
- Berking, M., Wupperman, P., Reichardt, A., Pejic, T., Dippel, A., & Znoj, H. (2008). Emotion-regulation skills as a treatment target in psychotherapy. *Behaviour Research and Therapy*, 46, 1230–1237.
- Billieux, J., Rochat, L., Rebetz, M. M. L., & Van der Linden, M. (2008). Are all facets of impulsivity related to self-reported compulsive buying behavior? *Personality and Individual Differences*, 44, 1432–1442.
- Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., et al. (2004). Mindfulness: A proposed operational definition. *Clinical Psychology: Science and Practice*, 11, 230–241.
- Bowen, S., Chawla, N., Collins, S. E., Witkiewitz, K., Hsu, S., Grow, J., et al. (2009). Mindfulness-based relapse prevention for substance use disorders: A pilot efficacy trial. *Substance Abuse*, 30, 295–305.
- Chambers, R., Gullone, E., & Allen, N. B. (2009). Mindful emotion regulation: An integrative review. *Clinical Psychology Review*, 29, 560–572.
- Christenson, G. A., Faber, J. R., & de Zwann, M. (1994). Compulsive buying: descriptive characteristics and psychiatric comorbidity. *Journal of Clinical Psychiatry*, 55, 5–11.
- Cyders, M. A., & Smith, G. T. (2007). Mood-based rash action and its components: Positive and negative urgency. *Personality and Individual Differences*, 43, 839–850.
- Cyders, M. A., Smith, G. T., Spillane, N. S., Fischer, S., Annus, A. M., & Peterson, C. (2007). Integration of impulsivity and positive mood to predict risky behavior: Development and validation of a measure of positive urgency. *Psychological Assessment*, 19, 107–118.
- de Zwaan, M. (2011). *Psychiatric comorbidity and compulsive buying. Compulsive buying: Clinical foundations and treatment* (pp. 87–104). New York NY, US: Routledge/Taylor & Francis Group.

- Dell'Osso, B., Altamura, A. C., Allen, A., Marazziti, D., & Hollander, E. (2006). Epidemiologic and clinical updates on impulse control disorders. A critical review. *European Archives of Psychiatry and Clinical Neuroscience*, 256, 464–475.
- DeSarbo, W. S., & Edwards, E. A. (1996). Typologies of compulsive buying behavior: A constrained clusterwise regression approach. *Journal of Consumer Psychology*, 5, 231–262.
- Faber, R. J., & O'Guinn, T. C. (1992). A clinical screener for compulsive buying. *The Journal of Consumer Research*, 19, 459–469.
- Faber, R. J., & Vohs, K. D. (2004). To buy or not to buy? Self-control and self-regulatory failure in purchase behavior. In R. F. Baumeister & K. D. Vohs (Eds.), *Handbook of self-regulation: Research, theory, and applications* (pp. 509–524). New York: Guilford Press.
- First, M. B. (2008). *Structured clinical interview for dsm-iv-tr impulse control disorders not elsewhere classified (SCID-ICD)*. Biometrics Research Department (draft).
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. (2002). *Structured clinical interview for DSM-IV-TR axis I disorders, research version, non-patient edition (SCID-I/NP)*. New York: Biometrics Research, New York State Psychiatric Institute.
- Grant, J. E., & Potenza, M. N. (2006). Compulsive aspects of impulse-control disorders. *Psychiatric Clinics of North America*, 29, 539–551.
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, 26, 41–54.
- Henry, J. D., & Crawford, J. R. (2005). The short-form version of the depression anxiety stress scales (DASS-21): Construct validity and normative data in a large non-clinical sample. *British Journal of Clinical Psychology*, 44, 227–239.
- Kabat-Zinn, J., Massion, A. O., Kristeller, J., Peterson, L. G., et al. (1992). Effectiveness of a meditation-based stress reduction program in the treatment of anxiety disorders. *The American Journal of Psychiatry*, 149, 936–943.
- Koran, L. M., Chuong, H. W., Bullock, K. D., & Smith, S. C. (2003). Citalopram for compulsive shopping disorder: An open-label study followed by double-blind discontinuation. *Journal of Clinical Psychiatry*, 64, 793–798.
- Koran, L. M., Faber, R. J., Aboujaoude, E., Large, M. D., & Serpe, R. T. (2006). Estimated prevalence of compulsive buying behavior in the United States. *The American Journal of Psychiatry*, 163, 1806–1812.
- Lakey, C. E., Campbell, W. K., Brown, K. W., & Goodie, A. S. (2007). Dispositional mindfulness as a predictor of the severity of gambling outcomes. *Personality and Individual Differences*, 43, 1698–1710.
- Lejoyeux, M., Tassian, V., Solomon, J., & Andes, J. (1997). Study of compulsive buying in depressed patients. *Journal of Clinical Psychiatry*, 58, 169–173.
- Lesieur, H. R., & Blume, S. B. (1987). The South Oaks gambling screen (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry*, 144, 1184–1188.
- Lovibond, S. H., & Lovibond, P. F. (1995). *Manual for the depression anxiety and stress scales* (2nd ed.). Sydney: Psychological Foundation.
- Lynam, D., Smith, G. T., Cyders, M. A., Fischer, S., & Whiteside, S. A. (2007). The UPPS-P: A multidimensional measure of risk for impulsive behavior. Unpublished technical report.
- McElroy, S. L., Keck, P. E., Pope, H. G., & Smith, J. M. R. (1994). Compulsive buying: A report of 20 cases. *Journal of Clinical Psychiatry*, 55, 242–248.
- Miltenberger, R. G., Redlin, J., Crosby, R., Stickney, M., Mitchell, J., Wonderlich, S., et al. (2003). Direct and retrospective assessment of factors contributing to compulsive buying. *Journal of Behavior Therapy and Experimental Psychiatry*, 34, 1–9.
- Monahan, P., Black, D. W., & Gabel, J. (1996). Reliability and validity of a scale to measure change in persons with compulsive buying. *Psychiatry Research*, 64, 59–67.
- Mueller, A., Mitchell, J. E., Crosby, R. D., Gefeller, O., Faber, R. J., Martin, A., et al. (2010). Estimated prevalence of compulsive buying in Germany and its association with sociodemographic characteristics and depressive symptoms. *Psychiatry Research*, 180, 137–142.
- O'Guinn, T. C., & Faber, R. J. (1989). Compulsive buying: A phenomenological exploration. *The Journal of Consumer Research*, 16, 147–157.
- Radomsky, A. S., Bohne, A., & O'Connor, K. P. (2007). Treating comorbid presentations: obsessive-compulsive disorder and disorders of impulse control. In M. M. Antony, C. Purdon, & L. J. Summerfeldt (Eds.), *Psychological treatment of obsessive-compulsive disorder: Fundamentals and beyond* (pp. 295–309). New York: American Psychological Association.
- Rasmussen, S. A., & Eisen, J. L. (1991). Phenomenology of OCD: Clinical subtypes, heterogeneity and coexistence. In J. Zohar, T. Insel, & S. Rasmussen (Eds.), *The psychobiology of obsessive-compulsive disorder* (pp. 13–43). New York: Springer.
- Ridgway, N. M., Kukar-Kinney, M., & Monroe, K. B. (2008). An expanded conceptualization and a new measure of compulsive buying. *Journal of Consumer Research*, 35, 622–639.
- Specker, S. M., Carlson, G. A., Christenson, G. A., & Marcotte, M. (1995). Impulse control disorders and attention deficit disorder in pathological gamblers. *Annals of Clinical Psychiatry*, 7, 175–179.
- Teasdale, J. D. (1999). Emotional processing, three modes of mind and the prevention of relapse in depression. *Behaviour Research and Therapy*, 37, 53–77.
- Williams, A. D., Grisham, J. R., Erskine, A., & Cassidy, E. (in press). Emotion regulation deficits associated with pathological gambling. *British Journal of Clinical Psychology*.
- Witkiewitz, K., Marlatt, G. A., & Walker, D. (2005). Mindfulness-based relapse prevention for alcohol and substance use disorders. *Journal of Cognitive Psychotherapy*, 19, 211–228.
- Zapolski, T. C. B., Cyders, M. A., & Smith, G. T. (2009). Positive urgency predicts illegal drug use and risky sexual behavior. *Psychology of Addictive Behaviors*, 23, 348–354.