Resisting temptation: Is compulsive buying an expression of personality deficits?

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Abstract

Purpose of review: We summarized studies focusing on the associations between compulsive buying and temperament/personality traits in community and clinical samples published between 2010 and 2016.

Recent findings: We found significant associations between compulsive buying (CB) and high levels of Behavioral Activation System (BAS) reactivity, Novelty Seeking, and Positive Urgency (promotion focus), as well as high levels of Neuroticism, Emotional Instability, and Negative Urgency (prevention focus). Finally, the results showed negative associations between CB and lack of Effortful Control, Self-Control, Perseverance and Premeditation.

Summary: CB seems to be driven by positive reinforcement and negative reinforcement as well as a breakdown in self-regulation. Longitudinal studies need to investigate the development of CB throughout time, and experimental studies need to examine whether individuals with CB suffer from a general vs. a cue-specific breakdown in self-regulation. Psychotherapy needs to focus on the training of self-control as well as the development of behavioral alternatives to regulate emotions.

Introduction

CB can be defined as a preoccupation with buying, by frequent buying episodes, or urges to buy that are experienced as irresistible [1]. The buying episodes are accompanied by pleasure (positive reinforcement) and relief (negative reinforcement), but followed by remorse and guilt due to psychological, social, occupational and financial problems related to maladaptive spending [2]. The prevalence of CB in adults is approximately 5% and younger people are more prone to develop CB [3]. Patients with CB suffer from both, Axis I (e.g., anxiety, depression, substance abuse, binge eating) and Axis II (e.g., avoidant, obsessive-compulsive and borderline personality disorders (PDs)) comorbid disorders [2]. Previous research showed that 90% of patients with CB showed at least one life-time Axis I diagnosis and that 60% reported at least one Axis II diagnosis [4]. Recently, several authors reported significantly positive associations between CB and the Cluster B borderline ($r = .42$, $p < .001$) and narcissistic ($r = .31$, $p < .001$) [5,6] personality disorder features. Among many other vulnerability factors (such as materialistic value endorsement, decision-making difficulties, low self-esteem, depression, etc.) [2], individual differences in personality functioning are considered as possible precursors of CB in both community and clinical samples [7].

The aim of the present chapter is to offer an overview of studies which focused on the associations between CB and different dimensional temperament/personality models between 2010 and 2016. Findings concerning the associations between CB and temperament/personality traits published before 2010 can be found in a review by Claes and Müller [8]. In what follows, we discuss the associations between CB and (a) the reactive and regulative temperamental model of Gray and Rothbart [9, 10], (b) the five personality dimensions of the Big Five Model [11], (c) the temperament and character dimensions of the Psychosocial Theory [12], and (d) the Impulsivity dimensions of Barratt [13] and the UPPS-P model [14] (see Table 1).

CB and reactive and regulative temperament

First, we investigated CB from a temperamental point of view. Rothbart, Ahadi and Evans [15] define temperament as individual differences in reactivity and self-regulation. “Reactivity refers to the excitability, responsivity, or arousability of the behavioral and physiological systems of the organism, whereas self-regulation refers to neural and behavioral processes functioning to modulate this underlying reactivity” [15, p. 123]. Reactive temperament (bottom-up) can be conceptualized in terms of two separate neurobiological systems: the Behavioral Inhibition System (BIS) and the Behavioral Activation System (BAS) [9]. The BIS is sensitive to stimuli that signal punishment and omission/termination of reward, and is involved in avoidance behavior. The BIS is related to negative affectivity and personality traits like Neuroticism and Harm Avoidance. The BAS is sensitive to stimuli that signal reward and relief from punishment, and is involved in approach behavior. The BAS is related to positive affectivity and personality traits like Extraversion and Sensation Seeking [16].

The reactivity of the BISBAS systems can be assessed by means of the BISBAS scales [17] or the Sensitivity to Punishment and Sensitivity to Reward Scale (SPSRQ) [18]. Besides reactive temperament, also self-regulation (top-down) can play a role in human behavior. Self-regulation is synonymously used with self-control [19] or effortful control [10] and is related to personality traits like Conscientiousness, Persistence and Self-Directedness. Self-regulation is often assessed by means of the Effortful Control Scale of the Adult Temperament Questionnaire measuring Attentional Control, Activation Control and Inhibitory Control [20] or the Self-Control Scale [21]. Studies that investigated the associations between CB and reactive and regulative temperament in community and clinical samples (see Table 1) showed that CB is significantly related with high levels of BAS reactivity/reward sensitivity and with low levels of effortful control/self-regulation, particularly in females [16,22-26]. In males, on the contrary, CB seemed to be related to high levels of BIS reactivity and low levels of effortful control [27].

Compulsive buying and the Big Five personality traits

The Five Factor Model (FFM) organizes personality traits into five higher-order factors being Neuroticism (emotional instability), Extraversion (energetic, outgoing), Openness (creative, open-minded), Agreeableness (friendly/compassionate) and Conscientiousness (well-organized, efficient), and 30 lower-order facets (six for each factor) [11]. To assess the Big Five personality traits and their facets, the most commonly used questionnaires are the NEO-Five Factor Inventory (NEO-FFI, 60 items) and the NEO-Personality Inventory-Revised (NEO-PI-R, 240 items) [11, 28]. However, also shorter questionnaires were developed to assess the Big Five traits such as the Big Five Mini Marker Scale [29] and the mini-International Personality Item Pool (mini-IPIP) [30]. Studies which investigated the association between CB and the Big Five personality traits in community and clinical samples (most often in females), showed that CB is significantly positive related with Neuroticism and negative with Agreeableness and Conscientiousness [31-34]. Only studies, performed in Pakistan [35, 36], did not confirm these findings and showed positive associations between CB and all Big Five personality traits.

CB and the character and temperament dimensions of the Psychosocial Theory of Cloninger

The Psychosocial Theory of Cloninger [12] describes four character dimensions, being Harm Avoidance (anxious, doubtful), Novelty Seeking (kick-seeking), Reward Dependence (sensitive to social reward) and Persistence (perseverance in spite of fatigue/frustration) and three temperament dimensions, being Self-Directedness (conscientiousness), Cooperativeness (agreeableness), and Self-Transcendence (experiencing rituals ideas). The Temperament and Character Inventory-Revised (TCI-R) [37] is the most frequently used questionnaire to assess the dimensions of the Psychosocial Theory. Three of the four studies which investigated the associations between CB and the temperament and

character dimensions, showed that CB is significantly positive related with Novelty Seeking (i.e., kick-seeking) in patients with CB, bipolar disorder and substance use disorder [38-40].

CB and the impulsivity dimensions of Barratt and Cyders (UPPS-P model)

Impulsivity can be defined as the tendency to act impulsively or without prior reflection or thought. The Barratt Impulsiveness Scale-11 item version (BIS-11) [13, 41] is often used to assess the impulsivity trait. The BIS-11 has three subscales, being attentional impulsivity (not paying attention), motor impulsivity (acting without thinking) and non-planning impulsivity (opposite of planning carefully). Many studies have investigated the associations between CB and BIS-11 (sub)scales and showed systematically significantly positive associations between CB and (attentional, motor and non-planning) impulsiveness in both community and clinical samples [38-40, 42, 43].

Finally, several studies which investigated the association between CB and impulsivity made use of the UPPS-P model (the five impulsivity traits of the FFM) [14, 44]. The UPPS-P model consists of the following five dimensions: Negative Urgency (act impulsive in the presence of negative affect), Lack of Perseverance (easily stop an action in progress), Lack of Premeditation (act without thinking), Sensation Seeking and Positive Urgency (act impulsive in the presence of positive affect). The UPPS-P model can be assessed by means of the UPPS-P Impulsivity Scale [44]. Both studies which investigated the associations between CB and negative/positive urgency showed significantly positive associations between CB and negative/positive urgency [45, 46]. Also the two other UPPS-P dimensions, lack of perseveration and lack of premeditation showed positive associations with CB [46].

Conclusions

Based on the findings of this review, we can conclude that CB is significantly related to both reactive (bottom-up) and regulative (top down) temperament features. First, CB is significantly related to Neuroticism, Behavioral Inhibition System Reactivity (in males), Affective Lability and Negative Urgency which can be related to the negative reinforcement function of CB. CB can thus be considered as a mean to decrease negative affect (prevention focus) [7], which was confirmed in a study using ecological momentary assessment (EMA) [47]. Secondly, CB is also related to Behavioral Activation System reactivity, Stimulus Seeking, Novelty Seeking and Positive Urgency, which can be related to the positive reinforcement function of CB. CB can be considered as a mean to gain pleasure, a 'kick', and a feeling of being reward (i.e. promotion focus) [7]. In sum, from a reactive temperament point of view; CB can be viewed as a way to gain pleasure/reward (promotion focus) and to avoid negative affect or punishment (prevention focus). Longitudinal research is urgently needed to address the question of whether the functionality of CB changes throughout time (e.g., from positive to negative reinforcement). Does CB start as a mean to acquire positive affect, and later on (when CB becomes addictive) as a mean to decrease negative affect? Or do there exist different types of

individuals with CB of whom some use repetitive shopping/buying as a mean to gain reward; and others use it to avoid negative affect? Finally, almost all studies clearly show that CB is related to deficits in top-down or effortful control, self-control, and self-directedness [7]. Future studies should investigate whether individuals with CB show a general deficit in self-regulation, or whether their effortful control is particular vulnerable in the presence of “favorite buying items” [48]. Given that many patients with CB have completely shifted to online shopping, it is of growing interest to investigate if the aforementioned pattern differs between traditional CB (i.e. buying in bricks-and-mortar-based stores) and CB via the internet.

Based on these findings, it is easily to understand that CBT seems to be the treatment of choice for patients with CB given that CBT offers stimulus control techniques, exposure and response prevention which help to train effortful control, as well as the development of alternative behaviors (emotion regulation strategies) to gain reward and to reduce negative affect which is often the functionality of CB [2].

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Table 1. Overview of studies investigating the associations between CB/impulsive buying and temperament/personality dimensions

Authors Country	Sample, gender distribution (%), mean age $\pm$ SD (years), mean baseline BMI $\pm$ SD (year)	Instruments	Analysis	Results
Reactive and Regulative Temperament (Gray, 1982; Rothbart, 1989)				
Claes et al. (2010) [16] Belgium	130 undergraduate psychology students 100% females Age: 22.3 (3.6) years	BISBAS Scales ATQ-SF-EC + SCS CBS	Correlations	CB correlated significantly positive with BAS-Fun Seeking ($r = .33$), BAS-Drive ($r = .31$), BAS-Reward Responsiveness ($r = .37$) and negative with Effortful Control (combination of SCS+EC) ($r = -.37$)
Claes et al. (2011) [23] Belgium + Germany	292 Belgian and German undergraduate students 72.3% females Age: 22.56 (33.9) years	BISBAS Scales ATQ-SF-EC CBS	Correlations	CB correlated significantly positive with BAS-Total ($r = .30$), BAS-Fun Seeking ($r = .33$) BAS-Reward Responsiveness ($r = .25$) and negative with Effortful Control-Total ($r = -.39$), EC-Inhibitory Control ($r = -.30$), EC-Activation Control ($r = -.34$) and EC-Attentional Control ($r = -.27$)
Mueller et al. (2011) [27] Belgium + Germany	410 Belgian and German undergraduate students 70% females Age: 22.9 (3.7) years	BISBAS Scales ATQ-SF-EC CBS	Correlations	In male students, CB correlated significantly positive with BIS ($r = .20$) and negative with EC ($r = -.32$) In female students, CB correlated significantly positive with BAS ($r = .22$) and negative with EC ($r = -.35$)
Davenport et al. (2012) [49] UK	134 students at a university in the East Midlands of the UK 100% females Age: majority between 18-24 years	SR BIS-11 CBS	Correlations	CB correlated significantly positive with Sensitivity to Reward ($r = .41$) and Impulsivity ($r = .46$)
Achtziger et al. (2015) [22] Germany	Representative sample of the German population (n=946) 55.39% females Age: 48.96 (17.54) years	SCS GABS	Correlations	CB was significantly negative related with self-control ($r = -.41$)
Claes et al. (2012) [24] Belgium	60 patients with an eating disorder 100% females Age: 27.82 (9.76) years	BISBAS Scales ATQ-SF-EC DAPP-BQ CBS	Correlations	CB correlated significantly positive with DAPP-Affective Lability ($r = .29$), DAPP-Stimulus Seeking ($r = .30$), and negative with Effortful Control-Total ($r = -.43$), EC-Inhibitory Control ($r = -.41$), EC-Activation Control ($r = -.43$)
Müller et al. (2014) [25] Germany	102 patients with CB 77.5% females Age: 39.2 (11.7) years	BISBAS Scales ATQ-SF-EC CBS	Correlations	In patients with CB, CB correlated significantly positive with BAS ($r = .28$)
Voth et al. (2014) [26]	31 patients with CB	BISBAS	ANOVA	CB patients scored significantly higher on BIS, BAS and

	28 matched healthy controls 80.6% females (CB) 82.1% females (HC) Age _{CB} : 40.65 (11.26) Age _{HC} : 39.07 (10.29)	Scales ATQ-SF-EC CBS		EC compared to healthy controls After controlling for depression, only the difference on BAS reactivity remained significant
Big Five Model (Costa & McCrae, 1992)				
Shahjehan et al. (2012) [36] Pakistan	640 students of a public sector university of Pakistan 42.8% females Age: between 20y-30y (95.5%)	Big Five Mini Markers Compulsive Buying (Valence et al, 1988)	Correlations	CB was positively related to Neuroticism ($r = .22$), Extraversion ($r = .22$), Openness ($r = .17$), Agreeableness ($r = .18$), and Conscientiousness ($r = .19$)
Donnelly et al. (2013) [32] USA	1077 students (sample 1) 74% females Age: 24.23 (9.71) years 650 students (sample 2) 67.7% females Age: 30.27 (12.91) years	Big Five Mini Markers CBS	Correlations	In sample 1/2, CB correlated significantly positive with Neuroticism ($r = .25/.19$) and negative with Agreeableness ($r = -.22/-.12$), Conscientiousness ($r = -.19/-.23$) and Openness ($r = -.11/ns$)
Otero-Lopez et al. (2013a) [33] Spain	667 adults general Galician population 100% females Age: 38.4 (6.1)	NEO-PI-R GABS	Correlations	CB was significantly positive related to Neuroticism ($r = .33$) and negatively related to Agreeableness ($r = -.17$) and Conscientiousness ($r = -.27$)
Otero-Lopez et al. (2013b) [34] Spain	1365 adults general Galician population 51.6% females Age: 39.7 (13.9)	NEO-PI-R GABS	MANCOVA	The high CB group scored significantly higher on Neuroticism (facets) and lower on Conscientiousness (facets) and Agreeableness (facets) compared to the low and moderate CB groups The high CB group scored also significantly higher on the Extraversion facet excitement-seeking and lower on the Extraversion facets Positive Emotions and Assertiveness
Andreassen et al. (2013) [31] Norway	218 undergraduate students 792% females Age: 20.6 (3.0)	NEO-FFI-R CBS	Correlations	CB correlated significantly positive with Neuroticism ($r = .17$) and negative with Agreeableness ($r = -.24$) and Conscientiousness ($r = -.28$)
Cheema et al. (2014) [35] Pakistan	400 individuals of the city of Karachi (Pakistan) 50% females Age: > 18 years	Mini-IPIP RCBS	Correlations	CB was significantly positive related to Neuroticism ($r = .96$), Extraversion ($r = .83$), Intellect ($r = .96$), Agreeableness ($r = .88$), and Conscientiousness ($r = .96$)
Mueller et al. (2010) [43]	68 patients with CB 85% females Age: 40.6 (10.6) years	NEO-FFI BIS-11 CBS	K-means cluster analysis	Cluster I of CB patients was characterized by positive z-scores on each of the Big Five personality traits; whereas Cluster II was characterized by a positive z-score on Neuroticism and negative z-scores on Extraversion,

				Openness, Agreeableness and Conscientiousness CB patients of Cluster II scored significantly higher on the Barratt Impulsiveness Scale than CB patients of Cluster I
Psychosocial model of Cloninger (1999)				
Black et al. (2012) [38] USA	26 persons with CB 32 healthy controls (HC) 88% females CB 84% females controls Age _{CB} : 36.6 (15.7) Age _{HC} : 39.7 (14.8)	TCI BIS-11 CBS	ANOVA	CB scored significantly higher on TCI-Novely Seeking and on BIS-Total, BIS-Attentional, BIS-Motor, BIS-Non-Planning Impulsivity compared to healthy controls
Di Nicola et al. (2010) [39] Italy	158 patients with Bipolar Disorder 59% females Age _{BD} : 48.7 (12.7) years	TCI-R BIS-11 CBS	Correlations	CB correlated significantly positive with TCI-Novely Seeking ($r = .30$), Self-Transcendence ($r = .25$) and BIS-11 Impulsivity ($r = .35$); and negative with TCI-Self-Directedness ($r = -.28$) and Cooperativeness ($r = -.30$)
Di Nicola et al. (2015) [40] Italy	95 Alcohol Use Disorder patients 140 healthy controls 40% females (AUD) 39.3% females (HC) Age _{AUD} : 44.1 (9.5) years Age _{HC} : 42.4 (12.2) years	TCI-R BIS-11 CBS	Correlations	In AUD patients, CB correlated significantly positive with TCI-Novely Seeking ($r = .33$) and BIS-11 Impulsivity ($r = .24$) In healthy controls, CB correlated significantly positive with TCI-Novely Seeking ($r = .38$) and BIS-11 Impulsivity ($r = .30$)
Granero et al. (2016) [50] Spain	110 patients with CB disorder 67.3% females Cluster 1: male CB (n=32) Cluster 2: female low dysfunctional (n=32) Cluster 3: female high dysfunctional (n=46) Age: 432 (?) years	TCI-R	Agglomerative hierarchical clustering method	The 'male CB' reported the lowest levels of TCI-Reward Dependence The 'female low-dysfunctional CB' scored the lowest on TCI-Harm Avoidance and the highest on TCI-Persistence, Self-Directedness, and Cooperativeness The 'female high dysfunctional CB' reported the highest levels of TCI-Harm Avoidance and the lowest levels of TCI-Self-Directedness
Impulsivity traits				
Maraz et al. (2016) [42] Hungary	1409 Hungarian shopping mall customers 63% females Age: 31.2 (12.1) years	BIS-11 ECBS	Correlations	CB correlated significantly positive with BIS-11 Impulsivity ($r = .39$)
Williams et al. (2012) [46]	49 compulsive buyers 37 healthy controls % females: ? Age _{CB} : 29.02 (11.24) years Age _{HC} : 25.61 (7.38) years	UPPS-P CBS RCBS	Correlations	CB correlated significantly positive with Positive Urgency ($r = .38/.41$), Negative Urgency ($r = .50/.55$), Lack of Premeditation ($r = .41/.31$) and Lack of Perseverance ($r = .39/.31$) as measured with CBS/RCBS respectively

Rose et al. (2014) [45] USA	514 North American Adults 54% female 32.97 (11.18) years	Mini-IPIP UPPS-P RCBS	Correlations	CB correlated significantly positive with IPIP-Neuroticism ($r = .17$), Negative Urgency ($r = .43$) and Positive Urgency ($r = .41$)
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Measures of compulsive buying: CBS = Compulsive Buying Scale [51]; ECBS = Edwards Compulsive Buying Scale [52]; GABS = German Addictive Buying Scale [53]; RCBS = Richmond Compulsive Buying Scale [54]; Compulsive Buying [55]; **Measures of reactive and regulative temperament:** BISBAS = Behavioral Inhibition System and Behavioral Activation System Scales [17]; SPSRQ = Sensitivity to Punishment and Sensitivity to Reward Questionnaire [18]; ATQ-SF-EC = Adult Temperament Questionnaire-Short Form-Effortful Control Scale [20]; SCS = Self-Control Scale [21]; **Measures of Big Five personality traits:** DAPP-BQ = Dimensional Assessment of Personality Pathology-Basic Questionnaire [56]; mini-IPIP = mini-International Personality Item Pool - Five-Factor Model [30]; Big Five Mini Markers [29]; NEO-FFI/NEO-PI-R = NEO-Five Factor Inventory (60 items)/NEO Personality Inventory-Revised (240 items) [11]; NEO-FFI-R = NEO-Five Factor Inventory-Revised [28]; **Measures of Psychosocial model:** TCI-R = Temperament and Character Inventory-(Revised) [12,37]; **Measures of Impulsivity traits:** BIS-11 = Barratt Impulsiveness Scale-11 [41]; UPPS-P = UPPS-P Impulsivity Scale [14,44].