

Executive Functioning of Sexually Compulsive and Non-Sexually Compulsive Men Before and After Watching an Erotic Video

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ABSTRACT

Introduction: Despite the serious behavioral consequences faced by individuals with sexual compulsivity, related neuropsychological studies are sparse.

Aim: To compare decision making and cognitive flexibility at baseline and after exposure to an erotic video in sexually compulsive participants and non-sexually compulsive controls.

Methods: The sample consisted of 30 sexually compulsive men and 30 controls. Cognitive flexibility was investigated through the Wisconsin Card Sorting Test and decision making was examined through the Iowa Gambling Task.

Main Outcome Measures: Wisconsin Card Sorting Test categories, correct responses, and perseverative errors and Iowa Gambling Task general trends and blocks.

Results: Sexually compulsive subjects and controls performed similarly at baseline. After watching an erotic video, controls performed better in block 1 of the Iowa Gambling Task ($P = .01$) and had more correct responses on the Wisconsin Card Sorting Test ($P = .01$).

Conclusions: The controls presented fewer impulsive initial choices and better cognitive flexibility after exposure to erotic stimuli. **Messina B, Fuentes D, Tavares H, et al. Executive Functioning of Sexually Compulsive and Non-Sexually Compulsive Men Before and After Watching an Erotic Video. J Sex Med 2017;XX:X–XX.**

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Key Words: Impulse Control Disorders; Decision Making; Executive Function; Sexual Behavior

INTRODUCTION

Compulsive sexual behavior (CSB) is characterized by a pattern of intense cognitions, impulses, and sexual behaviors—such as excessive masturbation, compulsive consumption of pornography, excessive use of erotic websites, and excessive search for sexual partnerships¹—leading to negative consequences that compromise social, familial, occupational, and financial aspects of the lives of individuals affected by CSB.¹

The debate on which spectrum the CSB phenomenon occurs is ongoing. There is evidence for the impulsivity spectrum,^{2,3} which considers CSB a direct outcome of the failure to resist an impulse⁴; the compulsivity spectrum,^{3,5} which considers CSB the result of obsessive compulsivity⁵; and the sexual desire

spectrum,^{6,7} which considers CSB a consequence of hyperactivation of sexual desire (ie, hypersexual behavior).⁸

The neuropsychology literature has investigated cognitive changes in individuals with CSB, with several insights that have clarified some points of this debate. One study compared eight sexually compulsive men with eight controls for attention and impulsivity through a go and no-go task and found that men with CSB committed more commission and omission errors than controls.³ Recently, another study of 18 sexually compulsive men and 44 controls found that the controls sought less disadvantageous decks than individuals with CSB when they completed the Iowa Gambling Test (IGT).⁹

Sexually compulsive men ($n = 87$) presented worse cognitive performance than 92 controls on cognitive flexibility when they completed the Behavior Rating Inventory of Executive Function—Adult Version.¹⁰ However, when the executive functioning of 30 sexually compulsive men and 30 controls was investigated through neuropsychological tasks, those findings were not repeated, and no differences appeared between groups.¹¹ The investigators suggested that future research on the neuropsychological functioning of sexually compulsive men should

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involve sexual stimulation because such cognitive deficits would be more apparent in an erotic context.¹¹

Another study enrolled 82 healthy heterosexual men and investigated decision making through a modified version of the IGT, in which sexual images were displayed while the individual chose the advantageous decks ($n = 41$) and neutral images were displayed when the individual chose the disadvantageous decks ($n = 41$) and vice versa.² The participants presented increased sexual arousal when sexual images were exhibited and performance on the decision-making task worsened when the sexual images were associated with disadvantageous decks, suggesting that sexual arousal moderated the relation between task condition and performance on the test.²

The neuropsychological findings on individuals with CSB are sparse and inconsistent. Therefore, we conducted an experimental study to investigate the decision making and cognitive flexibility of sexually compulsive men and controls at baseline and after exposure to an erotic video. We hypothesized that sexually compulsive participants would present worse cognitive flexibility and decision making on neuropsychological tasks after exposure to sexual stimulation than at baseline and that after stimulus their neuropsychological functioning would be worse than that of controls.

AIM

We compared neuropsychological functioning (decision making and cognitive flexibility) at baseline (time 0) and after visual sexual stimuli (erotic video; time 1) in each group (sexually compulsive participants and controls) and between groups.

METHODS

Participants and Procedures

This was an experimental study that evaluated the decision making and cognitive flexibility of sexually compulsive men and controls through neuropsychological testing at time 0 and time 1, with an interval of at least 6 months between evaluations. The experiment was performed at Institute of Psychiatry of the Clínicas' Hospital of the University of São Paulo Medical School. After the research protocol was approved, the research was advertised at the institution and in the media. The first wave (November 2011 to March 2012) focused on the recruitment of individuals with sexually compulsive symptoms. Participants with sexually compulsive symptoms who met the diagnostic criteria for excessive sexual drive (code F52.7) in the *International Classification of Diseases, Tenth Revision* (ICD-10)¹² and the criteria for sex addiction outlined by Goodman¹³ as a maladaptive pattern of sexual behavior leading to clinical impairment or distress manifested in one 12-month period by at least three behaviors (tolerance; withdrawal; frequent sexual behavior; unsuccessful efforts to control the behavior; considerable time spent in preparation for this behavior; social or occupational activities decreased

because of the behavior; and behavior that continues despite negative outcomes)¹³ were considered sexually compulsive in this research. A second wave (September 2011 to July 2013) focused on the recruitment of individuals without sexually compulsive symptoms. Participants who had no sexually compulsive symptoms and did not meet the criteria described earlier were considered controls. Inclusion criteria were male sex, age at least 18 years, literate in Portuguese, and having at least 5 years of formal education. Exclusion criteria were meeting the criteria of the ICD-10 for preference disorder (code F65); gender identity disorder (code F64); schizophrenia, schizotypal disorder, and delusional disorder (codes F20–F29); current manic or hypomanic episodes (codes F30.0 and F31.0 or codes F31.1 and F31.2); other mental disorders related to brain dysfunction, injury, or physical illness (code F0.6); and mental retardation (code F70).

Sexually compulsive men and controls were included after signing the consent form. Thirty-eight sexually compulsive men and 38 controls began the study. However, at the second phase of the research (neuropsychological investigation after exposure to an erotic video), six sexually compulsive men discontinued participation and did not answer our calls and two refused to continue, citing fear of exposure to the stimulus. Eight controls also discontinued participation—six did not answer our calls, one had died, and one cited religious reasons. We compared the sexual compulsivity scores, sociodemographic data, and neuropsychological data between those who discontinued and those who continued. We found no differences between groups in education, race, marital status, age, severity of sexual compulsivity, cognitive flexibility, or most variables assessing decision making, except in variables block 1 and block 2, in which the participants who discontinued presented less impulsive decision making than those who continued (block 1, mean = -0.8 , SD = 7.0 vs mean = -4.2 , SD = 5.3, $t_{74} = 2.055$, $P = .04$; block 2, mean = 9.7, SD = 6.4 vs mean = 3.2, SD = 6.5, $t_{74} = 3.580$, $P < .01$). Therefore, 30 sexually compulsive men and 30 controls completed the two phases of the research from November 2011 to September 2014.

At time 0, the psychiatrist on the team investigated the eligibility criteria. Participants responded to questions on socio-demographic aspects, comorbid conditions, and psychiatric treatment and completed the Sexual Compulsivity Scale (SCS).¹⁴ Participants underwent neuropsychological tests that assessed cognitive flexibility (ie, Wisconsin Card Sorting Test; WCST)¹⁵ and decision making (IGT)¹⁶ at baseline. The duration of the procedure was 30 minutes on average.

To avoid learning effects on the neuropsychological tests, the tests at time 1 were administered at least 6 months after time 0. The time 0 assessments started in May 2011 for sexually compulsive men and in November 2011 for controls, and the time 1 assessments started in October 2013 for sexually compulsive men and in December 2013 for controls. At time 1, the erotic stimulation consisted of different erotic and pornographic film titles on DVD, which were matched for content.

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