



## Online shopping in treatment-seeking patients with buying-shopping disorder

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### ABSTRACT

**Background and aims:** With e-commerce becoming an important shopping activity, it has been argued that traditional buying-shopping disorder (BSD) migrates to the online retail market resulting in BSD predominantly online. The aims of the current study were to investigate how many patients with BSD report symptoms of online BSD, and to determine whether symptoms of probable online BSD are related to sociodemographic variables, anxiety, depression, and a higher severity of general BSD.

**Method:** A post hoc analysis of pooled data collected within previous studies ( $n = 122$  treatment-seeking patients with BSD; age  $Mdn = 42.50$ , range 20–68 years; 76% women) was conducted. Assessment included the short version of the Internet Addiction Test modified for online shopping sites (s-IATshop), the Pathological Buying Screener (PBS) as an instrument assessing BSD in general, regardless of the buying or shopping environment, and measures for anxiety and depression.

**Results:** 33.6% of the sample met the s-IAT threshold for probable online BSD. Higher s-IAT scores were related to lower age and to a higher severity of anxiety, depression and general BSD. A hierarchical regression analysis with general BSD (PBS score) as dependent variable and partnership status, symptoms of anxiety, depression and online BSD (s-IAT-shop) as predictors indicated a significant positive association of probable online BSD with the severity of general BSD above and beyond anxiety and depression.

**Conclusion:** The findings may encourage future studies addressing phenomenological characteristics, underlying features, associated comorbidity, and clinical relevance of online BSD.

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### 1. Introduction

Buying-shopping disorder (BSD) is characterized by extreme preoccupations with and craving for buying/shopping and by irresistible and identity-seeking urges to possess consumer goods [1–4]. Patients with BSD buy more consumer goods than they can afford, and those are neither needed nor frequently used. The excessive purchasing is primarily used to regulate emotions, e.g. to get pleasure, relief from negative feelings, or coping with self-discrepancy [4,5]. In the long run, the recurrent breakdown in self-control leads to extreme distress, psychiatric comorbidity, familial discord, clutter due to pathological hoarding of goods, indebtedness and in many cases even in deception and embezzlement in

order to continue overspending despite growing financial problems [6–10]. A meta-analysis indicated an estimated point prevalence of BSD of 5% [11]. At present, BSD is not categorized as a separate mental health condition. However, the coding tool of the recently released 11th revision of the International Classification of Diseases (ICD-11) now lists BSD in the residual category ‘Other specified impulse control disorders’ [12].

As e-commerce provides an important shopping environment, traditional BSD may migrate into the online retail market. The Internet offers a vast variety of shopping information and simultaneous access to many online stores, thereby meeting expectations for immediate reward, emotional enhancement and identity gain. Previous studies showed that certain Internet-specific aspects such as availability, anonymity, accessibility, and affordability contribute to the development of an online subtype of BSD [13–15]. Similarly to gambling disorder and gaming disorder that may both be subdivided into predominantly offline and predominantly online types [12], BSD could be categorized with behavior

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that happens mostly on the Internet, or mostly offline (i.e. in bricks-and-mortar-based stores).

To our knowledge, empirical data concerning the prevalence of online BSD among patients with BSD have not yet been published. It is also unknown if online BSD is related to sociodemographic variables, psychopathology, and a higher severity level of general BSD. To make a first step in addressing these questions, we conducted a post hoc analysis of pooled data from previously carried out studies. The first aim of the current study was to estimate the prevalence of probable online BSD in a sample of treatment-seeking patients with BSD. There was no formal hypothesis given the exploratory nature of the present investigation. The second aim was to determine whether symptoms of online BSD are related to age, gender, school education, partnership status or symptoms of anxiety and depression. Findings from consumer research indicate that once consumers are experienced e-customers, their shopping behavior is independent from sociodemographic aspects [16] and that younger e-costumers and their older counterparts purchase equally [17]. Therefore, we did not expect to find a significant relationship between sociodemographic variables and symptoms of online BSD. In view of past research that indicated a high comorbidity with anxiety and depressive disorders in patients with BSD [6,8,10], symptoms of online BSD were expected to be positively related to symptoms of anxiety and depression. The third aim of the present study was to explore if symptoms of online BSD contribute to a higher symptom severity of BSD above and beyond sociodemographic variables and psychopathology. Again, due to the paucity of empirical data on online BSD, no hypothesis was formulated with respect to this research question.

## 2. Material and methods

### 2.1. Participants

The present investigation represents a post hoc analysis of pooled data collected within two past studies. The first study examined the psychometric properties of the Pathological Buying Screener (see below) in clinical samples [18,19], and the second study examined cognitive functions in patients with BSD [20]. Online BSD did not belong to the primary objectives of these former projects. Inclusion criteria for the former data collection were a diagnosis of BSD assessed via clinical interview by experienced psychologists/psychiatrist in accordance with the operational diagnostic criteria for compulsive buying proposed by McElroy et al. [1], being 18 years or older, and sufficient German language skills. Exclusion criteria for the former data collection were learning or developmental disorders, psychosis, mania, current substance use disorder (except tobacco), acute suicidal ideations, and sensory impairments. Patients were recruited at four different sites in Germany (Hanover Medical School  $n = 75$ , salus clinic Friedrichsdorf  $n = 19$ , University Hospital Erlangen  $n = 11$ , University of Duisburg-Essen  $n = 10$ ) and at the University Hospital Basel (Switzerland  $n = 7$ ). Written informed consent has been obtained within the two primary studies that were approved by the local ethics committee.

### 2.2. Assessments

In accordance with Trotzke et al. [14], the short version of the Internet Addiction Test [21] modified for Internet-shopping (s-IATshop) was used to measure subjective complaints due to Internet-shopping activities. The terms "Internet" and "online" were replaced by "Internet shopping sites" or "online shopping activity" (e.g. "How often do you try to hide how long you've been online?" into "How often do you try to hide how long you've been on Internet shopping sites?"). This corresponds with other studies which modified the original IAT to assess specific forms of Internet addiction [e.g. [22]]. Similar to the s-IAT, the s-IATshop consists of 12 items, answered on a 5-point-Likert scale (1 = never to 5 = very often). The total score ranges from 12 to 60, whereas scores >30 indicate problematic Internet-shopping, and >37 probable

online BSD [14]. Internal consistency (Cronbach's  $\alpha$ ) of the total score in the current sample was  $\alpha = 0.96$ .

The severity of BSD was assessed with the Pathological Buying Screener (PBS) [19]. This instrument was developed to measure BSD in general, regardless of the preferred shopping or buying environment (i.e. bricks-and-mortar-based stores, paper catalogues, TV-shopping channels, shopping websites). The questionnaire includes 13 items (e.g. "How often does it occur that you can't stop thinking about buying?" or "... that you suffer distress from your buying habits?"), answered on a 5-point-Likert scale (1 = never to 5 = very frequently, total score ranging from 13 to 65,  $\alpha = 0.89$ ). PBS total scores >28 define BSD [19].

The German translations of the 7-item Generalized Anxiety Disorder Questionnaire (GAD-7) and the 9-item Patient Health Questionnaire module for depression (PHQ-9) were used to assess symptoms of general psychopathology [23]. Answers are given on a 4-point scale from (0 = never to 3 = nearly every day, GAD-7  $\alpha = 0.89$ ; PHQ-9  $\alpha = 0.88$ ).

### 2.3. Data analysis

Statistical analyses were conducted using SPSS (Version 24, IBM Corp., Armonk, NY, USA). The percentages of patients with problematic Internet-shopping and probable online BSD were calculated based on the proposed s-IATshop cutoff scores [14]. The relationships between general BSD as measured with the PBS, symptoms of online BSD (s-IATshop), sociodemographic variables, symptoms of anxiety, and symptoms of depression were examined by calculating two-tailed Spearman's rank-order correlations using the list-wise deletion of missing data option in SPSS. To explore if the severity of BSD as measured with the PBS (dependent variable) is a function of other variables and if symptoms of online BSD have an own increment to explain shared variance in general BSD symptoms, a hierarchical regression analysis was performed. Those variables that were not significantly correlated with the PBS score on a bivariate level were omitted from the regression. Values of  $p < .05$  were considered to be statistically significant.

## 3. Results

Data were available from 122 treatment-seeking patients with BSD (age  $Mdn = 42.50$ , range 20 to 68 years; 76% women). Forty-nine patients were single (40.5%), and 66 patients (55.9%) completed <12 school years. One hundred and twenty-one patients (99.2%) scored above the PBS threshold for BSD (>28), one patient had a PBS total score of 28. By applying the proposed s-IATshop cut-off criteria, 19 patients (15.6%) admitted problematic Internet-shopping and 41 patients (33.6%) probable online BSD.

Table 1 summarizes the results of bivariate correlations. More symptoms of online BSD (s-IATshop) were related to a higher severity of

**Table 1**  
Two-tailed Spearman correlation coefficients  $r$ .

	PBS	Age	Gender	School	Partnership	GAD-7	PHQ-9
Age	−0.15						
Gender	−0.01	0.11					
School	−0.05	0.03	−0.20*				
Partnership	0.19*	−0.10	−0.01	0.19*			
GAD-7	0.41**	−0.06	0.13	−0.18	−0.09		
PHQ-9	0.42**	−0.06	0.02	−0.19*	−0.25**	0.79**	
s-IATshop	0.56**	−0.25**	0.06	0.02	0.11	0.27**	0.37**

Note.  $n = 115$  (listwise deletion of missing data).

Partnership: no partner = 0, having a partner = 1; PBS = Pathological Buying Screener, GAD-7 = 7-item Generalized Anxiety Disorder Questionnaire, PHQ-9 = Patient Health Questionnaire module for depression, s-IATshop = short version of the Internet Addiction Test modified for Internet-shopping.

\*  $p < .05$ .

\*\*  $p < .01$ .

**Table 2**  
Summary of hierarchical regression analysis with the Pathological Buying Screener (PBS) as dependent variable.

Model		Unstandardized coefficients		Standardized coefficient $\beta$	<i>t</i>	<i>p</i>
		<i>B</i>	<i>SE B</i>			
1	Partnership	2.39	1.66	0.13	1.44	0.152
2	Partnership	4.09	1.59	0.22	2.57	0.011
	GAD-7	0.23	0.23	0.13	0.97	0.334
	PHQ-9	0.47	0.20	0.33	2.30	0.023
3	Partnership	2.04	1.48	0.11	1.38	0.171
	GAD-7	0.35	0.21	0.21	1.65	0.102
	PHQ-9	0.10	0.20	0.07	0.53	0.599
	s-IATshop	0.30	0.06	0.44	5.31	<0.001

Note. Partnership: no partner = 0, having a partner = 1; GAD-7 = 7-item Generalized Anxiety Disorder Questionnaire, PHQ-9 = Patient Health Questionnaire module for depression; s-IATshop = short version of the Internet Addiction Test modified for Internet-shopping.

general BSD (PBS), anxiety (GAD-7), depression (PHQ-9), and lower age. There were positive correlations between general BSD (PBS) and anxiety/depression, and having a partner. Furthermore, a strong correlation between symptoms of anxiety and depression was found.

A hierarchical regression analysis with the PBS score as dependent variable was carried out to test the strength of association between symptom severity of general BSD and those variables that were significantly correlated with the PBS on a bivariate level (see Table 1). The model was controlled for partnership status including this variable in block 1. Anxiety (GAD-7) and depression (PHQ-9) were entered in block 2. To address the third study aim, the s-IATshop was added in block 3. Tests for multicollinearity indicated that a low level of multicollinearity was present for partnership ( $VIF = 1.20$ ) and s-IATshop ( $VIF = 1.26$ ), and an acceptable level for anxiety ( $VIF = 2.83$ ) and depression ( $VIF = 3.38$ ). As shown in Table 2, model 1 with partnership status as the only predictor was not significant [adjusted  $R^2 < 0.01$ ,  $F(1,119) = 2.08$ ,  $p = .152$ ]. Model 2, in which anxiety and depression were added explained 18% of variance [ $\Delta R^2 = 0.16$ ,  $F(3,117) = 9.92$ ,  $p < .001$ ]. Having a partner and depressive symptoms were significant predictors. Model 3, in which probable online BSD was added, explained 34% of the variance in general BSD symptoms as measured with the PBS [ $\Delta R^2 = 0.14$ ,  $F(4,116) = 16.23$ ,  $p < .001$ ]. The only significant predictor in model 3 was probable online BSD, while having a partner or depressive symptoms were no longer significant predictors.

#### 4. Discussion

About one third of the present treatment-seeking patients were categorized as having probable online BSD. In line with our hypothesis and with past findings [16], the results indicate no link between symptoms of online BSD and gender, school education, and partnership status. Findings from consumer research had shown that younger e-customers and their older counterparts purchase equally [17]. The weak negative correlation between the s-IATshop score and age in the current sample, however, suggests a higher propensity towards addictive online shopping in younger patients. This result corresponds with past findings regarding higher prevalence rates of Internet-use disorders in younger age groups [24]. The question of whether online BSD is more prevalent in younger individuals is an avenue for further research.

More symptoms of online BSD (s-IATshop) were related to a higher severity of general BSD. The latter was measured by using the PBS [19] that assesses BSD, regardless of the buying or shopping environment. Both, the s-IATshop and the PBS score were positively correlated with measures of general psychopathology (GAD-7, PHQ-9), which is in line with our hypothesis and with the literature concerning traditional BSD [e.g. [8], [10]]. Furthermore, a weak positive effect emerged for having a partner on the PBS score.

Of particular interest are the results of the hierarchical regression analysis that indicated a significant positive association of online BSD symptoms with the severity of general BSD above and beyond anxiety and depression. Those who shop and buy online appear to be more at risk for a higher severity of BSD. However, given the low explanatory power of the model the present findings should be interpreted with care. The PBS includes items that adhere to online and offline BSD likewise. Thus, it remains unknown if higher scores on the PBS of patients with probable online BSD referred to an addictive use of shopping websites only, or if and how much they were engaged in online as well as traditional offline buying and shopping. To automatically attribute a higher severity of BSD in those patients to their excessive use of shopping websites only may lead to erroneous conclusions. An alternative explanation could be that the presence of online BSD symptoms reflected a greater involvement in pathological buying in this group in general. Unfortunately, the predominant mode of BSD (online vs. offline) has not been systematically assessed within the two previous studies where the data for the present post hoc analysis were generated, which limits the outcome. Future studies should identify the problematic type of BSD using clinical interviews to be able to more accurately characterize those patients with BSD predominantly online, those with BSD predominantly offline, and those who engage in both forms of BSD.

#### 5. Conclusion

This study is among the first to investigate online BSD in a clinical sample. The preliminary findings suggest that probable online BSD is prevalent among treatment-seeking patients with BSD, which may encourage future studies addressing phenomenological characteristics, underlying features, associated comorbidity, and clinical relevance of this subtype of BSD.

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#### References

- [1] McElroy SL, Keck Jr PE, Pope Jr HG, Smith JM, Strakowski SM. Compulsive buying: a report of 20 cases. *J Clin Psychiatry* 1994;55:242–8.
- [2] Müller A, Mitchell JE, de Zwaan M. Compulsive buying. *Am J Addict* 2015;24:132–7. <https://doi.org/10.1111/ajad.12111>.
- [3] Trotske P, Brand M, Starcke K. Cue-reactivity, craving, and decision-making in buying disorder: a review of the current knowledge and future directions. *Curr Addict Rep* 2017;4:246–53. <https://doi.org/10.1007/s40429-017-0155-x>.
- [4] Moulding R, Duong A, Nedeljkovic M, Kyrios M. Do you think that money can buy happiness? A review of the role of mood, materialism, self, and cognitions in compulsive buying. *Curr Addict Rep* 2017;4:254–61. <https://doi.org/10.1007/s40429-017-0154-y>.
- [5] Müller A, Mitchell JE, Crosby RD, Cao L, Johnson J, Claes L, et al. Mood states preceding and following compulsive buying episodes: an ecological momentary assessment study. *Psychiatry Res* 2012;200:575–80. <https://doi.org/10.1016/j.psychres.2012.04.015>.
- [6] Christenson GA, Faber RJ, de Zwaan M, Raymond NC, Specker SM, Ekern MD, et al. Compulsive buying: descriptive characteristics and psychiatric comorbidity. *J Clin Psychiatry* 1994;55:5–11.
- [7] Kellert S, Bolton JV. Compulsive buying: a cognitive-behavioural model. *Clin Psychol Psychother* 2009;16:83–99. <https://doi.org/10.1002/cpp.585>.
- [8] Müller A, Mitchell JE, Black DW, Crosby RD, Berg K, de Zwaan M. Latent profile analysis and comorbidity in a sample of individuals with compulsive buying disorder. *Psychiatry Res* 2010;178:348–53. <https://doi.org/10.1016/j.psychres.2010.04.021>.
- [9] Möllenkamp M, de Zwaan M, Müller A. Hoarding with and without excessive buying: results of a pilot study. *Psychopathology* 2015;48:56–9. <https://doi.org/10.1159/000363389>.
- [10] Granero R, Fernandez-Aranda F, Mestre-Bach G, Steward T, Bano M, Del Pino-Gutierrez A, et al. Compulsive buying behavior: clinical comparison with other behavioral addictions. *Front Psychol* 2016;7(914). <https://doi.org/10.3389/fpsyg.2016.00914>.
- [11] Maraz A, Griffiths MD, Demetrovics Z. The prevalence of compulsive buying: a meta-analysis. *Addiction* 2016;111:408–19. <https://doi.org/10.1111/add.13223>.
- [12] WHO. ICD-11 for mortality and morbidity statistics; 2018.

- [13] Kukar-Kinney M, Ridgway NM, Monroe KB. The relationship between consumers' tendencies to buy compulsively and their motivations to shop and buy on the Internet. *J Retail* 2009;85:298–307. <https://doi.org/10.1016/j.jretai.2009.05.002>.
- [14] Trotzke P, Starcke K, Müller A, Brand M. Pathological buying online as a specific form of internet addiction: a model-based experimental investigation. *PLoS One* 2015;10:e0140296. <https://doi.org/10.1371/journal.pone.0140296>.
- [15] Dittmar H, Long K, Bond R. When a better self is only a button click away: associations between materialistic values, emotional and identity-related buying motives, and compulsive buying tendency online. *Journal of Social and Clinical Psychology* 2007;26:334–61. <https://doi.org/10.1521/jscp.2007.26.3.334>.
- [16] Hernandez B, Jimenez J, Martin MJ. Age, gender and income: do they really moderate online shopping behavior? *Online Information Review* 2010;35:113–33. <https://doi.org/10.1108/14684521111113614>.
- [17] Sorce P, Perotti V, Widrick S. Attitude and age differences in online buying. *International Journal of Retail & Distribution Management* 2005;33:122–32. <https://doi.org/10.1108/09590550510581458>.
- [18] Motamedi R. Validierung des Pathological Buying Screener an klinischen Stichproben (Validation of the Pathological Buying Screener in clinical samples). [doctoral thesis] Hannover Medical School: Hannover; 2017.
- [19] Müller A, Trotzke P, Mitchell JE, de Zwaan M, Brand M. The Pathological Buying Screener: development and psychometric properties of a new screening instrument for the assessment of pathological buying symptoms. *PLoS One* 2015;10:e0141094. <https://doi.org/10.1371/journal.pone.0141094>.
- [20] Vogel B, Trotzke P, Schäfer G, Löber S, Stenger J, Brand M, et al. Buying disorder: an experimental study of addiction-related neurocognitive functions. [Conference paper presented at the 5th International Conference on Behavioral Addictions, Cologne, Germany]. *J Behav Addict* 2018;7:159.
- [21] Pawlikowski M, Altstötter-Gleich C, Brand M. Validation and psychometric properties of a short version of Young's Internet Addiction Test. *Comput Hum Behav* 2013;29:1212–23. <https://doi.org/10.1016/j.chb.2012.10.014>.
- [22] Chan PA, Rabinowitz T. A cross-sectional analysis of video games and attention deficit hyperactivity disorder symptoms in adolescents. *Ann Gen Psychiatry* 2006;5:16.
- [23] Löwe, B., Spitzer, R. L., Zipfel, S., Herzog, W. 2002. PHQ-D- Gesundheitsfragebogen für Patienten: Manual Kompletversion und Kurzform/. [https://www.klinikum.uni-heidelberg.de/fileadmin/Psychosomatische\\_Klinik/download/PHQ\\_Manual1.pdf](https://www.klinikum.uni-heidelberg.de/fileadmin/Psychosomatische_Klinik/download/PHQ_Manual1.pdf)/ Retrieved 13 March 2015.
- [24] Rumpf HJ, Vermulst AA, Bischof A, Kastirke N, Gürtler D, Bischof G, et al. Occurrence of internet addiction in a general population sample: a latent class analysis. *Eur Addict Res* 2014;20:159–66. <https://doi.org/10.1159/000354321>.

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