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Does alexithymia moderate the relation between stress and general sleep experiences?☆

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ABSTRACT

A tendency for experiencing unusual dream and sleep-wake transition phenomena (e.g., recurrent dreams, hypnagogic hallucinations, and confusion upon awakening), labeled general sleep experiences (GSEs), is linked with stress as well as psychological distress, explicit as well as covert. We hypothesized that alexithymia may moderate the relationship between stress and GSEs. Undergraduate students (N = 187) completed online questionnaires; Three months later, n = 78 of them reported perceived stress and dreaming each day for 14 days. Regression analyses for trait data and multilevel modeling for daily diary data both revealed a pattern of two competing alexithymic mechanisms: difficulty in identifying feelings was related to increased GSEs, whereas externally-oriented thinking was related to decreased GSEs. As hypothesized, a cross-level interaction was found: daily stress predicted daily GSEs of the following night, only among those who reported difficulty identifying their emotions. It seems that those who experience GSEs following stress, tend to be internally-oriented (i.e., notice their inner experiences), yet find it difficult to understand and identify those experiences. GSEs seem to represent a nocturnal manifestation of unprocessed emotion.

1. Introduction

In recent years, a link has been established between an array of unusual dream experiences and sleep-wake transition phenomena on one hand, and stress or psychopathology on the other hand (Levin & Nielsen, 2007; Roberts, Lennings, & Heard, 2009; Soffer-Dudek, 2017; Zadra, 1996). The present study aims to explore this link further, by assessing the extent to which it may be moderated by various aspects of alexithymia.

Several nocturnal altered-consciousness phenomena, such as nightmares, narcoleptic characteristics, recurring dreams, dream recall, vivid dreams, problem-solving dreams, and dreams confused with reality, constitute a single construct, or individual differences trait, labeled "general sleep experiences" (GSEs; Watson, 2001). GSEs and a second sleep experiences factor, namely, lucid dreams (dreams that include awareness of dreaming) are both related to unusual cognitions such as dissociation and schizotypy (Koffel & Watson, 2009; Watson, 2001). Only GSEs, however, were repeatedly associated with negative affect, stress, and psychopathological symptoms in non-clinical and clinical samples (e.g., Watson, Stasik, Ellickson-Larew, & Stanton, 2015; for a review see Soffer-Dudek, 2017). Examining several trait and state factors, Schredl (2003) found that daily stress is the most effective predictor of nightmares. The relationship between stress and GSEs has been demonstrated longitudinally as well (Soffer-Dudek & Shahar, 2009, 2011).

GSEs have been conceptualized as an intrusion of waking into the sleeping consciousness due to emotional arousal (Soffer-Dudek, 2017). The notion is similar to non-Rapid Eye Movement (NREM) parasomnias (e.g., sleepwalking, night terrors), which are hybrid sleep-wake states and are strongly related to stress and psychopathology (Schenck & Mahowald, 2005). Soffer-Dudek (2017) suggested that GSEs may represent the corresponding REM-sleep arousal phenomena, as they contain elements characteristic of waking (e.g., elevated dream recall, nightmares, hypnagogic hallucinations, intensely kinesthetic dreams, vivid dreams, confusional arousals, false awakenings, and recurrent dreams, the latter characterized by increased access to memory). Indeed, hyper-vigilance and arousal, stemming from psychological distress, continue to affect the brain while sleeping (Hall

Abbreviations: AND, Affective Network Dysfunction; DDF, difficulty describing feelings; DES, Dissociative Experiences Scale; DIF, difficulty identifying feeling; EOT, externally-oriented thinking; GSEs, general sleep experiences; ISES, Iowa Sleep Experiences Survey; MLM, multilevel linear modeling; NREM, non-Rapid Eye Movement; PSS, Perceived Stress Scale; REM, Rapid Eye Movement; TAS, Toronto Alexithymia Scale

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et al., 2007). In fact, stress and worry have been shown to carry prolonged cardiovascular effects into sleep, independent of sleep quality, which have been labeled "unconscious worry" (Brosschot, Van Dijk, & Thayer, 2007). This view suggests that such unusual dreams occur in sleep-wake "mixed states" (Koffel & Watson, 2009; Mahowald & Schenck, 2001) that are induced by stress or emotional arousal. The notion that GSEs are experienced as an intrusion is in keeping with the finding that, in a psychiatric outpatient sample, they were associated with the extent to which patients felt that their illness intruded into various aspects of their lives (Soffer-Dudek, Shalev, Shiber, & Shahar, 2011).

A sense of intrusion may stem either from increased *fusion* between mental contents, or from *separation* (as in dissociation), which may have a paradoxical rebound effect (see Soffer-Dudek, 2017, for a discussion of these two mechanisms engendering GSEs). Watson (2001) proposed that sleep experiences may stem from psychological material easily crossing over between consciousness states. Accordingly, Waters et al. (2016) have established a phenomenological and neurobiological overlap between sleep experiences and hallucinations. Soffer-Dudek and Shahar (2009) demonstrated that transliminality, a tendency for psychological material to cross thresholds into or out of consciousness (Thalbourne & Houran, 2000), longitudinally predicted sleep experiences. They concluded that transliminality taps onto a trait of being attuned to one's inner fantasy life, which may manifest itself in waking imagery (e.g., daydreaming and vivid perception) as well as in nocturnal imagery (e.g., elevated dream recall, vivid dreams and hypnogogic hallucinations).

However, it is not yet clear how transliminality and stress may join forces in bringing about GSEs. Elevated stress was found to enhance the relationship between dissociation and GSEs in Soffer-Dudek and Shahar (2011), but it was found to work against that of GSEs and transliminality in Soffer-Dudek and Shahar (2009). Transliminality and dissociation are both altered-consciousness phenomena characterized by unique cognitions, however, they differ in the degree of connectedness and attunement to one's inner world (Soffer-Dudek & Shahar, 2009). Stress possibly affects the sleeping consciousness differently in individuals who are attuned, versus not attuned, to their inner experience. Recently, Soffer-Dudek (2016) found that GSEs longitudinally predicted an elevation in psychopathological symptoms following exposure to traumatic stress, over and above participants' own estimation of how much stress they were under during the conflict. The author proposed that such a pattern may suggest that GSEs tap into a somewhat latent or covert aspect of one's emotional state.

To directly explore the significance of attunement to one's inner life in relation to GSEs, we utilized the construct of alexithymia. Alexithymia is considered to be a personality trait involving several characteristics of an externally-oriented cognitive style and a preference for concrete thinking, such as difficulty in identifying and describing feelings, or distinguishing between feelings and the physical sensations that accompany them; Alexithymic individuals tend to experience difficulty communicating their emotions to others, and their imaginal processes seem to be limited, marked by a paucity of fantasy, daydreams and introspection (Bazydlo, Lumley, & Roehrs, 2001; De Gennaro et al., 2003; Lumley & Bazydlo, 2000). Alexithymia is associated with various psychosomatic, psychiatric, and substance abuse disorders (Taylor, Bagby, & Parker, 1999). However, to the best of our knowledge, alexithymia has never been explored in the context of GSEs.

Two conflicting theoretical hypotheses are appropriate; as mentioned above, GSEs are associated with increased fusion of psychological material (i.e., transliminality). This means that those high in GSEs may imagine vividly, sense clearly, and associate different experiences with each other, compared to those low in GSEs. Indeed, reporting GSEs demands remembering, upon awakening, the experiences one had in one's prior consciousness state (i.e., sleep). To the extent that GSEs involve such attunement to inner experience, we should expect decreased GSEs in alexithymic individuals. This hypothesis is in keeping with the finding according to which alexithymic individuals have less fantastic dreams (Parker, Bauermann, & Smith, 2000) and an overall impoverished or diminished dream process (Cartwright, 1993; Krystal, 1979). However, GSEs are also strongly related to dissociation (e.g., Watson, 2001), which like alexithymia, is considered an avoidant coping style in which one is not in touch with one's emotions; indeed, alexithymia and dissociation are positively related (Grabe, Rainermann, Spitzer, Gänsicke, & Freyberger, 2000). Thus, we may also hypothesize increased GSEs in alexithymic individuals (i.e., a positive relationship). Moreover, the psycho-somatic tendencies of alexithymics (Bach & Bach, 1996; Cox, Kuch, Parker, Shulman, & Evans, 1994) support the notion that stress and arousal among these individuals may be expressed in the form of nocturnal intrusions, indirectly conveying psychological distress. Indeed, alexithymic individuals experience greater insomnia, excessive sleepiness, sleepwalking and nightmares (Bauermann, Parker, & Taylor, 2008; Godin, Montplaisir, Gagnon, & Nielsen, 2013). These findings support the notion of difficulty in verbalizing internal psychic conflicts, which results in increased nocturnal manifestations of psychological distress (Hyyppa, Lindholm, Kronholm, & Lehtinen, 1990).

In the current study, we explored: (1) the relationship of GSEs and alexithymia; and (2) the role of alexithymia as a moderator of the effect of daily perceived stress on daily GSEs. We hypothesized that alexithymic individuals would be more inclined to react to stress with an increase in GSEs, because GSEs seem to represent covert distress, of which the individual is not necessarily aware. However, because of the conflicting hypothesized relationships detailed above, the three alexithymia factors were explored as separate moderating mechanisms to enable the detection of complex interaction patterns.

This is the first study to explore alexithymia in relation to GSEs. In addition, most previous research on GSEs has been cross-sectional and has relied on retrospective self-reports of nocturnal experiences long after they occurred, which raises questions as to the validity of these reports. In the current study, we followed Soffer-Dudek and Shahar (2011) who conducted a rigorous 2-week daily diary study showing a relation of GSEs with daily stress. Moreover, by focusing on both the daily reports and the previously measured traits, we were able to examine trait-state interactions. Specifically, we explored the question: Does trait alexithymia moderate the effect of perceived daily stress on daily GSEs? Notably, both sleep quality and duration were assessed and controlled for, as both were previously found to be strongly related to daily GSEs (Soffer-Dudek & Shahar, 2011).

2. Method

2.1. Participants and procedure

The study included two phases. Phase 1 included Time 1 and Time 2 trait measurements (separated by a three-month interval). Phase 2 included a 14-day daily diary phase. In Time 1 of the trait phase of the study, 187 Israeli undergraduate students (71.1% female, mean age = 23.39, SE = 1.44, range 18–28) from the Department of Psychology at Ben-Gurion University of the Negev (one of Israel's research Universities, located in the southern part of the country), answered a battery of online questionnaires on alexithymia, sleep, dreaming, perceived stress, and dissociation, in exchange for course credit. Three months later, 78 Time 1 completers (74.6% female, mean age = 23.21, SE = 1.5, range 19–28) agreed to participate in a follow-up phase in exchange for monetary compensation (150 NIS). Participants first completed again the same trait questionnaires as before, in order to obtain longitudinal data (this was Time 2 of trait assessments). Next, they underwent a 14-day daily diary phase (this was Phase 2), during which they reported sleep experiences and quality every morning, and perceived stress and dissociation every evening. All questionnaires were completed from home online using Qualtrics software (Qualtrics,[1] Provo, UT). Both phases of the study were approved