

NOTE

A Study of Multiple Behavioral Addictions in a Substance Abuse Sample

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Behavioral addictions (BAs) are underrecognized, even in addiction programs. We assessed BAs in a substance abuse sample ($n = 51$; data collection 2011–2012). A self-report Behavioral Addictions Screen, assessing eight BAs, was administered using an automated telephone system. Most endorsed at least one BA, with the most common shopping/spending; eating; work; computer/internet; and sex/pornography. Lowest were gambling, self-harm, and exercise. Some BAs were correlated with others. Gender, ethnicity, age, and positive depression and posttraumatic stress disorder screens were associated with specific BAs. Future research could address interpretation of “addiction,” comparison to diagnostic interviews, relationship to substance use disorders, and larger samples.

Keywords substance misuse, behavioral addiction, assessment, screening, interactive voice response

Behavioral addictions (BAs), also known as “process addictions,” are a growing research area. BAs refer to excessive reward-seeking behaviors that do not involve consumption of substances, in diverse areas such as gambling, shopping, exercise, work, internet, eating, and sex. Currently, there is no uniform definition of BAs and most are not in DSM-5, except for pathological gambling (PG). Other DSM-5 disorders could be construed as addictions, such as binge eating disorder and hoarding disorder, but are not categorized as such. There remains much controversy over what behaviors are truly addictions and how much they must differ from normal behavior to warrant clinical concern. The term addiction is subject to both overestimation (e.g., chocolate is called “addictive” in popular culture) and underestimation (such as the denial common in substance abuse). In general, the construct of BAs usually mirrors criteria for substance dependence, including salience, tolerance, withdrawal, mood modification, and impaired functioning (Albrecht, Kirschner & Grusser

2007; Sussman, Lisha, & Griffiths, 2011; Freimuth, 2005; Freimuth et al., 2008; Najavits & Srinivas, 2010; Shaffer, LaPlante & Nelson, 2012; Sun, Ashley & Dickson, 2013; Sussman, Leventhal, et al., 2011; Sussman, Lisha, et al., 2011).

Due to such conceptual challenges, rates of most BAs vary widely depending on the study (Sussman, Lisha, et al., 2001). Yet there is growing recognition of their importance. The DSM-V has broadened the DSM-IV category of *substance-related disorders* to *substance-related and addictive disorders* (which includes PG). Neuroscience research increasingly indicates, moreover, that BAs such as gambling activate the reward system in similar ways to substances (Sussman, Leventhal, et al., 2011).

There are numerous measures for BAs, but most focus on disorders defined in the DSM (e.g., gambling, binge eating) rather than non-DSM BAs (Najavits & Srinivas 2010). Also, measures rely on different conceptualizations of BAs, with no uniform underlying construct. On a practical level, each BA has its own measures, leading to patient burden and excessive time required for case identification. The only assessment across multiple BAs is the Shorter PROMIS Questionnaire. It is very lengthy at 110 items, each rated on a Likert Scale (Christo et al., 2003). It has been studied in only three articles (Haylett, Stephenson & Lefever, 2004; MacLaren & Best, 2010; Pallanti, Bernardi & Quercioli, 2006), perhaps in part because of its length.

Our study evaluated a new brief screen for BAs (Najavits, 2009) for several reasons. First, we sought to screen for multiple BAs at the same time. Given that psychiatric conditions, including BAs, co-occur (Freimuth et al., 2008), identifying multiple BAs may be helpful. For SUD patients in particular, a brief BA screen might also identify addiction substitution over time (replacing SUD with other addictions). Second, a brief screen can build awareness of under-identified BAs. Third, we wanted to see whether people would admit to BAs. We chose a SUD

sample as they are already aware of one addiction and thus may be likely to report others too.

Notably, very brief screens have been shown to work in various domains. For example, a single-item depression screen (“Do you think you suffer from depression?”) showed as good or better sensitivity (83%) than longer depression screens when compared to the Structured Clinical Interview for DSM-IV (SCID) in 153 older primary care patients; and it had 83% specificity (Ayalon, Goldfracht & Bech, 2010). The single-item failed to identify just one depressed patient. That study, like ours, is notable for not defining “depression,” leaving it to the respondent to interpret. Another two-item depression screen, scaled *yes/no*, showed strong psychometrics compared to longer depression instruments, validated by diagnostic interview (Whooley, Avins, Miranda & Browner, 1997). Indeed, just one item had 93% sensitivity and 62% specificity. Single-item measures with good psychometrics also exist for PTSD (Gore, Engel, Freed, Liu & Armstrong, 2008); symptom severity, psychosocial functioning, and quality of life in depressed patients (Zimmerman et al., 2006); and SUD (Smith, Schmidt, Allensworth-Davies & Saitz, 2009, 2010; Taj, Devera-Sales & Vinson, 1998; Williams & Vinson, 2001).

This study was part of a larger project funded by the National Institute on Drug Abuse to develop an automated telephone screening (called interactive voice response; IVR) for SUD and comorbidities. IVR can reduce clinician burden in identifying disorders. Research shows strong convergence between IVR and clinician assessments, and also indicates that people are more likely to report sensitive behaviors (such as SUD and HIV risk) via IVR (Midanik & Greenfield, 2008; Sinadinovic, Wennberg & Berman, 2011). Thus, it has potential for BA identification.

METHODS

Participant inclusion criteria were age 21 or older; currently in substance abuse treatment; and had access to a phone. The only exclusion criterion was a major health issue that might affect participation. We kept criteria minimal so as to obtain a representative sample.

Measures

The Behavioral Addiction Screen (Najavits, 2009) is a single-stem question, “Do you think you may have an addiction to any of the following behaviors. . .” followed by: *gambling addiction; shopping or spending money addiction; sex or pornography addiction; work addiction; exercise addiction; self-harm addiction (such as cutting or burning yourself); computer or internet addiction (such as gaming, web-surfing or texting); eating addiction; or any other*. Responses were *yes/maybe/no*. “May have an addiction” allowed for respondents who might minimize or be unclear about BAs. *Maybe* was included to ensure as valid responses as possible for *yes* and *no* (and we only report on the latter two, unless otherwise in-

TABLE 1. Description of the sample ($n = 51$)

Type of substance abuse treatment	
Outpatient	44 (86.27%)
Residential	7 (13.73%)
Sex	
Male	34 (66.67%)
Female	17 (33.33%)
Average age in years	40.94 (SD = 10.27)
Ethnicity	
Caucasian	45 (88.24%)
African-American	5 (9.80%)
Asian	1 (1.96%)
Employment status	
Unemployed	44 (86.27%)
Working full- or part-time	7 (13.73%)
Substance use disorder (current)	
Alcohol use disorder	15 (29.41%)
Opiate use disorder	15 (29.41%)
Cocaine use disorder	9 (17.65%)
Cannabis use disorder	6 (11.76%)
Sedatives/hypnotics/tranquilizers disorder	3 (5.88%)
Mental health screens	
Positive PTSD screen	14 (27.45%)
Positive depression screen	9 (17.65%)
“Maybe” on current suicidal ideation	6 (11.76%)
“Yes” on past suicide attempt	7 (13.73%)

dicated). We obtained current DSM-IV SUD diagnoses on the Alcohol Use Disorder and Associated Disabilities Interview Schedule (Grant, Dawson & Hasin, 2001); the 4-item PTSD Primary Care Screening Questionnaire (scaled *yes/no*; Prins et al., 2003); the Patient Health Questionnaire depression screen, 9 items, 0 = *not at all* to 3 = *nearly every day*; PHQ-9 (Kroenke, Spitzer, & Williams, 2001); four suicide questions (current ideation, plan, intent, past suicide attempts (all *yes/maybe/no*); and demographics.

Data analyses were descriptive statistics and associations between the eight BAs (chi-squares, Pearson correlations). Significant results are below.

RESULTS

Sample Characteristics

See Table 1 for descriptive data on the sample.

BA Rates

See Table 2. The most commonly endorsed were shopping/spending; eating; work; computer/internet; and sex or pornography. Lowest were gambling, self-harm, and exercise. “Other” was also highly endorsed and participants listed various problems (e.g., relationships, anger); some also listed substances ($n = 5$ drug; $n = 2$ nicotine). The “maybe” response was also endorsed frequently, suggesting subthreshold problems or that participants were unclear on what is an “addiction.” Notably, virtually no items were blank (“no response”), indicating they could answer the question as stated. The mean number of BAs

TABLE 2. Self-reported BAs ($n = 51$)

Part 1—Specific types								
Addiction to . . .	Yes		Maybe		No		No response	
Shopping	9	17.65%	12	23.53%	30	58.82%	0	0%
Eating	7	13.73%	9	17.65%	35	68.63%	0	0%
Work	6	11.76%	4	7.84%	41	80.39%	0	0%
Computer	5	9.80%	9	17.65%	37	72.55%	0	0%
Sex	5	9.80%	2	3.92%	44	86.27%	0	0%
Exercise	3	5.88%	5	9.80%	43	84.31%	0	0%
Gambling	3	5.88%	3	5.88%	43	84.31%	2	3.92%
Self-harm	2	3.92%	4	7.84%	45	88.24%	0	0%
Other	11	21.57%	6	11.76%	34	66.67%	0	0%
Part 2—Frequencies ^a								
Total number endorsed			<i>n</i>			%		
0 (“no” to all)			23			45.1%		
1 (“yes” to 1)			15			29.4%		
2 (“yes” to 2)			6			11.8%		
3 (“yes” to 3)			5			9.8%		
4 (“yes” to 4)			1			2.0%		
5 (“yes” to 5)			1			2.0%		

^aOnly “yes” and “no” responses (“maybe” responses not included).

endorsed (including “other”) was 1.00 (SD = 1.22; range 0–5). Twenty-eight participants (54.90%) responded “yes” to at least one BA and 23 (45.10%) reported none. If “maybe” responses are included, 42 (82.35%) reported at least one and 9 (17.65%) reported none.

Relationship Between BAs

Computer/internet was associated with gambling ($r = .40$, $p = .005$) and eating ($r = .31$, $p = .028$). Sex/pornography was associated with shopping/spending ($r = .33$, $p = .018$) and work ($r = .49$, $p = .000$). Exercise was associated with self-harm ($r = .42$, $p = .002$).

Sociodemographics

Gender differed for both sex addiction ($\chi^2 = 5.68$, $df = 1$, $p < .02$, $n = 49$) and work addiction ($\chi^2 = 8.37$, $df = 1$, $p < .01$, $n = 47$), with men scoring higher on both (sex: men 25% vs. women 3%; work: men 33.33% vs. women 3.12%). Age was negatively associated with computer addiction ($r = -.35$, $p < .01$) and eating addiction ($r = -.36$, $p < .01$), i.e., these were higher among younger participants. Minorities, as a group, endorsed eating addiction more than Caucasians (50% vs. 11.11%; $\chi^2 = 5.60$, $df = 1$, $p < .02$, $n = 42$).

Psychopathology

Participants who screened positive for PTSD, compared to those who did not, endorsed exercise addiction more (16.66% vs. 2.94%; $\chi^2 = 2.74$, $df = 1$, $p = .098$, $n = 46$). Participants who screened positive for depression, compared to those who did not, reported more computer addiction (33.33% vs. 8.33%; $\chi^2 = 3.06$, $df = 1$, $p = .08$,

$n = 42$) and eating addiction (37.50% vs. 11.76%; $\chi^2 = 3.09$, $df = 1$, $p = .08$, $n = 42$).

DISCUSSION

This is the first known study to screen for various BAs in a SUD sample and the first to use an automated IVR system to do so. Our findings offer a preliminary glimpse into a domain that is under-assessed in treatment programs (Freimuth, 2005). Under-assessment occurs particularly for BAs that are not classified in the DSM (e.g., shopping; work; exercise; self-harm; sex; internet) but also for those in the DSM such as PG. Under-assessment relates to lack of clinician awareness and training, a paucity of validated instruments for many BAs, low base rates of many BAs, and a lack of evidence-based treatments for most of them (Sussman, Lisha, et al., 2011; Freimuth, 2005; Freimuth et al., 2008; Sun et al., 2013; Sussman, Leventhal, et al., 2011; Sussman, Lisha, et al., 2011).

Nonetheless, BAs are an important domain for clinical attention as they can impact quality of life, including economic impact (e.g., gambling, shopping), relationships (e.g., work, sex, internet), physical health (e.g., eating, self-harm), and mental health generally. BAs may be presumed to be higher in SUD samples, who already have one known addiction; however, there is scant data generally on most BAs and certainly on their comorbidity (except for gambling, which is elevated in SUD samples; Najavits, Meyer, Johnson & Korn, 2011). Clinicians working with SUD clients should explore whether they have compulsive behaviors other than substance use. Although most BAs do not yet have specific treatments, applying SUD

treatment strategies such as motivational interviewing, relapse prevention, and CBT to BAs would make sense at this point.

In this preliminary study, clients endorsed BAs at notable rates, and in patterns that correspond broadly to population-based problems. For example, the highest-endorsed BAs (spending/shopping; eating; work) map onto known public health problems. Most of the U.S. population is in debt (corresponding to spending/shopping problems); most are overweight (corresponding to eating problems); and many work longer and with more work stress than past eras (corresponding to work problems). Conversely, we found low endorsement of BAs for behaviors known to be low in the U.S. population: exercise, self-harm, and gambling.

The majority of the sample reported at least one BA (54.9% *yes*), indicating willingness to admit to such problems. The rate is comparable to the 50% past-year BA rate reported in Sussman, Lisha, et al. (2011), which aggregated across numerous studies and BAs. However, that review focused primarily on large general population and student samples rather than treatment samples, and controlled for co-occurrence of multiple BAs. It thus awaits future research to directly compare “apples to apples” in terms of measures and samples.

We also found relationships among BAs (cf. Sussman, Lisha, et al., 2011), and between BAs and co-occurring disorders. For example, self-harm and exercise was correlated, fitting a “deprivation/punitive” BA spectrum in which people are too hard on themselves. There were also associations between “over-indulgent” BAs (e.g., sex/pornography with shopping/spending). However, not all of the associations fit neatly into these relationships, and other variables (demographic and cultural) may help explain associations among BAs. Indeed, we found some demographic associations with BAs: gender (men endorsed sex and work addiction more); ethnicity (minorities endorsed eating addiction more); and age (younger respondents endorsed computer/internet and eating addictions more). The latter may signify a cultural shift such that high levels of computing and eating are considered normal in younger cohorts. On psychopathology, we found a positive PTSD screen was associated with exercise addiction; and a positive depression screen was associated with eating and computer addiction. These have face validity and suggest a need for further study of psychiatric conditions in relation to BAs.

Our study was limited by a small sample (and mostly Caucasian); no definition of “addiction”; no comparison to validated measures; and statistically, no control for Type I error.

Also, the high endorsement of BAs may reflect problems, but perhaps not classification as addictions. Our screening question and/or method of scoring needs further psychometric research. A clear next step would be comparison to validated BA measures.

BAs are ripe for future research, including exploring the relationship of BAs to specific SUDs. A time-lag anal-

ysis of BAs in relation to SUD recovery would also be interesting to explore symptom substitution (replacing SUD with other addictive behavior). Clearly, larger samples are needed for such topics. Most of all, there is a need for further conceptualization of how to define BAs; how to assess them; how they map onto DSM disorders; how to treat them; and ultimately, how to reduce their public health burden.

Declaration of Interest

Dr. Najavits is the author of the Behavioral Addictions Screen used in this study; and is director of Treatment Innovations, which provides training, materials, and consultation related to therapy. No other authors have interests to declare. The authors alone are responsible for the content and writing of the article.

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RÉSUMÉ

Adicciones conductuales (“behavioral addictions”; BAs) son poco reconocido, incluso en programas de adicción. Se evaluó BAs en pacientes por abuso de sustancias ($n = 51$; recopilación de datos desde 2011 hasta 2012). Una evaluación de auto-reporte de ocho BAs se administró utilizando un sistema telefónico automatizado. La mayoría presentaron al menos un BA, con las compras / gasto más común, comer, trabajar, informática / internet, y el sexo / pornografía. Menor eran los juegos de azar, las autolesiones, y el ejercicio. Algunos BAs se correlacionaron con otros. Género, etnia, edad, y positiva la depresión y el trastorno de estrés postraumático pantallas se asociaron con BA específico. La investigación futura podría abordar la interpretación de “adicción”, respecto a las entrevistas de diagnóstico, la relación con los trastornos por consumo de sustancias, y un mayor número de pacientes.

RESUMEN

Addictions comportementales (“behavioral addictions”; BAs) sont sous-reconnu, même dans les programmes de traitement de la toxicomanie. Nous avons évalué BAs parmi les patients de toxicomanie ($n = 51$; collecte de données 2011–2012). Une auto-évaluation de huit BAs a été administré à l’aide d’un système téléphonique automatisé. La plupart entériné au moins un BA, avec des achats / des dépenses les plus courantes; alimentation; travail; ordinateur / internet et sexe / pornographie. Plus bas ont été le jeu, l’automutilation et l’exercice. Certains BAs ont été corrélés avec les autres. Sexe, origine ethnique, l’âge et la dépression positif et écrans de trouble de stress post-traumatique ont été associés à BAs spécifique. Les recherches futures pourraient aborder l’interprétation de «dépendance» par rapport à des entrevues diagnostiques,

la relation avec les troubles de toxicomanie, et un plus grand nombre de patients.

THE AUTHORS



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Over the last decade, she has participated in clinical research and has received funding from the National Institute on Drug Abuse as well as the pharmaceutical industry. Her focus is the psychopharmacology of substance abusers and the integration of substance abuse treatment into primary care.

GLOSSARY

Behavioral addiction (in contrast to a substance addiction): A pattern of repeated compulsive engagement in an action that causes significant negative consequences to a person's well-being (e.g., physical or mental health, social, financial, legal functioning). Also known as *process addiction*, or *nonsubstance addiction*. Examples include gambling, shopping, exercise, work, internet, eating, and sex.

Comorbidity: The presence of two or more medical and/or mental health conditions at the same time (e.g., substance use disorder and major depression).

Interactive Voice Response (IVR): Automated telephone technology that allows a human being to interact with a computer via keypad entries and/or voice inputs.

Psychometrics: The branch of psychology dealing with the design, administration, and interpretation of quantitative tests for the measurement of psychosocial variables such as intelligence, aptitude, and personality traits.

Single-item measure: A quantitative scale assessing a domain using a single question.

Type I error: The phenomenon of a statistical test indicating a difference exists when in fact there is no real difference; also known as a *false positive*

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