



Prevalence and correlates of sleep paralysis in adults reporting childhood sexual abuse

Murray P. Abrams, Ashlee D. Mulligan, R. Nicholas Carleton, Gordon J.G. Asmundson *

University of Regina, Regina, Saskatchewan, Canada

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ABSTRACT

Sleep paralysis (SP) occurs when rapid eye movement (REM) activity and concomitant paralysis of the skeletal muscles persist as an individual awakens and becomes conscious of his/her surroundings. SP is often accompanied by frightening hallucinations that some researchers suggest may be confounded with memories of childhood sexual abuse (CSA; [McNally, R. J., & Clancy, S. A. (2005). Sleep paralysis in adults reporting repressed, recovered, or continuous memories of childhood sexual abuse. *Journal of Anxiety Disorders*, 19, 595–602]). The purpose of this study was to evaluate relationships between CSA and SP. Based on self-report, participants ($n = 263$) were categorized into three CSA groups: confirmed, unconfirmed, or no history of CSA. Relative to participants reporting no CSA history, those reporting CSA reported more frequent and more distressing episodes of SP. Post hoc analyses revealed that participants with clinically significant post-traumatic symptoms (irrespective of CSA history) also reported more frequent and more distressing episodes of SP. Significant correlations were found among SP indices and measures of post-traumatic symptoms, depression, dissociation, and absorption. Implications and future research directions are discussed.

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1. Introduction

Sleep paralysis (SP) is a phenomenon that results when rapid eye movement (REM) activity, which includes concomitant paralysis of the skeletal muscles, persists as an individual awakens and becomes aware of his/her surroundings (Hishikawa & Shimizu, 1995; Hobson, 1995). SP is often accompanied by a variety of hallucinations that may include sensing the presence of others, the sensation of external pressure on the chest, hearing odd sounds such as footsteps, and feelings of falling or spinning (Cheyne, Rueffer, & Newby-Clark, 1999). These episodes can be quite frightening and are often interpreted as supernatural

experiences that are elaborated in culturally distinct ways (see for example, Cheyne et al., 1999; Hufford, 2005). Reported prevalence of SP varies widely, ranging in population studies from 6% (Ohaeri, Awadalla, Makanjuola, & Ohaeri, 2004) to 17% (Hufford, 2005). Higher rates of SP have been found in samples of college students, wherein 25–42% of individuals reported at least one episode (Awadalla et al., 2004; Cheyne et al., 1999; Fukuda, Ogilvie, Chilcott, Vendittelli, & Takeuchie, 1998).

Descriptions of the hallucinations associated with SP vary (Spanos, McNulty, DuBreil, Pires, & Burgess, 1995), but are generally grouped into three broad categories including *vestibular motor*, *intruder*, and *incubus* (Cheyne & Girard, 2004). Vestibular motor hallucinations often include euphoric sensations and feelings of floating, falling, or flying. Intruder hallucinations involve reports of paranormal creatures (e.g., aliens, witches), auditory hallucinations (e.g., footsteps, verbal threats), or the sensation of being physically grabbed. Incubus hallucinations involve visual hallucinations, perceptions of bodily contact, such as feelings of

* Corresponding author at: Anxiety and Illness Behaviours Laboratory, University of Regina, Regina, Saskatchewan S4S 0A2, Canada. Tel.: +1 306 337 2473; fax: +1 306 585 4784.

E-mail address: Gordon.Asmundson@uregina.ca (Gordon J.G. Asmundson).

strangulation and pain, extreme fear, and the feeling of impending death. The nature of these hallucinations has led some researchers to suggest the possibility that these experiences may be confounded with the emergence of repressed (or stringently dissociated) memories of childhood sexual abuse (CSA; McNally & Clancy, 2005). This notion is not implausible, particularly when one considers that a substantial proportion of CSA victims retrospectively report experiencing tonic immobility (TI) during an abuse episode; TI is a temporary and involuntary peritraumatic fear response typified by an inability to move or call for help during a traumatic event (Heidt, Marx, Forsyth, 2005; Suarez & Gallup, 1979). Moreover, reported TI in response to trauma has been linked to high levels of peritraumatic dissociation (Abrams, Carleton, Taylor, & Asmundson, in press), which has been found to be predictive of worsened post-traumatic symptoms (Cardeña & Spiegel, 1993; Koopman, Classen, & Spiegel, 1994; Ozer, Best, Lipsey, & Weiss, 2003).

Adult survivors of CSA are thought to be especially vulnerable to develop PTSD (Breslau, 2002) and to experience frightening episodes of SP (Krakow et al., 2001); indeed, persons with PTSD complain of distressing dreams or sudden awakenings during the night (Ohayon & Shapiro, 2000). There is also evidence to suggest that mechanisms underlying waking hypervigilance in CSA survivors may be responsible for dysfunctions during REM sleep (Hetzel & McCanne, 2005). In and of itself an extremely distressing episode of SP may be of sufficient intensity to elicit symptoms of PTSD, and therein be mistaken as an emergent memory of an actual event (McNally & Clancy, 2005). A recent study revealed a rate of 20% of isolated SP episodes in a sample of outpatients diagnosed with various anxiety disorders (Otto et al., 2006). The study could not determine whether SP episodes were sufficient to cause a traumatic response, or if suffering a traumatic experience increased reports of SP episodes because no measure of PTSD symptoms was administered. The findings did, however, suggest a relationship based on several factors, including medication use and the irregular sleep patterns of anxiety patients.

Despite potential clinical and legal implications for understanding relationships among CSA, SP, and PTSD, there remains a paucity of research in the area. A recent investigation found no significant differences in reported episodes of SP across different groups reporting a history of CSA; however, those reporting any history of CSA did report more frequent and more distressing episodes of SP than a control group reporting no history of CSA (McNally & Clancy, 2005). Participants reporting SP and CSA also reported higher scores on measures of depression, dissociation, and absorption. Although intriguing, these findings were qualified as preliminary due to issues of sample size and not having assessed related symptoms of post-traumatic stress (McNally & Clancy, 2005).

The purpose of the current study was to extend McNally and Clancy's (2005) findings using a larger sample and a measure of post-traumatic symptoms. Participants reporting confirmed or unconfirmed CSA were expected to differ from participants reporting no history of CSA; the CSA groups were not expected to differ significantly. We

predicted that recollections of CSA, irrespective of whether or not confirmed, would potentiate group differences. Accordingly, we tested four hypotheses: (1) participants who reported CSA, confirmed or unconfirmed, would report more episodes of SP than participants not reporting CSA; (2) participants reporting both CSA and SP would report more frequent and more distressing intruder and incubus SP episodes relative to those reporting no history of CSA; (3) participants reporting current and clinically significant post-traumatic symptoms, irrespective of CSA history, would report more frequent and more distressing episodes of SP of any type relative to those without such symptoms; and (4) the frequency and intensity of SP episodes would correlate positively with measures of depression, dissociation, absorption, and symptoms of post-traumatic stress.

2. Materials and methods

2.1. Participants and procedure

Participants were 263 volunteers from the University of Regina and surrounding community [71 men aged 18–51 ($M = 22.24$; $S.D. = 6.28$); 191 women aged 18–52 ($M = 22.25$; $S.D. = 6.57$; one participant did not indicate sex)]. Participants were recruited via newspaper advertisements and through the University of Regina Psychology Participant Pool. Inclusion criteria required participants to be between the ages of 18 and 65 years, and have the ability to read and write English at a grade eight level or better. Participants completed a web-based questionnaire package. Web-based data collection has been demonstrated to be a valid approach for questionnaire based research (Gosling, Vazire, Srivastava, & John, 2004). Demographic questions assessed age, sex, education, and CSA history. Several additional self-report measures assessed sleep disturbances, depression, dissociation, absorption, and symptoms of post-traumatic stress. The sample was primarily students (90%). Ethnicity was self-reported as Caucasian (82%), Asian (8%), First Nations (3%), African (2%), Hispanic (1%), East Indian (.5%), and other (3.5%). The investigation was approved by the University of Regina Research Ethics Board.

2.2. Measures

Waterloo Unusual Sleep Experiences Questionnaire-VIIIa (WQ; Cheyne, 2002): The WQ is a 42-item questionnaire designed to assess aspects of SP including, intensity, frequency, and associated hallucinations (e.g., *During the experience I had a sensation of floating; During the experience I felt as though I were being strangled*). Respondents who report a SP experience are asked to rate the intensity of various emotions (i.e., *anger, sadness, pain, fear*) typically aroused by SP episodes. Frequency of SP is rated on a 4-point Likert scale ranging from 1 (*never*) to 4 (*more than five times*). Vividness or intensity of SP experiences is rated on a 7-point scale ranging from 1 (*having experienced a hint*) to 7 (*having experienced a very distinct impression of the phenomenon*).

PTSD Check List, Civilian Version (PCL-C; Weathers, Litz, Herman, Huska, & Keane, 1993). The PCL-C is a 17-item

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