Comparison of dominant nightmare types in patients with different mental disorders

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Summary. The present study aims to test whether the degree of replicativity to which nightmares resemble potentially traumatic events varies with regard to different disorders. A further purpose was to investigate whether the subjectively experienced distress differs from one form of nightmare to another. The sample consisted of 127 service members who were treated in the Centre for Mental Health at the German Armed Forces Hospital Hamburg from March 2014 to June 2015 after being diagnosed as suffering from posttraumatic stress disorder (PTSD), depressive disorder or adjustment disorder. Whether the dominant nightmare type of patients reflected content that was replicative of a potentially traumatic event, non-replicative, or a mixed form of both was determined. Findings indicated that patients with PTSD suffered significantly more frequently from replicative nightmares than patients with depressive or adjustment disorders. Moreover, the subjectively experienced distress was most distinctive in patients who suffer mainly from replicative as compared to non-replicative or mixed nightmares.

Keywords: Posttraumatic nightmares, PTSD, depressive disorder, adjustment disorder, questionnaire, service members, German Armed Forces Hospital

1. Introduction

Nightmares are considered a frequent phenomenon of modern-day society, having a lifetime prevalence of almost 100%. According to the German Sleep Society (DGSM, 2009), nightmares can be regarded as clinically relevant in some 2 - 8% of those affected. Moreover, 56% of Dutch veterans and civilian casualties of World War II stated that, more than 40 years later, they still suffer from event-correlated nightmares at least once per month (Schreuder, Kleijn, & Rooijmans, 2000). In a representative study, 52% of Vietnam War veterans diagnosed with PTSD stated that they suffer from nightmares (Neylan et al., 1998).

With incidences of up to 70% in representative samples (Leskin, Woodward, Young, & Sheikh, 2002), posttraumatic nightmares are recognized as a frequent symptom of PTSD. Furthermore, individuals suffering from posttraumatic nightmares feel highly distressed subjectively both during the nightmares and hours thereafter, including emotions such as despair and impaired physical movement (Germain & Nielsen, 2003; Nielsen & Levin, 2007). According to Schreuder and Kleijn (2001), posttraumatic nightmares can be classified into three categories: replicative nightmares (exact replication of the traumatic event); mixed nightmares (partially concurring with the traumatic event, but with deviations); and non-replicative nightmares (with a symbolic connection to the traumatic event). On the basis of a literature review, Wittmann, Schredl, and Kramer (2007) reach the conclusion that roughly half of all posttraumatic nightmares can be assumed to be replicative. A summary of evidence by Wittmann and de Dassel (2015) found the development of PTSD and the attribute of posttraumatic nightmare replicativity to be specifically associated. Harb, Thompson, Ross, and Cook (2012) categorised the contents of nightmares suffered by 48 Vietnam veterans. The five most frequent dream content categories were the fear of death, fear of being attacked, loss of self-efficacy, loss of control, and the thought of being at war. With respect to differentiating nightmares in a military vs. civilian context, Schreuder et al. (2000) described that the content of veterans' nightmares tends to correspond more to the actual traumatic event (purely replicative), compared with those of civilians. According to Davis, Byrd, and Rhudy (2007), empirical differentiation

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Submitted for publication: May 2017
Accepted for publication: March 2018

between trauma-related and non trauma-related nightmares is difficult. Because of specific aspects of traumatic memories – so-called stuck points or hot spots, which represent a traumatic key experience of high relevance for the person concerned – a large variety of possible formal characteristics or content details of a dream may be associated with these hotspots. Consequently, a reliable judgement that no dream detail is related to the traumatic memory remains challenging.

A clear differentiation between posttraumatic and non trauma-related nightmares based on occurrence in specific sleep stages has yet to be made, due to a lack of clear data regarding the latter. Wittmann et al. (2007) conclude that posttraumatic nightmares occur both in REM and non-REM sleep. In a polysomnographic study, for instance, Woodward et al. (2000) showed that 57% of posttraumatic nightmares occur in REM sleep, 27% in sleep stage (S) 2, and 10% in S1.

Objective of the study. The present study analyses the hypothesized link between dominant form of nightmare, on the one hand, and specific diagnosis as well as subjectively experienced distress, on the other. More specifically, the following two hypotheses were tested:

Hypothesis 1: The dominant nightmare type (i.e., replicative, non-replicative, and mixed nightmares) is differentially associated with diagnoses of PTSD, adjustment disorder and depressive disorder symptoms.

Hypothesis 2: The subjectively experienced distress is significantly more pronounced with increasing replicativity of the dominant nightmare type.

2. Method

2.1. Participants

Anonymous data from 792 service members who attended the Centre for Mental Health at the German Armed Forces Hospital Hamburg for standard diagnosis purposes (consecutive sampling) between March 2014 and May 2015 were evaluated. Inclusion criteria were a diagnosis of posttraumatic stress disorder (F43.1), adjustment disorder (F43.2), or a depressive disorder (F32.0, F32.1, F32.2). Patients with comorbidities (i.e., more than one out of these three disorders) or symptoms in remission were excluded from the sample.

2.2. Procedure

The study was approved by the Institutional Review Board of the International Psychoanalytic University Berlin, Germany.

This study analyzed cross-sectional data from the standard clinical diagnostic assessment battery of the German Armed Forces Hospital Hamburg. Patients completed questionnaires within three days upon admission to the program. Clinical interviews were then conducted by the treating psychiatric staff. The clinical observations of multidisciplinary teams including psychiatrists, psychologists, physiotherapists, and occupational therapists in conjunction with psychometric results and clinical interviews, contributed to the final ICD-10 diagnosis (WHO, 2004).

2.3. Instruments

2.3.1 Sociodemographic information

Sociodemographic information collected included gender, age and level of education (with six categories). For the purposes of data analysis, level of education was dichotomized to form the categories “university entrance qualification or higher” and “lower than university entrance qualification”.

2.3.2 Assessment of nightmares

Serving as the basis for this study was the Hamburg Nightmare Questionnaire for Military Personnel (German abbr.: HAFB/MIL), which the German Armed Forces Hospital Hamburg in cooperation with the International Psychoanalytic University in Berlin, the Central Institute of Mental Health in Mannheim and the Institute and Outpatients Clinic of Medical Psychology at the University Medical Centre Hamburg-Eppendorf has developed further since March 2013 and is currently being finalised. Here, we report data from a previous version of this questionnaire. A publication of the final version is in preparation.

This self-rating questionnaire is the first German nightmare-recording instrument that takes into account specific nightmare subtypes. The aim of this questionnaire is to record important aspects of nightmares and their influence on wellbeing. In the first of the three sections (six items), general information is gathered on the duration and frequency of nightmare occurrences. Nightmare content is investigated with questions focusing on whether at least one nightmare replicates a real experience and by asking respondents to indicate to what percentage nightmares have replicative, fictitious (non-replicative) or mixed contents. A final open-ended question elicits themes of the patient´s nightmares. The second section, comprising 20 items, explores general characteristics of patients nightmares. Patients who are unsure how to answer are instructed to think about the most frequent or worst nightmare. The subjective assessment of the person affected is recorded using a five-stage Likert scale (1 = not true to 5 = true, or 1 = not at all to 5 = very strong).

A principal component analysis and subsequent promax rotation encompassing the 20 items of the second part of the questionnaire was completed with data from a military sample (N = 281), to arrive at the following five subscales:

1. Correspondence to reality
2. Reorientation
3. Physiological experience
4. Emotional experience
5. Dream recall

The first subscale, Correspondence to reality, is comprised of six items which cover realistic and fictitious components of the dream content. A low value indicates a replicative nightmare, while a high value indicates a non-replicative nightmare. An internal consistency of = .88 was found. The second subscale, Reorientation, with an internal consistency of α = .82, is comprised of five items relating to self-reassurance and orientation after awakening from a nightmare. The Physiological experience subscale, comprised of three items, measures physical experiences upon waking, such as heightened perspiration, tachycardia and dyspnoea (α = .77). The fourth subscale, Emotional experience, is comprised of four items which measure feelings such as anxiety and helplessness both during the dream

and after awakening. An internal consistency of α = .86 was found. The fifth subscale, Dream recall, is comprised of two items which measure richness of detail and clarity of the nightmare contents recollected and revealed an internal consistency of α = .75. On the basis of these five factors, 69.3% of variance within the 20 items was accounted for.

The third section of the HAFB elicits subjectively perceived distress during the days after a nightmare occurrence. As the Distress subscale refers to waking life rather than to dream content or related psychophysiological reactions, it was constructed independently of the second HAFB section. With seven items, it measures subjectively perceived distress across social environment, work, family life, physical and mental performance, the effect on mood, as well as general effects on everyday life. The items of this section apply the same Likert scale format as section two. An internal consistency of α = .94 was found for the Distress subscale.

2.3.3 Depression

In order to assess possible depressive symptoms, the General Depression Scale (ADS; Hautzinger, Bailer, Hofmeister, & Keller, 2012) was used. This scale measures depressive symptoms across emotional, motivational, cognitive, somatic and motor domains within the past seven days. In several population samples, the internal consistency for adults lay between .89 and .92. The General Depression Scale has proven to be a reliable and valid self-rating instrument in clinical work.

2.3.4 Posttraumatic stress disorder severity

The severity of possible posttraumatic symptoms was explored using the Impact of Event Scale - Revised (IES-R; German version by Maercker & Schützwohl, 1998). This self-rating questionnaire comprises three subscales (intrusion, avoidance, and hyperarousal), which measure the classic symptoms of PTSD according to DSM-IV (APA, 1994). The internal consistency of the individual subscales lay between .79 and .90 (Maercker & Schützwohl, 1998).

2.3.5 Analysis of dominant nightmare type

Categorisation of dominant nightmare type according to replicativity (replicative vs. non-replicative vs. mixed) was completed with respect to patients' subjective assessment of all experienced nightmares. Thus, this variable refers to the general dominance of a specific nightmare type whilst acknowledging that more than one type may be experienced. The categorisation took place in three steps. Firstly (step 1), the nightmare contents freely described by the patients were evaluated to determine whether the nightmare content represented realistic experiences or bizarre or fictitious events. Realistic experiences may indicate replicative nightmares, whereas bizarre or fictitious events imply non-replicative ones. The degree (percentage) to which nightmares reflected a replicative, non-replicative, or mixed content was then included (step 2). Thereafter, the Correspondence to reality subscale of the Hamburg Nightmare Questionnaire for Military Personnel was considered (step 3). Categorisation of dominant nightmare type was carried out independently by two raters. Overall Cohens Kappa for the determination of dominant nightmare type was κ = .803 ($p \leq .001$).

3. Results

3.3.1 Sample description

127 patients (16.0% of those screened during study period) met the inclusion criteria. 21 of them (16.5%) were female, and the average age was 30.5 years (SD = 9.1, range 18 - 65). 41.7% held at least a university entrance qualification, while 57.5% had a lower school-leaving qualification (one missing value).

3.3.2 Psychopathology

Forty-five patients (35.4%) were diagnosed with PTSD (F43.1) and another 45 (35.4%) with an adjustment disorder (F43.2), with the remaining 37 patients (29.1%) diagnosed with a depressive disorder (F32.0, F32.1, F32.2).

3.3.3 Duration of nightmares

For 111 patients (87.4%), data was available on how long they had been experiencing nightmares. The majority of patients (ranging between 59.0 and 70.0% for the three diagnostic groups) endorsed the presence of nightmares for years (M = 5.4 years, SD = 5.5). With the exception of two subjects (both diagnosed with adjustment disorder), all remaining patients endorsed having experienced nightmares for months (M = 5.1 months, SD = 2.5). Of the 127 test subjects, 118 (92.9%) provided information on nightmare frequency. Seventy-seven patients (65.2%) stated they suffered from nightmares at least once per week, and an additional 33 patients (27.9%) stated they had nightmares at least once per month (see Table 1).

The fifth item of the HAFB indicates what percentage nightmares have replicative, fictitious (non-replicative) or

Table 1. Nightmare frequency (n = 118)

	The patient has at least one nightmare:							
	Per night		**Per week**		**Per month**		**Per year**	
Diagnosis	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
Depressive disorder (F32)	3	2.5	24	20.3	5	4.2	2	1.7
Posttraumatic stress disorder (F43.1)	6	5.1	24	20.3	10	8.4	2	1.7
Adjustment disorder (F43.2)	3	2.5	17	14.5	18	15.3	4	3.4
Total	12	10.1	65	55.1	33	27.9	8	6.8

Table 2. Dominant nightmare type with regard to diagnosis

	Depressive disorder (F32; n = 34)		Posttraumatic stress disorder (F43.1; n = 43)		Adjustment disorder (F43.2; n = 43)	
Nightmare type	**n**	**%**	**n**	**%**	**n**	**%**
Non-replicative	12	35.2	1	2.3	21	48.9
Replicative	4	11.7	20	46.5	5	11.6
Mixed	14	41.4	16	37.3	12	27.9

mixed contents. Seventeen patients (13.4%) endorsed only one of the three nightmare types. A further 37 persons (29.1%) reported two, and 65 persons (51.2%) all three nightmare types.

The nightmare analysis revealed that 15 patients (11.8%) had given incoherent information when it came to categorising the dominant nightmare type. An additional 7 patients (5.5%) were excluded from the analysis due to missing data. 105 patients were therefore included in the categorisation according to dominant nightmare type based on data from three sources.

3.3.4 Testing of the hypotheses

Hypothesis 1: The distribution of dominant nightmare types (replicative, non-replicative, and mixed) is differentially associated with diagnoses of PTSD, adjustment disorder and depressive disorder symptoms.

Table 2 shows the distribution of dominant nightmare types by diagnoses. It is noteworthy that the percentage of non-replicative nightmares was at its lowest (2.3%) for patients diagnosed with PTSD. In contrast, the percentage of replicative nightmares was at its lowest, at just under 12%, for patients diagnosed with a depressive episode or adjustment disorder. The testing of this hypothesis confirmed a significant association between diagnosis and nightmare type (χ^2 (4) = 32.3, p = <.001).

Subsequent post hoc testing according to Garcia-Perez and Nunez-Anton (2003; adjusted significance level for the post hoc contrasts = .005) provided the opportunity to explore the following three results: (1) Patients with PTSD experienced significantly more replicative nightmares than patients with a depressive episode or adjustment disorder (χ^2 (1) = 19.98, p < .001). (2) Patients with PTSD experienced significantly fewer non-replicative nightmares than patients with a depressive episode or adjustment disorder (χ^2 (1) = 22.94, p < .001). (3) Patients with an adjustment disorder experienced significantly more non-replicative nightmares than patients with a depressive disorder or PTSD (χ^2 (1) = 14.21, p < .001).

Hypothesis 2: The subjectively experienced distress is significantly more pronounced with increasing replicativity of the dominant nightmare type.

The second hypothesis tested for differences in subjectively experienced distress during the days after nightmare occurrence (as assessed by section 3 of the HAFB) according to dominant nightmare type. Testing with a one-way ANOVA found a significant effect of dominant nightmare type on distress (F(2,102) = 34.1, p = <.001, η^2 = 0.40). Subsequent post hoc testing with a Bonferroni correction found that the subjectively experienced distress brought on by nightmares was significantly more pronounced in the case of replicative nightmares (M = 3.2, SD = 1.0) than for non-replicative nightmares (M = 1.4, SD = 0.6, t (102) = 8.25, p = <.001) and mixed nightmares (M = 2.2, SD = 0.9, t(102) = 4.79, p = <.001). In addition, it was found that subjective distress was significantly more pronounced in the case of mixed nightmares than for non-replicative nightmares (t (102) = 4.02, p = <.001).

4. Discussion

This study focused on the association between nightmare replicativity and distress across three different mental health diagnoses (PTSD, adjustment and affective disorders) in a military sample. The majority of the sample (63.9%) reported experiencing nightmares for more than one year and almost all patients (93.1%) suffered from at least several monthly nightmares. The main findings demonstrate that individuals with a diagnosis of PTSD experience a replicative dominant nightmare type with a higher probability and non-replicative dominant nightmare types with a lower probability than those diagnosed with an affective or adjustment disorder. Furthermore, nightmare distress was highest in the case of a dominant replicative nightmare type and lowest in non-replicative dominant nightmare type.

The present study has provided a vital contribution to the understanding of posttraumatic nightmares within the current field of research. The study has confirmed that replicative and non-replicative as well as mixed nightmares differ as a function of diagnoses. To the best of our knowledge, no other study has so far compared the three nightmare types as well as nightmare distress with respect to the three diagnostic groups included in a sample without diagnostic overlap of the three index diagnoses. The high percentage of the replicative dominant nightmare type experienced by service members with PTSD was striking. The mixed form nightmares tended, however, to be independent of any disorder, which presumably is attributable to the many common features shared by replicative and non-replicative nightmares, as already emphasised by Germain and Nielsen (2003) and Spoormaker (2008). These findings represent further confirmation of the specific link between PTSD and replicativity of nightmares described by Wittmann and de Dassel (2015).

Furthermore, our results offer additional empirical support for the neurocognitive model proposed by Nielsen and Levin (2007). Replicative nightmares were perceived as significantly more distressing than non-replicative or mixed nightmares. Follow-up research examining which factors cause the heightened distress where replicative nightmares are concerned would further add to our knowledge. This will require a further, more specific differentiation of the nightmare types.

With regard to the already presented findings of Schreuder et al. (2000), it will also be necessary to differentiate between service members whose nightmares are brought on by military experiences and civilians whose nightmares have a non-military content. We cannot readily apply the current findings to civilian contexts. Furthermore, the influence of therapeutic aspects as well as the long-term development of nightmare characteristics have not been considered due to the cross-sectional design of the study and the lack of differentiation between treated and untreated patients. It is also important to note that using solely self-rating instruments potentially limits the validity of the data. The decision to select subjects based on diagnostic status rather than based on nightmare frequency has two implications. Our results are more representative of individuals with the respective diagnoses, given that not all of them suffer from nightmares, whereas, the representativeness of our sample for the population of nightmare sufferers (typically defined by at least weekly occurrence of nightmares) is limited. In addition, because of the typical co-occurrence of different nightmare types it was not possible to group the test subjects unequivocally within one nightmare category only. Patients were instead categorized according to their dominant nightmare type, which resulted in excellent interrater reliability.

Notwithstanding these limitations, our results bear several implications for further research as well as clinical practice. The growing evidence that replicative nightmares are specifically linked to PTSD (Wittmann & de Dassel, 2015) makes nightmares an intriguing tool for diagnostic and differential diagnostic questions. Furthermore, our findings bring into question the changes made in the DSM-V PTSD (APA, 2013) criteria regarding nightmares. While DSM-IV restricted criterion B2 to dreams which replayed the traumatic event, DSM-V softened this criterion including dreams "[…] in which the content and/or affect […] are related to the traumatic event(s)" (p. 273) or which are "[…]representative or thematically related to the major threats involved in the traumatic event" (p. 275). A study examining whether the elevated risk for suicidal behavior associated with nightmares (Nadorff, Nazem, & Fiske, 2011) is specifically linked to replicative nightmares (as our results have shown for nightmare distress) may allow for an important extension of our findings.

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