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Characteristics of Posttraumatic Nightmares and Their Relationship to PTSD Severity Among Combat Veterans with PTSD and Hazardous Alcohol Use

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Abstract

While nightmares are known to predict the clinical course of PTSD, research on the relationship between specific nightmare characteristics and PTSD severity is sparse. This study conducted a secondary analysis to explore how five nightmare characteristics are cross-sectionally related to PTSD severity in 76 combat veterans with PTSD and at-risk alcohol use. Consistent with Emotional Processing Theory, we hypothesized that more replicative, threatening, realistic, and easily recalled nightmares would be associated with more severe PTSD while those with greater symbolism would predict lower PTSD severity. Nightmares narratives were audio-recorded and rated by multiple coders. MANOVAs explored the relationship between nightmare characteristics and PTSD clinical indicators. Most nightmares were realistic, easily recalled, and involved significant threat. Greater realism and replication were associated with greater PTSD severity. Realistic and replicative nightmares may be markers of more severe PTSD and may indicate that less emotional processing of the trauma has occurred.

Keywords

PTSD; nightmares; emotional processing theory; veterans

Nightmares are common among individuals with Posttraumatic Stress Disorder (PTSD) and are associated with other sleep disturbances, psychiatric concerns, and the severity and course of PTSD (Creamer et al., 2018; Pigeon et al., 2013). Nightmares are also independently associated with impairments in functioning and suicidality (Pigeon et al.,

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2012; Titus et al., 2018). Posttraumatic nightmares are “recurrent distressing dreams in which the content and/or affect of the dream are related to the traumatic event” (APA, 2013, p. 271). This definition allows characteristics such as how symbolic, repetitive, and threatening the nightmare is to vary. It is largely unknown to what extent these characteristics relate to clinical indicators of PTSD.

Posttraumatic nightmares are understood in different ways in the fields of PTSD and dream research (Phelps et al., 2008). Within the PTSD field, Emotional Processing Theory conceptualizes posttraumatic nightmares as a re-experiencing symptom (i.e., unsuccessful attempt to process the traumatic memory that are experienced as distressing and unwanted) (Foa & Kozak, 1986). Within the dream research field, dreams following trauma are thought to promote emotional adaptation. For instance, the Threat Simulation Theory proposes that dreaming functions to simulate realistic threats within the safe space of dreaming to rehearse and prepare for threats in waking life (Revonsuo, 2008).

The limited existing research exploring connections between posttraumatic nightmare characteristics and clinical indicators supports Emotional Processing Theory. References to violence in nightmares are associated with poorer treatment outcomes (Harb et al., 2012). Individuals with more detailed recall of nightmares experience worse PTSD symptoms (Mellman et al., 2001). Nightmares that closely replicate traumas are also related to greater PTSD severity while distressing but non-trauma-replicative dreams are correlated with more positive outcomes (Davis et al., 2007, de Tassel et al., 2018). Therefore, nightmares that are more realistic, threatening, recalled in greater detail, and more closely replicate trauma may indicate less emotional processing has occurred and are related to more severe PTSD. While these studies hint at the implications of varying nightmare characteristics, much remains to be discovered.

The systematic study of nightmare characteristics and how they relate to important clinical indicators is rare (de Tassel et al., 2018; Titus et al., 2018; Whitmann et al., 2007). Surveys that capture a limited number of nightmare characteristic exist (Cranston et al., 2017; Donovan et al., 2005). However, single studies have yet to evaluate a wide range of theory-based characteristics. To address this gap, we sought to describe the characteristics of PTSD nightmares in Iraq and Afghanistan combat veterans with PTSD and at-risk alcohol use and explore their relationships to PTSD severity. This a clinically relevant sample as PTSD and alcohol use commonly co-occur and individuals with PTSD report drinking to manage sleep difficulties, including nightmares (Nishith et al., 2001; Possemato et al, 2015). We hypothesized several relationships based on Emotional Processing Theory. As indicators of less emotional processing, dreams that closely replicate past traumas, are easily recalled, and have high threat and more realistic content were hypothesized to be associated with higher PTSD severity. As an indication of more emotional processing, more symbolic dreams were hypothesized to predict lower PTSD severity. Because the sample also had risky alcohol use we explored if alcohol use severity was related to dream characteristics.

Method

The is a secondary analysis of data collected from two IRB-approved studies that shared the same inclusion/exclusion criteria, recruitment procedures, and measurement (Acosta et al., 2017; Possemato et al., 2015). Participants were recruited from primary care clinics based on positive screens for PTSD and/or alcohol use. Participants were required to be 1) combat veterans of conflicts in Iraq and Afghanistan within the last 5-years from when data was collected (e.g., served in at least one conflict between 2005–2015) and 2) primary care patients in one of four Veterans Affairs facilities. Veterans needed to be at-risk drinkers (women ≥7, men ≥8 on the Alcohol Use Identification Test (AUDIT; Barbour et al., 2001) and have at least subthreshold PTSD (defined as experiencing a traumatic event, 1 re-experiencing symptom, and either 3 avoidance symptoms, or 2 hyperarousal symptoms with functional impairment; as measured by the Clinician-Administered PTSD Scale) (CAPS; Blake et al., 1995) completed at the initial assessment. The CAPS assessed the 17 *DSM-IV* symptoms and has excellent diagnostic utility (Blake et al., 1995) and good internal consistency in this sample (alpha= .76).

All CAPS interviews were recorded and the trauma assessment and nightmare item were reviewed and coded for nightmare characteristics. A coding template was created that rated five dream characteristics (Figure 1). Dream characteristics were chosen based on past research and the data available within the audio-recorded CAPS symptoms. Intensity and type of emotion (i.e., fear, shame, anger, sadness) were also coded, however, these data are not presented because all dreams were coded as fearful and most dream narratives did not provide enough information to code for emotional intensity. Three authors independently coded each nightmare narrative and regularly met to resolve discrepancies. In addition, a clinical psychologist provided training and supervision for coding and coded a random 25% of the dream narratives to ensure accuracy.

SPSS 22 was used for analyses. Dream characteristics were described with descriptive statistics. The 5-point dream characteristic scales were dichotomized and used as independent variables within MANOVAs to explore their relationship to the dependent variables of PTSD intensity, and severity of PTSD clusters (e.g., re-experiencing, avoidance, numbing and arousal). PTSD clusters were explored as outcomes because nightmare characteristics may have different relationships with different types of PTSD symptoms. The nightmare and sleep items were removed from all PTSD scales to ensure independence between nightmare characteristics and PTSD clinical indicators. In preliminary analyses dream characteristics were found to be unrelated to AUDIT scores and therefore no other analyses included alcohol severity.

Results

Nightmare narratives were coded for 76 participants. Participants were 90% (n=68) male and 82% (n=62) non-Hispanic White with an average age of 31(SD=8) years. Participants reported an average annual income of $37,000(SD=$25,000) and 38% (n=29) veterans were currently married. Fifty-seven participants (75%) were Army veterans with an average number of 1.5(SD=.7) combat deployments. Participants reported moderately severe PTSD

[CAPS total M(SD)=64.8(20.0)], and severe alcohol use [AUDIT total M(SD)=18.9(6.8)]. Sixty-six veterans (87%) met full PTSD diagnostic criteria and 10 (13%) reported subthreshold symptoms.

Figure 1 includes descriptive characteristics of dream coding results. Not all the 76 narratives had sufficient detail to be coded for each dream characteristic. For instance, recall was coded for 75 narratives (99%), while threat was only coded for 49 narratives (65%). No other data for this study was missing. Most narratives were coded as completely realistic (n=46, 71%) and as easily recalled (n=45, 60%). Ratings of other dream characteristics were more evenly distributed across the rating scale with the most common codes being for dreams that were near complete replication of the trauma (n=20, 32%), not at all symbolic (n=22, 36%), and severely threatening, resulting in death (n=19, 39%).

No MANOVA assumptions were violated: PTSD indicators were correlated with each other at $r \leq .73$, data was normally distributed, and variance was equal between nightmare characteristic groups. Table 1 displays means for PTSD clinical indicators for groups of participants who scored high and low on each nightmare characteristics and results from the five MANOVAs exploring the relationship between nightmare characteristics and PTSD indicators. The models for replication and realism were significant indicating that participants with highly replicating and more realistic dreams had significantly higher PTSD intensity scores than those with less replicating and less realistic dreams. The models for recall, threat, and symbolism were not significant. However, the model for threat approached significance and the between-subjects analyses indicate that this finding maybe be driven by PTSD arousal symptoms. Between-subjects analyses for the relationship between recall and PTSD indicators indicate that participants with better nightmare recall may have higher severity of re-experiencing and avoidance symptoms than those with less nightmare recall. Symbolism was unrelated to PTSD indicators. Taken together, these findings indicate that greater replication, more realistic, and possibly more threat content and better recall, are related to more severe PTSD indicators.

Discussion

Results are consistent with previous studies finding that more replication, higher threat, and better recall are associated with more severe PTSD (Harb et al., 2012; Mellman et al., 2001, de Tassel et al., 2018; Davis et al., 2007). Findings build upon previous research that assessed fewer than five nightmare characteristics within a study and did not sample recent combat veterans. Also, this is the first study to find that realism is associated with PTSD severity. Results are consistent with Emotional Processing Theory. Higher realism, replication, threat, and recall may suggest that little emotional processing is occurring halting adaptation and recovery. Specifically, nightmares that more accurately depict past traumas may enhance pre-existing or elicit new behavioral avoidance, such as avoidance of sleep, which in turn decreases opportunities for emotional processing and symptom resolution. The potential relationship between higher nightmare threat content and more arousal symptoms may be explained via veterans also perceiving more threat content during the day resulting in increased hyperarousal. Our results join previous research unable to find a link between symbolism and PTSD severity (Phelps et al., 2008) indicating that symbolism

may not be a useful predictive characteristic. Results should be interpreted cautiously given the exploratory nature of this study and replication is larger sample is needed.

The strengths of this study include reliable, structured assessment of nightmares that resulted in a rich qualitative dataset of multiple nightmare characteristics and systematic coding of nightmare narratives by three independent coders. Limitations include lack of previous validation of the nightmare coding template, the CAPS was not designed to yield nightmare characteristics resulting in missing data, and did not include the three newer symptoms in the DSM-V. Also, our study was underpowered and replication in a larger sample may reveal more associations between nightmare characteristics and PTSD.

In conclusion, research investigating posttraumatic nightmare characteristics suffers from poorly developed parameters (Phelps et a., 2008; Titus et al., 2018). To help standardize the study of nightmare characteristics, investigators utilizing existing accounts of nightmares can use our template. Measures that assess a more limited number of nightmare characteristics are available for new data collection efforts (Cranston et al., 2017; Donovan et al, 2005). Our results are consistent with emotional processing as a mechanism of action for nightmare treatment (Rousseau & Belleville, 2018). Firstline PTSD treatments such as prolonged exposure and cognitive processing therapy can effectively treat nightmares (Colvonen et al., 2018). For individuals experiencing nightmares that are not resolved by firstline treatments, nightmare-specific interventions that facilitate emotional processing, such as Imagery Rehearsal Therapy, are efficacious (Gieselmann et al., 2019).

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REALISM: (*n* coded= 65) How realistic is this dream? (i.e., Could this happen in real life? Unrealistic dreams are fantasy-like or dream-like).				
1 Completely unrealistic	2 Only a little content is realistic	3 About half of the content is realistic	4 Mostly realistic	5 Completely realistic
n = 4 (6.2%)	*n* =3 (4.6%)	*n* = 4 (6.2%)	*n* = 8 (12.3%)	*n* = 46 (70.8%)
REPLICATION: (*n* coded= 63) Is this dream replicating a traumatic event that the participant experienced (i.e., were the dream persons, places, and events the same as the actual trauma)?				
1 No replication	2 A little replication	3 About half of the content is a replication	4 Mostly a replication	5 Near complete replication
n = 8 (12.7%)	*n* = 11 (17.4%)	*n* = 12 (19.0%)	*n* = 12 (19.0%)	*n* = 20 (31.8%)
SYMBOLISM: (*n* coded= 61) How symbolic is this dream (i.e., to what extent does the dream substitute representations of aspects of real traumatic events for the events themselves, such as a dream about drowning, when the actual event was a severe chest injury from an explosive)?				
1 Not symbolic, all events actually happened	2 A little symbolic	3 About half of the content is symbolic	4 Mostly symbolic	5 Completely symbolic, no aspects were true to actual trauma experience
n = 22 (36.1%)	*n* = 8 (13.1%)	*n* = 7 (11.5%)	*n* = 12 (19.7%)	*n* = 12 (19.7%)
THREAT: (*n* coded= 49) What is the level of threat and injury to the dreamer or others? (If threat to dreamer and others is different, code higher threat level.)				
1 No threat	2 Minor threat	3 Significantly threatened, but not injured	4 Severely or brutally injured	5 Death
n = 2 (4.1%)	*n* = 3 (6.1%)	*n* = 18 (36.7%)	*n* = 7 (14.3%)	*n* = 19 (38.8%)
RECALL: (*n* coded= 75) How well did the dreamer recall details of the dream?				
1 Someone else tells the dreamer they are dreaming, but they don't recall any of the dream	2 Only could recall 1-2 details	3 Can recall more than few details, but not all details	4 Could recall most of the dream with considerable effort	5 Easily recalls details of the dream
n = 6 (8.0%)	*n* = 17 (22.7%)	*n* = 4 (5.3%)	*n* = 3 (4.0%)	*n* = 45 (60.0%)

Figure 1:
Nightmare Coding Template with Descriptive Results

Table 1.

MANOVA Results for the Relationship Between Nightmare Characteristics and Clinical Indicators of PTSD

	Wilk's Lambda		PTSD Intensity		Re-experiencing		Avoidance		Numbing		Arousal	
	Value, F (df)		**M (SD)**	**F (SS)**	**M (SD)**	**F (SS)**	**M (SD)**	**F (SS)**	**M (SD)**	**F (SS)**	**M (SD)**	**F (SS)**
Replication	.08, 160.97 (58) *	High	39 (9)	1.74 (157) †	17 (8)	.30 (10)	9 (5)	1.59 (27)	18 (8)	.73 (34)	27 (9)	.02 (.44)
		Low	33 (10)		15 (6)		8 (4)		15 (8)		25 (6)	
Recall	.92, 1.50 (70)	High	36 (9)	1.20 (100)	17 (7)	2.23 (78) ††	9 (4)	.39 (7)	17 (8)	2.80 (78) †	26 (7)	.03 (1)
		Low	33 (10)		13 (6)		8 (4)		14 (7)		26 (7)	
Realism	.131, 2.27 (60) *	High	36 (11)	2.71 (248) †	16 (7)	.01 (.07)	9 (4)	.12 (2)	17 (8)	−2.78 (248) †	26 (7)	.36 (12)
		Low	31 (6)		12 (5)		8 (4)		13 (8)		25 (5)	
Threat	.18, 1.68 (48) ††	High	35 (9)	.67 (51)	15 (6)	.01 (.41)	8 (4)	.01 (1)	15 (7)	.04 (2)	27 (6)	5.73 (213) *
		Low	33 (10)		15 (8)		8 (4)		15 6)		22 (7)	
Symbolism	.13, 2.11 (56)	High	34 (10)	.27 (25)	16 (6)	.01 (1)	9 (4)	.05 (1)	16 (8)	.02 (2)	26 (6)	.05 (2)
		Low	36 (10)		16 (7)		8 (4)		16 (8)		26 (8)	

Notes: Wilk's Lambda represents the omnibus F for the MANOVA for each nightmare characteristic. Other F statistics are between subjects effects. Clinician Administered PTSD Scale (CAPS) sleep and nightmare items were removed from all relevant scales. PTSD Intensity = CAPS intensity score for all items. Re-experiencing, avoidance, numbing and arousal are total CAPS severity score for each of these clusters. For all dream characteristics "high" was coded as 4 and 5 and "low" was coded as 1, 2, and 3 on the Nightmare Coding Template.

* $p < .05$

† $p < .10$

†† $p < .20$. SS= Sum of Squares. Post-hoc power ranged from .419-.529 for MANOVA models.