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Problematic sexual behavior in young adults: Associations across clinical, behavioral, and neurocognitive variables

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ABSTRACT

A notable number of young adults struggle to control impulsive behavior, resulting in impairment and distress. Assessments of problematic sexual behavior (PSB) have noted clinical differences relative to other populations, but neurocognitive findings have varied. This analysis assesses the clinical presentation and neurocognitive profile of patients with PSB relative to participants without PSB symptoms. A total of 492 participants (18–29) were recruited for a study on impulsivity in young adults. Participants completed diagnostic, self-report, and neurocognitive measures which assessed several cognitive domains. PSB was defined as endorsing fantasies, urges, or sexual behavior that felt out of control or was causing distress. In the sample, 54 (11%) participants reported current PSB. This group was older, reported earlier sexual experiences and alcohol use, and lower quality of life and self-esteem. Comorbidity was greater in the PSB group, particularly for depression and alcohol dependence. The PSB group also showed differences in impulsivity, decision making, spatial working memory, problem solving, and emotional dysregulation. Results suggest associations between PSB psychosocial dysfunction, greater comorbidity, and neurocognitive differences. These associations suggest a more salient impact than typical sexual behavior. Furthermore, this study demonstrated several neurocognitive deficits in the PSB group which have found more mixed support previously.

1. Introduction

Sexual behaviors, including sexual risk-taking and experimentation, are common among young adults (Kaestle et al., 2004; Kann et al., 2014; Santelli et al., 1998). Some individuals, however, have problems controlling their sexual urges and/or behaviors. Young adulthood is also frequently associated with numerous impulsive behaviors in general, including alcohol abuse and illegal drug use (Chen et al., 2005; Courney and Polich, 2009; Kann et al., 2014; Young et al., 2002). In some cases, sexual and other risk-taking behaviors start to reflect a pattern of impulsivity resulting in significant impairment and distress. Although sexual behavior may be fairly common among young adults, it is unclear how many young adults experience problems with sex. Problematic sexual behavior (PSB) has been relatively understudied across the lifespan, particularly in young adults. This lack of epidemiological data has led to a relative dearth of information regarding the true prevalence and severity of PSB. Prior research has suggested that young adults with PSB show greater depressive and anxious symptoms, as well as higher rates of social anxiety disorder, attention-deficit/hyperactivity disorder, compulsive buying, pathological gambling, and kleptomania (Odlaug et al., 2013).

In the present study, we assessed a large sample of non-treatment seeking young adults regarding sexual behaviors. Although previous research suggests that compulsive sexual behavior and other addictive behaviors may be linked, no study has systematically examined the relationship of problematic sexual behavior to a range of behaviors and cognitions (Black et al., 1997; Derbyshire and Grant, 2015; Kuzma and Black, 2008). For purposes of this study, we chose to examine sexual behaviors reflective of an unhealthy or problematic level (characterized by a combination of repetitive sexual fantasies, urges, or behavior that is perceived to be out of control or cause significant distress) without over-pathologizing the behavior as a psychiatric disorder (as could be the case in hypersexuality or compulsive sexual behavior). A similar approach has been used with other problematic behaviors, such as hazardous drinking and higher risk gambling, in order to assess the impact of these behaviors on clinical presentation and functioning (Agrawal et al., 2010; Carneiro et al., 2014). We hypothesized that PSB would be reported frequently, would be associated with a range of impulsive behaviors (such as age of first alcohol consumption and sexual experience), and would be associated with underlying cognitive

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dysfunction relative to young adults with no history of PSB. Examining a problematic level of sexual behavior, that does not reach diagnostic criteria for a sexual disorder, may have important public health implications, particularly for early interventions and education.

Given the incomplete data on problematic sexual behavior among young people, particularly in community samples, the aims of this study were to: (1) examine the prevalence and sociodemographic correlates of problematic sexual behavior in young adults; (2) investigate mental health correlates in young adults who report problematic sexual behavior; and (3) examine the neurocognitive underpinnings in young adults with sexual thoughts/behaviors indicative of this problem.

2. Methods

A sample of 491 participants was recruited from the surrounding community near two large Midwestern universities for a study on impulsive behavior in young adults. PSB was assessed using the Minnesota Impulsive Disorders Interview (MIDI) (Odlaug and Grant, 2010) and was defined as a response of "Yes" to any of the 4 primary diagnostic questions from compulsive sexual behavior module, listed below:

1. Do you or others that you know think that you have a problem with being overly preoccupied with some aspect of your sexuality or being overly sexually active?
2. Do you have repetitive sexual fantasies which you feel are out of your control or cause you distress?
3. Do you have repetitive sexual urges which you feel are out of your control or cause you distress?
4. Do you engage in repetitive sexual behavior which you feel is out of control or cause or distress?

The scale reported by Odlaug and Grant (2010), has been used previously as sufficient criteria for diagnosis and screening for PSB.

All participants also completed standard diagnostic interviews, basic demographic information, self-report impulsivity inventories, and a computerized cognitive battery. Psychiatric comorbidity was assessed using the Mini International Neuropsychiatric Inventory (MINI) (Sheehan et al., 1998) by trained raters. All study procedures were carried out in accordance with the Declaration of Helsinki. The Institutional Review Boards of the University of Minnesota and of the University of Chicago approved the procedures and the accompanying consent forms. All participants provided written informed consent prior to participation in the study.

2.1. Clinical measures

Minnesota Impulsive Disorders Interview (MIDI) (Odlaug and Grant, 2010): the MIDI is a self-report inventory which screens for several impulse control disorders including the following: CSB, kleptomania, intermittent explosive disorder, gambling disorder, compulsive buying, skin picking disorder, trichotillomania, pyromania, and binge eating disorder. Where available, the MIDI uses criteria set by the DSM-5 to identify individual disorders, including skin picking, trichotillomania, gambling disorder, and binge eating disorder. The MIDI has been used previously to assess the prevalence of impulse control disorders in several samples with good reliability (Odlaug and Grant, 2010). Body Mass Index (BMI) was calculated using height and weight values provided by the subject, and calculated as kg/m^2.

2.2. Self-report measures

Barratt Impulsiveness Scale, Version 11 (BIS) (Barrett, 1959; Patton et al., 1995): the BIS is a self-report measure of impulsivity across attentional, motor, and non-planning dimensions. The measure consists of 30 questions, with each rated on a scale of 1 ("Rarely/Never") to 4 ("Almost Always/Always"). Second-order scores are reported for the dimensions of attentional, motor, and non-planning impulsivity.

Rosenberg Self-Esteem Scale (RSE) (Rosenberg, 1965): the RSE is a 10 question self-report inventory which assesses levels of self-esteem. Factors assessed include feelings of satisfaction with oneself, worth, and attitude towards oneself amongst others. Responses range from "Strongly Disagree" to "Strongly Agree", and yield a composite score.

Difficulties in Emotion Regulation Scale (DERS) (Gratz and Roemer, 2004): the DERS is a self-report measure of emotional dysregulation. The measure consists of 36 questions with responses ranging from 1 ("Almost Never") to 5 ("Almost Always"). The target aspect of the measure for this analysis was the composite score of the scale.

Quality of Life Inventory (QOLI) (Frisch et al., 1992): the QOLI is a 32 question self-report measure of perceived quality of life. Participants are asked to provide answers of how important a given factor is on a scale from 0 to 2, and then an answer of how satisfied they are with that factor on a scale of −3 to 3. These values are then multiplied to give a net score for that factor. Factors are then summed to give a raw score. Scores are then converted into t-scores for the final analysis using the methods reported by Frisch and colleagues (Frisch et al., 1992).

2.3. Cognitive measures

Neurocognitive variables were assessed using the Cambridge Neuropsychological Test Automated Battery (CANTAB) system. The following assessments were included in this analysis:

Intra-/Extra-dimensional Set Shift (IDED): the IDED assesses cognitive flexibility, which is associated with compulsivity. During the task, participants are presented with four boxes, two of contain pink shapes. Participants are told that one shape has been chosen as "correct", and the remaining is "incorrect". They are then informed that their goal is to select the correct shape as many times as possible. After a set number of correct choices, the correct answer (i.e. the rule governing which stimulus is correct) is changed by the computer, requiring the individual to learn from feedback and detect the new rule. The target variable for this analysis was the total number of errors made during the task, adjusted for the level of difficulty that the subject was able to reach to account for the number of possible attempts the individual had based on performance.

Stop Signal Task (SST): the SST assesses facets of motor inhibition, which is reflective of motor impulsivity. During the task, the computer displays sequences of arrows that face either left or right. The subject is asked to press one of two buttons corresponding with the left and right arrows displayed on the screen. After a training phase, audible "beeps" are introduced after certain arrows, and participants are instructed to not press a button for arrows after which there is a "beep" until the next arrow is displayed. The length of time between the arrow and sound varies over the course of the trial, depending on the participant's success in inhibiting the initial motor response. The target measure for the task is the Stop-Signal Reaction Time (SSRT); this variable is an estimate of the interval between the presentation of an arrow and the audible "beep" at which the individual is able to suppress a motor response for 50% of the trials.

Cambridge Gambling Task (CGT): the CGT assesses risk-taking and decision making abilities in the context of a gambling task. During the task, participants are shown a series of ten boxes, with varying proportions of those colored either red or blue. A smaller yellow square is hidden underneath one of the displayed boxes, and participants are instructed that it has an equal chance of being under any given box on the screen. Participants are then asked to select either the red set of boxes or the blue set of boxes, corresponding to which color box they believe the yellow square is underneath. After selecting, the participant