



ORIGINAL ARTICLE

Pathological and Nonpathological Worry: Their Relationships with Nightmare Frequency

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ABSTRACT

Objective: Both worry and nightmares are relatively common phenomena and both are conceptually related. However, research investigating their relationship has not been reported. The aim of the current study was to investigate the statistical relationship between worry and nightmare frequency.

Methods: Using a cross-sectional design, university students (n=134) completed reliable and validated measures of nightmare frequency using the Schredl's Nightmare Frequency Scale, trait pathological worry using the Three Item Worry Index (TIWI), nonpathological worry using the Worry Domains Questionnaire Short Form (WDQ-SF), and worry related sleep disturbance using the Sleep Disturbance Ascribed to Worry Scale (SAW).

Results: Higher frequency of nightmares was significantly correlated with higher scores on measures of pathological worry, nonpathological worry, and worry-related sleep disturbance. Using ordinal regression, it was determined that pathological worry, but not nonpathological worry or worry-related sleep disturbance, accounted for significant unique variance in nightmare frequency.

Conclusions: The results were consistent with conceptualizations of pathological worry and nightmare frequency as related to ego functioning and psychological distress. Individuals seeking psychotherapy reporting intense, uncontrollable worry might need to be evaluated for frequent nightmares as well. The results were discussed and suggestions for future research were offered.

Keywords: Nightmares, dreams, worry, anxiety, sleep disorders

INTRODUCTION

Worry, a sequence of emotionally unpleasant anxious thoughts which are usually oriented toward the future (1), is a commonly experienced phenomenon. In a nonclinical sample, 38% of respondents report worrying daily, while 72% endorse worrying at least once a month (2). Although worry is sometimes experienced as benign and even helpful, it can become uncontrollable and excessive. Thus, worry takes two forms: nonpathological (perceived as useful and stoppable) and pathological (uncontrollable and excessive) (3). These have been distinguished as statistically separate (4) with nonpathological worry being associated more with transient perceived stress, and

pathological worry being more associated with trait anxiety (5). Worry is consistent with, but not synonymous with, anxiety and stress (6).

In its pathological form worry is the cardinal feature of Generalized Anxiety Disorder (GAD) (7). However, it should be noted that worry is transdiagnostic: it occurs in conjunction with many psychopathologies (8), not only generalized anxiety. For instance, worry is correlated with obsessiveness (9), depressive symptoms (10), sleep difficulties (11) and narcissism (12). Additionally, worry is associated with emotional avoidance of unwanted emotions (13), unhealthy families of origin (14), intolerance for uncertainty (15), and insecure attachment styles (16). The current study examines the relationship between worry and one potential correlate, nightmares.

Nightmares are story-like frightening and disturbing dreams that are well-remembered upon awakening (7). The number of individuals who experience frequent nightmares is relatively high. For instance, between 2.4 -

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5.1% of community samples of adults report experiencing nightmares at least weekly (17-19). Schredl (20) reports that 14% of a community sample report experiencing nightmares at least monthly. It should be noted that frequent nightmares do not necessarily indicate occurrence of the more severe Nightmare Disorder, which includes clinically significant distress or disability (7).

Despite the occurrence of frequent nightmares among relatively high proportions of the population, causes of nightmares are not well understood. One possible explanation for nightmares is the continuity hypothesis of dreams (21). According to this conceptualization waking experiences of distress and frightening thinking are mirrored in sleep states. This is consistent with findings that nightmares are related to general psychological distress (22,23), neuroticism (24), posttraumatic stress (25), and psychotic-like experiences (26).

Links can be drawn between the experiences of nightmares and worry. For instance, both are associated with insecure attachment styles (16,27) and trauma (25,28). On a descriptive level, given that both nightmares and worry perhaps can be considered symptoms of distress, it is not surprising that both have been related to general psychological distress (23,29), and its trait counterpart neuroticism (30,24). On a theoretical level, both worry, especially pathological worry, and nightmares are associated with ego impairments (31-34). The ego is the hypothetical psychological structure that regulates internal mental processes and mediates between subjective internal experiences and external reality (35). The ego can be weakened by traumatic events (36), including attachment trauma (37).

Although conceptual links between worry and nightmares can be established, empirical examinations of the relationship between worry and nightmares are sparse. In one study individuals with frequent nightmares report significantly more worry before and after sleep than those with infrequent nightmares (38). However, that study assesses the incidence of worry using an unstandardized state measure, which is not consistent with most contemporary worry research which uses

standardized trait measures. This makes it difficult to understand the findings in the context of the majority of worry research.

In another study, worrying about nightmares is included as an item on a scale of worry content (39). That specific study does not report individual findings for worry about nightmares, so little relevance to the current investigation can be gleaned. Given the central nature of worry to GAD, it is noteworthy that a measure of GAD is related to nightmare frequency (40). However, recalling the transdiagnostic nature of worry, many individuals worry without diagnoses of GAD. Hence, again, findings regarding GAD provide little insight specifically into the relationship between worry and nightmares, especially nonpathological worry.

The current study examines the relationships between nightmare frequency and two manifestations of worry: specifically, nonpathological and pathological worry. Moreover, given that nightmares are related to sleep disturbance (41), a measure of worry-related sleep disturbance is also included. The findings of this study might be useful for both researchers and clinicians in understanding the underlying factors for nightmares and worry and examining which patient groups should be further assessed for either issue. For instance, individuals complaining of worry might need to be assessed for nightmares and vice versa.

It is expected that zero-order correlations will exhibit significant correlations between all measures as they appear to be manifestations of psychological distress and neuroticism (23,24,29,30). Also, given that ego deficits, a theoretical predisposition for nightmares (33,34), appear to be consistent with pathological more than nonpathological worry (31), it is hypothesized that, after statistically controlling for each other, a measure of pathological worry, but not nonpathological worry, will account for unique variance in nightmare frequency. Finally, considering that worry, assumedly, is a necessary ingredient for worry-related sleep disturbance (42), it is expected that after accounting for the variance associated with worry, worry-related sleep disturbance will not be significantly associated with nightmare frequency.

METHOD

Participants

Participants included a convenience sample of 134 (106 females, 26 males, 1 did not identify sex) undergraduate students enrolled at a small university in the United States. The average age of the sample was 22.55 years ($SD = 4.19$).

Measures

Nightmare Frequency. Nightmare frequency was assessed using Schredl's (24) eight point scale ("How often do you experience nightmares?" 0 = Never, 1 = Less than once a year, 2 = About once a year, 3 = About 2 to 4 times a year, 4 = About once a month, 5 = About 2 to 3 times a month, 6 = About once a week, 7 = Several times a week). The test-retest reliability of this measure has been estimated at 0.75 across four weeks (42). Validity has been demonstrated through correlations with another measure of nightmare frequency and hypothetically related variables such as neuroticism, ego boundary thinness, and general psychological distress (24).

Trait Pathological Worry. Pathological worry was assessed using the Three Item Worry Index (TIWI) (44). The TIWI included three items that measure the frequency and severity of worry. Participants responded using an 11-point scale (0 = "Never" or "Not at All" to 10 = "Continuously" or "Very Much," as appropriate for each item. Responses to each item were summed.. Higher total scores on the measure indicated more pathological worry. Reliability ($\alpha = 0.92$) and concurrent validity have been reported (44,45).

Nonpathological Worry. The 10-item Worry Domains Questionnaire Short Form (WDQ-SF) (46) was used as a measure of nonpathological worry. Participants were provided with the stem "I worry..." followed by 10 common worries and responded how much they worry about each using a 5-point scale (1 = "Not at All" to 5 = "Extremely"). Responses were summed with higher scores indicating higher levels of nonpathological worry. Reliability ($\alpha = 0.89$) and adequate validity have been

reported (46). The longer version of the WDQ has been used successfully as a measure of nonpathological worry as it taps frequency of general worry content rather than severity or uncontrollability of worrying (4-6).

Worry Related Sleep Disturbance. Worry related sleep disturbance was measured using the 5-item Sleep Disturbance Ascribed to Worry Scale (SAW) (47). Participants responded to each item using an 11-point scale (0 = "Never" to 10 = "Very Often"). Responses were summed and higher scores indicated more worry-related sleep disturbance. Internal consistency reliability has been estimated at 0.85 (47) and a test-retest reliability of 0.83 across 4 weeks was reported (48). Validity of the measure has also been supported (42,47).

Procedure and Statistical Analyses

The study was approved by the local IRB. Participants were recruited before undergraduate psychology classes to answer a questionnaire on "Mood and Sleep." After obtaining informed consent, participants completed questionnaire packets in classroom settings. No tangible benefits (i.e., extra credit) were offered in exchange for participation. Because nightmares were assessed using an ordinal measure, Spearman correlations were calculated to examine the relationships among variables. An ordinal regression was calculated to examine the extent to which nonpathological and pathological worry and worry-related sleep disturbance separately accounted for variance in nightmare frequency. Analyses were calculated using SPSS 24.0 for Windows (IBM Corp., Armonk, NY, USA).

RESULTS

Frequencies of responses to the nightmare scale were presented in Table 1. As seen in the table, about 17% of the sample reported they never had nightmares. Hence, 83% reported having had at least one nightmare. About 69% of the sample reported having at least one nightmare a year and about 27% reported having at least one nightmare per month. About 7% of the sample reported nightmares at least weekly.

Table 1: Nightmare Frequency

Categories	Frequency	Percentage
Never	23	17.2
Less than once a year	14	14.2
About once a year	18	13.4
About 2 to 4 times a year	38	28.4
About once a month	18	13.4
About 2 to 3 times a month	9	6.7
About once a week	5	3.7
Several times a week	3	3.0

Note: N = 134

Means, standard deviations, and internal consistency reliabilities for measures in this study were presented in Table 2 along with correlations between measures. As shown in the table, all multi-item scales had good internal consistency and all measures were significantly intercorrelated. The strongest correlation was between the TIWI and SAW and the weakest, though still significant, was between nightmare frequency and the WDQ-SF. Gender (dummy coded; 1 = male, 2 = female) was significantly correlated with TIWI, $r=0.21$, $p<0.05$, and SAW, $r=0.17$, $p<0.05$, scores, but not with scores on the WDQ-SF, $r=0.08$, $p>0.05$, or nightmare frequency, $r=0.02$, $p>0.05$.

To examine the relative predictive power of the three worry-related measures for nightmare frequency, an ordinal regression was calculated using nightmare frequency as the criterion and entering WDQ-SF, TIWI, and SAW scores simultaneously as predictors. Because gender did not significantly correlate with nightmare frequency, it was not included as a predictor. The regression indicated a significant effect for TIWI scores (standardized estimate=0.07, $\chi^2=5.96$, $p=0.02$), but not for WDQ-SF (standardized estimate=0.03, $\chi^2=1.23$, $p=0.27$), or SAW (standardized estimate=0.02, $\chi^2=1.15$, $p=0.28$) scores.

DISCUSSION

The hypotheses of the present study were generally supported; nightmare frequency was significantly related with pathological and nonpathological worry as well as worry related sleep disturbance. However, when the worry variables were accounted for simultaneously, pathological worry predicted nightmares above nonpathological worry and worry-related sleep disturbance. The current study extended previous findings by indicating that nightmares were related to trait worry in addition to a simple measure of state worry (38) and specified that pathological worry, more than nonpathological worry, was most associated with nightmares.

The current findings were consistent with the theoretical notion that frequent nightmares and worry were tied to ego functioning (31,33,49). This was most apparent when examining all the variables simultaneously. More frequent and chronic experiences of nightmare frequency and pathological worry remained significantly related after controlling for the more transient and stress-related nonpathological worry. This would be expected if both phenomena reflected a disintegrated, weakened ego structure rather than simply being explained by neuroticism (24) or the experience of distress (35).

Interpreting the results of the current study at surface level, however, it was still plausible that both worry and nightmares were simply manifestations of neuroticism (24) and not a reflection of ego structure. This notion would be consistent with previous research findings (22,29,50) and the continuity hypothesis of dreaming (21). Future research would be needed to examine if the relationship between pathological worry and nightmares was better explained simply by distress levels as predicted

Table 2: Reliabilities, Means, and Correlations Between Scales

	2	3	4	α	M	SD
1. NF	0.46	0.34	0.40	--	2.57	1.82
2. TIWI		0.57	0.73	0.96	17.81	9.02
3. WDQ-SF			0.38	0.83	27.98	8.10
4. SAW				0.89	20.49	13.00

Note: N = 134. All correlations significant at $p<0.001$ (two-tailed). NF = Nightmare Frequency, TIWI = Three Item Worry Index, WDQ-SF = Worry Domains Questionnaire Short Form, SAW = Sleep Disturbance Ascribed to Worry Scale.

by the continuity hypothesis, ego structure deficits, or some combination thereof. This might be explored by simultaneously including measures of ego strength, ego boundaries, and psychological distress along with nightmare frequency and pathological worry.

The current study had several limitations which should be considered when attempting to generalize the results. For instance, the use of a relatively small and homogeneous sample of university students makes generalization of the results to community samples difficult. Further, the inclusion of only brief measures might have decreased the ability to detect smaller, more subtle effects. For instance, the use of a single item of nightmare frequency may not have adequately reflected the full nightmare phenomena which often includes nightmare distress and severity (51). Future studies might use multi-item instruments such as the Disturbing Dream and Nightmare Severity Index (52) to measure nightmares and the longer Penn State Worry Questionnaire (53) to measure pathological worry. Additionally, there has been discussion in the literature as to whether or not retrospective measures of nightmares, such as the one used in the current study, underestimate the incidence of nightmares (54). Thus, future studies might include prospective measures of nightmares, such as sleep diaries, to estimate nightmare frequency in

addition to retrospective nightmare recall.

Future research is needed to examine these possibilities and correct for limitations of the current study. Studies with larger, more diverse samples rather than exclusively college students might be useful. Future research is also needed to examine the relationship between worry and nightmare frequency while controlling for other potentially confounding variables such as transient anxiety and stress. Due to the cross-sectional nature of the study, cause-effect cannot be determined. A prospective design might allow for tracking levels of worry across time as related to nightmare frequency. A further limitation in the current study was that nightmares were not defined for the sample.

Due to these limitations, caution should be used when interpreting the results. Despite the limitations of the current study, given that nightmares are an underreported and undertreated, though treatable, condition (55), it is recommended that patients reporting frequent, uncontrollable worry to psychotherapists or physicians should also be evaluated for the presence of frequent nightmares.

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