

Gender Differences in Retrospective Nightmare Frequency Among Young Adults: Effects of Nightmare Distress and Affective Distress

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Summary. Females, as a group, retrospectively report more nightmares than males. This difference has been attributed to socialization factors whereby females experience more negative affect and have associated nightmares. It is also possible that females recall more nightmares because they find nightmares more distressing and, therefore, more salient. The current study examined the effects of nightmare distress and general affective distress on the gender difference in nightmare frequency among 221 young adults. Nightmare distress accounted for the gender difference in nightmare frequency more strongly than affective distress. However, affective distress and nightmare frequency did not account for the gender difference in nightmare distress. The results and recommendations for future research are discussed.

Keywords: Nightmare Frequency, Nightmare Distress, Gender differences, Negative Affect, Psychological Distress

1. Introduction

Females, compared to males, report more nightmares, dysphoric and easily recalled dreams that usually awaken the sleeper (American Psychiatric Association, 2013). Meta-analytic findings support this assertion and reveals the trend is especially prevalent among young adults (Schredl & Reinhard, 2011). The reason for this relatively consistent gender difference is not well understood. Levin and Nielsen (2007) speculate five possible mechanisms to explain gender differences in nightmare frequency: relative to males females tend to 1) be more open in reporting negative experiences; 2) experience more traumata; 3) have more depressive risk-factors, i.e., less assertiveness; 4) use emotionally focused, ruminative coping strategies; and 5) report more emotionally laden memories and responsiveness to emotional stimuli. These possible nightmare inducing mechanisms could largely stem from socialization processes. Observations of gender differences in nightmares by age groups partly supports this. For example, adolescent, young, and middle-aged females who have ostensibly already been exposed to many socialization processes report more nightmares compared to males. Conversely, the gender difference in nightmares is not observed among children for whom socialization is perhaps less solidified (Schredl & Reinhard, 2011).

Gender differences in nightmare frequency mostly have been reported using retrospective questionnaires in which respondents estimate recalled nightmares (i.e., Levin, 1994;

Schredl, 2014) rather than prospective diary methods in which respondents keep daily records of nightmare occurrences (i.e., Levin et al., 2011). Though Schredl and Reinhard (2011) attempted to account for methodology in their meta-analysis, they were only able to include four prospective versus 94 retrospective studies. Results of the prospective studies were not reported separately. One study using both prospective and retrospective methods found females reported more nightmares retrospectively though there was no significant gender difference prospectively (Blagrove et al., 2004). This suggests the possibility of a reporting bias whereby females retrospectively recall more nightmares than males though actual frequency of nightmares might not differ.

If a reporting bias in retrospective nightmare estimates exists, it could partly result from a salience effect. That is, females could be more sensitive and attentive to internal states and experiences (Levin & Nielsen, 2007). This is supported by several findings. For instance, females experience dreams as more vivid and impactful (Levin, 1994). Females endorse nightmares as having more meaning and purpose (Schredl et al., 2019). Further, females tend to be more sensitive to negative visual stimuli (Lithari et al., 2010). From these findings, females might estimate more nightmare frequency because of increased awareness and focus on their nightmares. This potential salience effect is consistent with recent findings that self-rated negative emotions during dreams and about dreams during waking states rather than dream content determines if a dream is experienced as a nightmare (Mathes et al., 2020). A salience effect would also be consistent with Levin and Fireman's (2002) suggestion that nightmare reports could partly be based on threat perceptions of dreams as manifested through nightmare distress, waking suffering caused by nightmares. Other research indicates that females report more nightmare distress and attribute more negative life effects to nightmares (Klůžzová Kráčmarová & Plhánková, 2015). Taken together, it is possible that females perceive nightmares as more salient than males due to perceiving them as more impactful and distressing.

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Investigations of the effects of nightmare distress on gender differences in nightmare frequency have been limited. Among nonclinical samples, the effect size for gender differences in nightmare distress was slightly larger than the gender effect of nightmare frequency among young adults: $d=.32$ and $d=.26$, respectively (Schredl & Reinhard, 2011). Previous findings (Lancee et al., 2010) indicate that nightmare distress accounts for relationships between nightmare frequency and experiences of negative affectivity. Further, accounting for nightmare distress significantly reduced the correlation between two retrospective nightmare frequency measures suggesting that nightmare distress can affect nightmare estimates (Kelly et al., 2018).

The purpose of this preliminary study is to extend previous findings by examining the possible role of nightmare distress as a hypothesized salience factor for gender differences in retrospective nightmare frequency. This study focuses on estimates of general trait-like nightmare distress given that it perhaps represents salience of multiple (i.e., frequent) nightmares whereas distress about a single nightmare would not (c.f., Schredl et al., 2003). Previously, Schredl (2014) found that controlling for neuroticism largely accounted for the gender difference in nightmares. Therefore, a measure of affective distress was included in the current study to control for the relationship between nightmare distress and affective distress (Klůžová Kráčmarová & Plhánková, 2015) and allow comparison of this previously observed influence on gender differences. It was hypothesized that nightmare distress would account for the gender difference in nightmare frequency even after accounting for affective distress.

2. Method

2.1. Participants and Procedure

Participants were 221 (115 males, 98 females, 8 unidentified) students enrolled in undergraduate psychology courses at a small university in the United States. The average age of the sample was 20.07 years ($SD=1.74$), ranging from 18-28. The average age for females ($M=20.21$, $SD=2.04$) was not significantly different than males ($M=19.81$, $SD=1.23$), $t(209)=1.67$, $p=.10$, $d=.24$.

2.2. Measures

Nightmare Frequency. Retrospective nightmare frequency was assessed with the item: "I have nightmares often." Nightmares were defined for participants as "unpleasant and clearly remembered dreams that awaken you; after waking you quickly become alert." Participants responded using a 5-point scale (0="Strongly Disagree" to 4="Strongly Agree"). This measure was found to correlate strongly with

Table 1. Correlations Between Nightmare Frequency, Nightmare Distress, and Affective Distress

Scale	NF	ND	M (SD)
ND	.57		1.14 (1.14)
K6	.34	.37	9.38 (5.44)
NF			1.03 (1.18)

Note: $N=221$. All correlations $p<.001$. NF=Nightmare Frequency; ND=Nightmare Distress; K6=Kessler 6 Psychological Distress Scale.

another measure of nightmare frequency and moderately with neuroticism and affect regulation (Kelly et al., 2018). To examine test-retest reliability, a subset of participants from the current sample ($n=59$; 64% female; $M_{age}=19.93 \pm 1.17$) completed this item again after two-weeks. The test-retest coefficient was $r=.80$.

Nightmare Distress. Nightmare distress was assessed by asking participants to respond to the item: "Typically, how distressed are you by your nightmares?" using a 5-point scale (0="Not at all distressed" to 4="Very distressed"). Kelly et al. (2018) found a similarly worded item correlated with two measures of nightmare frequency and mediated relationships between nightmare frequency and affective distress. To estimate test-retest reliability the subsample reported above for the nightmare frequency retest estimate completed the nightmare distress measure again after two weeks. The reliability coefficient was $r=.72$.

Affective Distress. Affective distress was measured using the six-item Kessler-6 (K6; Kessler et al., 2002). Participants responded to how often they experienced affective distress symptoms over the past 30 days using a 5-point scale (0="None of the time" to 4="All of the time"). Higher total scores indicated more distress. Validity has been supported by the K6's ability to discriminate between individuals with and without clinical diagnoses (Kessler et al., 2002). Internal consistency reliability in the current sample was $\alpha=.86$.

2.3. Procedure

Participants were recruited from undergraduate psychology courses to complete a larger questionnaire on "Sleep and Stress." After obtaining informed consent, participants completed anonymous paper and pencil questionnaires during regular class times. There was no time limit for questionnaire completion and no exclusionary criteria were used.

2.4. Statistical Analysis

Pearson correlations were calculated between nightmare frequency, nightmare distress, and K6 scores (affective dis-

Table 2. Gender Differences for Nightmare Frequency, Nightmare Distress, and Affective Distress

Scale	Males		Females		t	p	d
	M	SD	M	SD			
NF	00.80	1.09	01.26	1.24	2.80	.006	.39
ND	00.85	1.11	01.49	1.11	4.18	.001	.58
K6	08.46	5.23	10.45	5.60	2.68	.008	.37

Note: Male $n=115$; Female $n=98$. NF=Nightmare Frequency; ND=Nightmare Distress; K6=Kessler 6 Psychological Distress Scale.

Table 3. Regression Models Predicting Nightmare Frequency

Scale	Step 1			Step 2			Step 3		
	β	t	p	β	t	p	β	t	p
Gender	.19	2.74	.007	.13	1.93	.055	.02	0.25	.802
K6				.32	4.94	.001	.16	2.58	.011
ND							.52	8.37	.001
	$\Delta F=7.53, p<.007$ $\Delta R^2=.04$			$\Delta F=24.40, p<.001$ $\Delta R^2=.10$			$\Delta F=70.06, p<.001$ $\Delta R^2=.22$		

Note: Total $N=221$. ND=Nightmare Distress; K6=Kessler 6 Psychological Distress Scale. Gender dummy coded (1=male, 2=female).

ress). Gender differences for nightmare frequency, nightmare distress, and K6 scores were examined using t-tests. A linear regression was calculated using gender, nightmare distress, and K6 scores to predict nightmare frequency. To better determine which variable might affect the gender difference, gender was loaded on Step 1, K6 scores were added on Step 2, and nightmare distress was added on Step 3. An exploratory second regression predicting nightmare distress was also calculated taking the same approach using gender, K6 scores, and nightmare frequency as predictors. Analyses were conducted using SPSS 24 for Windows.

3. Results

As presented in Table 1, all variables were significantly related. The strongest relationship was between nightmare frequency and nightmare distress. Affective distress was roughly equivalently related to both nightmare distress and frequency.

As presented in Table 2, females scored significantly higher on nightmare frequency, nightmare distress, and affective distress. Effect sizes were about equal for nightmare frequency and affective distress. The gender difference was strongest for nightmare distress supporting the notion that females react more strongly to nightmares than males.

A linear regression was calculated with gender (Step 1), affective distress (Step 2), and nightmare distress (Step 3) predicting nightmare frequency. Combined, the three variables accounted for a total of 34.4% (adj. R^2) in the variance in nightmare frequency. Results for each step of the regression are presented in Table 3. On Step 1, gender accounted for a small, yet significant, 4% of the variance in nightmare frequency. On Step 2, affective distress accounted for an additional, significant 10% of variance. On Step 2, gender remained marginally significant. After adding nightmare dis-

stress on Step 3, however, gender no longer predicted significant variance in nightmare frequency. On Step 3, nightmare distress accounted for an additional 22% of the variance in nightmare frequency above gender and affective distress. Affective distress remained a significant predictor, though the β was reduced by half after adding nightmare distress.

An exploratory second regression was calculated using gender (Step 1), affective distress (Step 2), and nightmare frequency (Step 3) to predict nightmare distress. Combined, the three variables accounted for a total of 37.8% (adj. R^2) of the variance in nightmare distress. Regression results are presented in Table 4. On Step 1, gender accounted for a significant 8% of the variance in nightmare distress. On Step 2, affective distress contributed an additional, significant 10% of the variance in nightmare distress. On Step 3, nightmare frequency accounted for an additional 21% of the variance in nightmare distress above gender and affective distress. Gender, affective distress, and nightmare frequency all contributed significant unique variance to nightmare distress on Step 3. Similar to the previous regression, after accounting for nightmare frequency on Step 3 the β for affective distress was reduced by half.

4. Discussion

The current findings generally supported the hypothesis. Gender differences in nightmare frequency were mostly accounted for trait-like nightmare distress. Affective distress contributed comparatively little to the gender difference in nightmare frequency relative to nightmare distress. Though affective distress and nightmare distress had their own unique relationships with nightmare frequency, the gender differences in nightmare frequency became almost nonexistent after controlling waking distress about nightmares. Conversely, the exploratory regression predicting nightmare

Table 4. Regression Models Predicting Nightmare Distress

Scale	Step 1			Step 2			Step 3		
	β	t	p	β	t	p	β	t	p
Gender	.28	4.18	.001	.22	3.40	.001	.16	2.78	.006
K6				.33	5.12	.001	.17	2.88	.004
NF							.49	8.37	.001
	$\Delta F=17.44, p<.001$ $\Delta R^2=.08$			$\Delta F=26.19, p<.001$ $\Delta R^2=.10$			$\Delta F=70.06, p<.001$ $\Delta R^2=.21$		

Note: Total $N=221$. NF=Nightmare Frequency; K6=Kessler 6 Psychological Distress Scale. Gender dummy coded (1=male, 2=female).

distress found that even after accounting for affective distress and nightmare frequency, gender remained a significant predictor of nightmare distress. Taken together, these results suggest that nightmare distress is more directly affected by gender than is nightmare frequency, and that nightmare distress, more than affective distress, influences retrospective estimates of nightmare frequency.

Consistent with previous findings, the current results found gender differences in nightmare distress and frequency and affective distress (Saleh et al., 2017; Schredl & Reinhard, 2011). Further, consistent with Kleůzová Kráčmarová and Plháková (2015), affective distress accounted for its own unique variance in nightmare frequency. The current findings were also consistent with the notion that females could be more sensitive to dream stimuli and find their nightmares more salient compared to males (Levin, 1994; Schredl et al., 2019).

Additional examination of whether sensitivity to nightmares reflects a gender-specific socialization effect (Levin & Nielsen, 2007) is needed. In the current study, nightmare distress was separate from affective distress and more powerful in predicting nightmare frequency. Negative affect may nevertheless play an important but lessened role in gender differences in nightmares relative to distressing reactions to nightmares. Research should further examine possible mechanisms by which nightmare distress mediates the nightmare frequency gender difference. For instance, it could be that overall dream recall frequency, which was not assessed in the current study, influenced this finding (i.e., Schredl, 2014).

Another possible avenue would be to examine if differences in self-disclosure, especially disclosure revealing vulnerability, contribute to gender differences in reports of nightmare frequency. This would be consistent with reports that gender differences sometimes result from response style differences rather than differences in the construct of interest (Mewton et al., 2016). Future research could examine measurement invariance for nightmare frequency and tendencies to disclose negative experiences to better determine if the observed gender difference reflects response styles.

Köthe and Pietrowsky (2001) reported differences in ways individuals attempted to manage nightmares with coping and meaning-making strategies particular to nightmares. It might be interesting to understand if these post nightmare strategies attenuate the influence of nightmare distress on the gender difference in nightmare frequency. For instance, it could be that females' tendency to use emotion focused rather than behaviorally oriented strategies to manage effects of nightmares (Levin & Nielsen, 2007) and sensitivity to beliefs that nightmares reflect poorer mental health (c.f., Köthe & Pietrowsky, 2001) could influence their scores on nightmare distress and estimations of nightmare frequency.

There were several limitations to the current research. For instance, self-reports of perceived nightmare frequency were measured rather than actual frequency. Future research could compare if nightmare distress affects retrospective and prospective nightmare frequency differently. Measuring nightmare distress using multiple approaches might also be informative, i.e., retrospective and prospective measures. Similarly, future research could examine an alternative approach to the current study by assessing distress about a single nightmare, or averaged across several recent nightmares, rather than trait-like nightmare distress and frequen-

cy as was assessed in the current study (e.g., Schredl et al., 2003). Additionally, the current study used single-item measures of nightmare frequency and nightmare distress. Future research incorporating more psychometrically sound multiple-item measures is recommended. Also, the use of a relatively brief affective distress measure may have reduced its sensitivity.

It has been suggested that females are exposed to more traumata which might make them vulnerable to experience nightmares (Levin & Nielsen, 2007). This could hold true for more minor traumata and unremembered early childhood adversity as proposed by Nielsen's (2017) Stress Acceleration Hypothesis of nightmares. Future research might examine if nightmare distress continues to affect the gender difference in nightmares outside of trauma and childhood adversity. Finally, replication of the current findings using larger, community-based and clinical samples is needed.

The current study found that nightmare distress largely accounts for the gender difference in retrospective nightmare frequency. Females might partly report more nightmares simply because of their attentiveness to this unpleasant experience (Lithari et al., 2010). However, other mechanisms, such as openness to reporting negative experiences, exposure to trauma, and brain-based explanations should also be explored along with using additional approaches to assess nightmare salience such as attitude toward nightmares.

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