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Debate: Behavioral addictions in the ICD-11

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COMMENTARY



Criteria for the establishment of a new behavioural addiction

Commentary to the debate: “Behavioral addictions in the ICD-11”

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ABSTRACT

When does repeated behaviour constitute behavioural addiction? There has been considerable debate about non-substance-related addictions and how to determine when impaired control over a behaviour is addiction. There are public health benefits to identifying new behavioural addictions if intervention can improve outcomes. However, criteria for establishing new behavioural addictions must guard against diagnostic inflation and the pathologizing of normal problems of living. Criteria should include *clinical relevance* (Criterion 1), alignment with addiction *phenomenology* (Criterion 2) and *theory* (Criterion 3), and *taxonomic plausibility* (Criterion 4). Against such criteria, evidence does not yet support classification of pornography-use and buying-shopping disorders as addictions.

KEYWORDS

behavioural addiction, gaming disorder, pornography-use disorder, buying-shopping disorder, diagnosis, reward

INTRODUCTION

When does repeated behaviour become addictive behaviour? There has been considerable debate over what constitutes a non-substance-related addiction, with the most widely accepted being Gambling Disorder (formerly known as Pathological Gambling) and (Internet) Gaming Disorder (Grant, Atmaca, et al., 2014; Kardefelt-Winther et al., 2017; Saunders et al., 2017; Stein, 2008). In the Fifth Edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013)* Gambling Disorder was grouped with substance use disorders, while Internet Gaming Disorder was included in a separate “Conditions for Further Study” chapter. In 2018 a decision was made to include these conditions in the chapter on Disorders due to Substance Use and Addictive Behaviours in the International Classification of Diseases, Eleventh Revision (ICD-11). Formal recognition of behavioural addictions has occurred relatively recently.

Brand et al. (2022) propose “meta-level” criteria to determine whether conditions should be accepted into the category of “Other specified disorders due to addictive behaviors” (ICD-11 code 6C5Y). Pornography-use disorder and buying-shopping disorder were deemed to have met their criteria for inclusion under code 6C5Y. At present, the former is listed in ICD-11 as an example of behaviours involved in compulsive sexual behaviour disorder (6C72) and the latter listed within Other specified impulse control disorder (6C7Y). Neither

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Table 1. Proposed criteria for classification of conditions as ICD-11 *Other specified disorders due to addictive behaviors* (6C5Y)

Criterion 1: Clinical relevance	Functional impairment in everyday life.
Criterion 2: Phenomenology	Alignment with the phenomenology of addiction (see Fig. 1).
Criterion 3: Theoretical embedding	Syndromes are consistent with existing addiction theories; Some evidence for the involvement of underlying psychobiological mechanisms of addiction.
Criterion 4: Taxonomic plausibility	Externalising disorder; Higher comorbidity with substance use disorder or gambling disorder than other mental disorders; Moderately heritable; Responds to effective treatments for substance use disorder or gambling disorder.

appear in DSM-5. Here, we propose an alternative set of meta-criteria that incorporate phenomenology and taxonomic plausibility and reevaluate these two candidate behavioural addictions (Table 1). Social-network-use disorder was not deemed by Brand et al. to have met their criteria and we do not consider it here.

Beyond addiction theory

We agree with Brand et al. (2022) that *causing functional impairment* (Criterion 1) is a pragmatic criterion for whether a cluster of experiences may be clinically relevant and reflective of a possible disorder. There are clear public health benefits to identifying such a cluster if intervention leads to better outcomes than doing nothing (Frances, 2013). However, we argue that classification as a behavioural addiction is not adequately assessed by Brand et al.'s original criterion 2 (*theoretical embedding*) and 3 (*underlying mechanisms*). These criteria focus too narrowly on alignment with addiction theories and would benefit from clearer separation of phenomenological and aetiological considerations. We also propose an additional criterion, *taxonomic plausibility*, required in addition to the "fit" with addiction theory.

The extent to which conjectured aetiology (theory) should play in diagnostic classification has long been debated. Diagnostic criteria in the addictions in recent years have eschewed aetiological considerations, focusing on observable features (Edwards, Arif, & Hadgson, 1981). A major criticism is the lack of a uniform standard of proof for such theories (Meehl, 1986). Brand et al.'s (2022) proposed theoretical embedding criterion may, therefore, be of limited utility. There is also no standardised approach to evaluating a candidate's fit with addiction theory.

There are a multitude of addiction theories possessing differing levels of empirical support. Brand et al. (2022) cite examples, but it is not clear on what basis these particular theories were chosen (e.g., reward deficiency syndrome; Blum et al., 1996) and others not (Koob & Le Moal, 2001; Koob & Volkow, 2010). Other aspects of theoretical embedding require clarification. It is not clear whether a candidate behavioural addiction need only align with one addiction theory to satisfy the criterion, or multiple. Furthermore, is there a requirement that the empirical evidence presented concerning underlying mechanisms (Brand et al. criterion 3) be aligned with that chosen addiction theory, or any theory? For example, would a candidate disorder that could be explained by an addiction

theory focused on implicit cognition (Brand et al. criterion 2) and supporting empirical data on attentional bias (Brand et al. criterion 3) still be considered a behavioural addiction if neurophysiological data showed none of the alterations in mechanisms required by neuroscientific theories (e.g., altered dopamine transmission or prefrontal functioning)? While we do agree that theoretical embedding is an important consideration (retained as **Criterion 3**), evaluating it is complicated by the multitude of addiction theories, their diversity in aetiological scope (biological, psychological, social) and, of course, empirical support. A more pragmatic and less controversial preceding criterion would be a candidate's *alignment with the phenomenology of addiction* (The Lancet Psychiatry, 2021). We argue that this should be **Criterion 2**.

The phenomenology of addiction

Prior to application of their meta-level criteria, Brand et al. (2022) propose candidate disorders already be judged to have met guidelines adopted for gaming and gambling disorder that include increasing priority of the rewarded behaviour, impaired control, and continuation/escalation despite negative consequences. However, impulse-control disorders can also be characterised by repetitive rewarding behaviour meeting these criteria, raising the question of what defining features make a disorder an "addictive" disorder? One of these must be the heightened valuation of the reward received from the behaviour, the nature of which changes over time (Gullo & Saunders, 2020; Koob & Le Moal, 2001).

In a Delphi consensus study involving 44 international addiction experts, altered reward valuation was judged to be a core defining feature of addiction, the nature of which changes over the course of the condition (Yücel et al., 2019). In early stages, heightened reward valuation and anticipation are prominent factors in responsiveness to addiction-related stimuli, with the repeated behaviour leading to positive reinforcement. At later stages, the nature of this altered reward valuation takes on a more dominant allostatic-incentive salience role, with behavioural outcomes characterised by negative reinforcement and occurring within the context of altered reward thresholds (Koob & Le Moal, 2001). In sum, it is both the centrality of altered reward valuation and its changing nature over time that differentiates addiction from other mental disorders characterised by impaired control (Sussman, Rozgonjuk, & van den Eijnden, 2017; Tunney & James, 2017). Unlike addiction, the phenomenology of impulse-control and



compulsive disorders (e.g., obsessive-compulsive disorder) is the centrality of negative affect as trigger, and relief from it as (negative) reinforcement (Stein, 2008).

Similarities in phenomenology played a critical role in the reclassification of gambling disorder as an addiction within ICD and DSM nosologies (Grant & Chamberlain, 2016). A focus on phenomenology would also protect against narrow, *a priori* confirmatory approaches to evaluating whether a candidate disorder featuring impulse-control problems is a behavioural addiction (Kardefelt-Winther et al., 2017). Maintaining focus on the entirety of the candidate behaviour, instead of the presence/absence of specific features (examined in isolation), can help ensure context is not lost. For example, Kardefelt-Winther et al. (2017) argued that preoccupation with video games (salience) should not be considered harmful in the same way as preoccupation with substances because it is a common everyday activity related to far fewer negative consequences. It was through phenomenological analysis that Sassover and Weinstein (2022) compellingly argue against classifying compulsive sexual behaviour as a behavioural addiction.

Our phenomenological framework for addiction is presented in Fig. 1 alongside Griffiths' (2005) components framework and the expert consensus on addiction Research

Domain Criteria (RDoC; Yücel et al., 2019). We note that Griffith's framework, while influential in the addiction field, is not without criticism when applied to specific behavioural addictions (e.g., Castro-Calvo, King et al., 2021). It is included here along with the RDoC consensus to provide context for our proposed phenomenological framework for behavioural addictions, highlighting points of similarity and difference. Common across all frameworks is reward sensitivity, salience and impaired control over the behaviour. We propose replacing Griffiths' "tolerance" with *habituation* to better reflect the need for higher engagement to achieve sufficient reinforcement, which need not result from physiological tolerance, but simply a learning process (Tunney & James, 2017). We also make explicit the functional impairment caused, as well as the addiction's progressive, chronic nature, both of which are implicit in the other two frameworks.

Taxonomic plausibility

Addictions are externalising disorders and more closely related to other externalising disorders than internalising or other categories of mental disorder (Krueger, 1999; Widiger & Clark, 2000). Mental disorders reflect an underlying

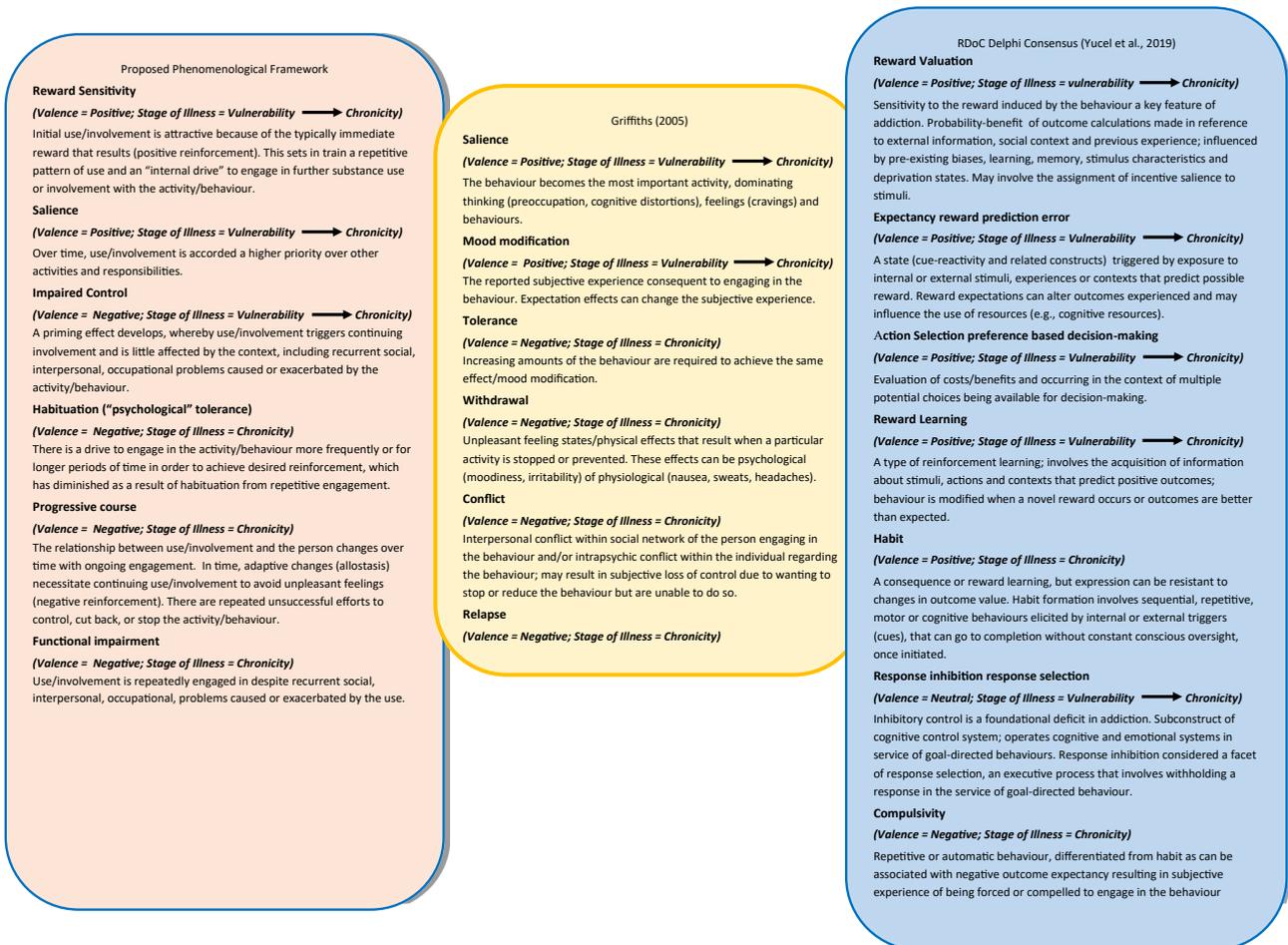
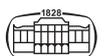


Fig. 1. Phenomenology of addiction
 Note. RDoC = Research Domain Criteria.



psychobiological dysfunction and, in the case of addictions, are moderately heritable (Goldman, Oroszi, & Ducci, 2005; Lobo & Kennedy, 2009; Stein, Phillips, Bolton, & Fulford, 2010). Disorders that cluster together or commonly co-occur may arise from similar core psychopathological processes (Krueger, 1999). Thus, given the evidence for an underlying structure to psychopathology, a criterion for any candidate behavioural addiction is that it should be able to plausibly reside within that structure alongside established addictions (*Taxonomic Plausibility*, **Criterion 4**; Achenbach & Edelbrock, 1978; Forbes et al., 2021; Krueger, 1999; Meehl, 1986). Obsessive-compulsive disorder and trichotillomania are not addictions to handwashing and hair-pulling, respectively, despite similarities to addictive disorders in certain clinical features and neurobiological correlates (Grassi & Pallanti, 2017; Mouaffak et al., 2017). There are important differences in clinical course, prognosis, and response to treatment suggesting: 1) a different underlying cause, and; 2) that grouping them with addictions would be of little clinical utility - in fact, it may reduce utility (Farhat et al., 2020; Grant, Odaug, Schreiber, & Kim, 2014; Kendall & Jablensky, 2003; Meehl, 1986; Stein et al., 2010, 2019).

Taxonomic plausibility is also demonstrated by evidence of higher comorbidity with substance use disorder or gambling disorder than non-addictive disorders (Sinclair, Lochner, & Stein, 2016). However, if the candidate only exists as a comorbid disorder, this would raise serious doubts about its legitimacy (Van Rooij & Kardefelt-Winther, 2017). Lastly, there should be evidence that the candidate disorder responds to effective treatments for established addictions; important for determining clinical utility (Grant & Chamberlain, 2016; Stein et al., 2010).

Candidate behavioural addictions

Pornography-use disorder. “Pornography-use disorder” is the first candidate behavioural addiction argued by Brand et al. (2022) to meet their proposed criteria. There may be evidence of theoretical embedding (Criterion 3; Castro-Calvo, Cervigón-Carrasco, Ballester-Arnal, & Giménez-García, 2021), but evidence of functional impairment has been debated (Criterion 1; Humphreys, 2018; Ley, Prause, & Finn, 2014) and the condition does not align with the phenomenology of addiction (Criterion 2). Studies do show stronger neural responses and greater liking of pornographic images (positive reinforcement), as well as attentional bias towards such images in those engaging in greater pornography consumption (Castro-Calvo, Cervigón-Carrasco, et al., 2021; Ley et al., 2014). However, this is expected and there is no evidence of a temporal course involving a shift toward an allostatic or negative reinforcement-like profile over time (Ley et al., 2014). Repeated/excessive pornography use can already be diagnosed as an ICD-11 impulse-control disorder: Compulsive sexual behaviour disorder (Gola et al., 2022; Humphreys, 2018; Kraus, Voon, & Potenza, 2016; Ley et al., 2014; Sassover & Weinstein, 2022; Sniewski, Farvid, & Carter, 2018).

Existing evidence does not support the taxonomic plausibility of pornography-use disorder as an addiction (Criterion 4).

There is no evidence of heritability, and evidence of only a weak role (at best) for impulsivity predicting problematic use (Böthe et al., 2019; Grubbs, Wilt, Exline, Pargament, & Kraus, 2018; Ley et al., 2014). Indeed, believing pornography use to be “morally wrong” is a stronger predictor of future self-perceived addiction than impulsivity or quantity/frequency of use (Grubbs et al., 2018). There is also no compelling evidence that addiction treatments reduce pornography use. In fact, case studies suggest that treatments aimed at reducing shame and guilt (“pornography acceptance”) may be as therapeutic as those seeking to reduce the behaviour (Sniewski et al., 2018). Among those seeking treatment for pornography use, only 6% report no comorbid mental disorder, with mood disorders (71%) being far more common than substance use (41%) or gambling (20%) disorders (Kraus, Potenza, Martino, & Grant, 2015). Instead of an addiction, it may be that excessive use of pornography is a means of coping with low mood or life dissatisfaction (Ley et al., 2014).

Buying/shopping disorder. The second candidate argued to meet Brand et al.’s (2022) proposed criteria is buying-shopping disorder. There is evidence of functional impairment (Criterion 1; McElroy, Keck, Pope, Smith, & Strakowski, 1994; Müller, Mitchell, & de Zwaan, 2015; Schlosser, Black, Repertinger, & Freet, 1994) and some evidence of alignment with the phenomenology of addiction (Criterion 2). While compulsive buying is positively reinforced by the rewarding characteristics of purchasing items, the motivation for initial engagement appears to be alleviation of negative mood (Faber & Christenson, 1996; Kellett & Bolton, 2009; Miltenberger et al., 2003; Müller et al., 2012), which is consistent with the phenomenology of impulse-control and compulsive disorders. Evidence of a temporal course involving a transition from positive-to-negative reinforcement from longitudinal studies is lacking (Rumpf, Brandt, Demetrovics, & Billieux, 2019).

Individuals engaging in compulsive buying show increased activity in the ventral striatum that is associated with positive arousal (‘liking’) when presented with product purchasing decisions (Criterion 3; Raab, Elger, Neuner, & Weber, 2011). Increased dorsal striatum activity has been found in individuals with chronic buying-shopping disorder (Trotzke, Starcke, Pedersen, & Brand, 2021), suggesting further consolidation of conditioned stimuli (Volkow, Michaelides, & Baler, 2019) associated with habituated or compulsive motivation (‘wanting’) and possible tolerance (Trotzke et al., 2021). This is consistent with addiction (Everitt & Robbins, 2013). Raab et al. (2011) reported higher anterior cingulate activity in compulsive buyers, but noted that this also occurs in depression. Consistent with underlying cognitive mechanisms commonly observed in addictive behaviours, there is some evidence of impaired decision making (Trotzke, Starcke, Pedersen, & Brand, 2015), stimulus-related inhibitory control deficits (Lindheimer, Nicolai, & Moshagen, 2020), and craving (Vogel et al., 2019) in studies of clinical and treatment-seeking patients.



Existing evidence does not support the taxonomic plausibility of buying-shopping disorder as an addiction (Criterion 4). While there is some evidence of alignment with the externalising spectrum and impulsivity (Mestre-Bach et al., 2016; Nicolai, Darancó, & Moshagen, 2016; Lawrence, Ciorciari, & Kyrios, 2014; Williams & Grisham, 2012), other evidence indicates only a modest association with established addictions: 21% prevalence of substance use problems in compulsive buyers and 17% prevalence of compulsive buying in problem gamblers (Black, Repertinger, Gaffney, & Gabel, 1998; Black et al., 2015). Family studies have shown alcohol dependence and depression (19.7% and 18.3% respectively; Black et al., 1998) in first degree relatives of individuals with buying shopping disorder, compared to 3% prevalence of compulsive buying disorder (Black et al., 2015). In fact, buying-shopping disorder shows closer alignment with mood disorders, with lifetime depression three times more prevalent than substance use disorders (Black et al., 1998; Müller et al., 2012; Trotzke et al., 2021).

There is no compelling evidence that addiction treatments are effective for compulsive buying (Criterion 4). Cognitive-behaviour therapy, naltrexone and topiramate are not more effective than placebo, nor are tricyclic and SSRI antidepressants; although they are effective for mood symptoms (Hague, Hall, & Kellett, 2016; Kellett, Oxborough, & Gaskell, 2021; Nicoli de Mattos et al., 2020). However, existing studies tend to be of low methodological quality. Overall, the evidence for buying-shopping disorder being an addiction is equivocal and more evidence is required.

CONCLUSION

Appropriate criteria for establishing behavioural addictions will facilitate early identification of emerging problems that have a clear impact on public health, whilst also guarding against diagnostic inflation, the pathologizing of normal problems of living and, ultimately, loss of diagnostic credibility (Frances, 2013; Gullo & O’Gorman, 2012; Sinclair et al., 2016; van Rooij et al., 2018; Widiger & Clark, 2000). Such criteria must go beyond the identification of functional impairment and alignment with addiction theory. This sets the bar too low. We argue for phenomenological and taxonomic plausibility as criteria, against which existing evidence would not support classification of pornography-use and buying-shopping disorders as addictions at this time.

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