Nightmare Frequency, Nightmare Distress, and Psychopathology in Female Victims of Childhood Maltreatment

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Abstract: This study investigated the relationships between a history of childhood maltreatment, the frequency of disturbing dreams, their associated distress, and the presence of psychopathology in 352 female undergraduate volunteers. Participants completed questionnaires assessing dream recall, bad dream and nightmare frequency, nightmare distress, psychological well-being, and history of childhood trauma. Four groups were investigated based on the type and severity of childhood maltreatments experienced. Women reporting more severe forms of maltreatment reported higher frequencies of disturbing dreams, higher levels of nightmare distress, and greater psychopathology. Results showed that nightmare distress explains frequency of disturbed dreaming beyond the effect of psychopathology and childhood trauma. The results highlight the importance of assessing waking distress associated with disturbing dreams independently from their actual incidence.

Key Words: Child abuse, childhood neglect, dreaming, nightmares, anxiety

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Disturbing dreams (DDs) are vivid dreams marked by intense negative emotions such as fear, anxiety, and anger (Levin and Nielsen, 2007; Zadra et al., 2006). Disturbed dreaming, including nightmares and bad dreams, is among the most frequently reported symptoms exhibited by trauma victims, and dream-related disorders can persist for years and even decades after trauma exposure (Mellman and Hipolito, 2006; Schreuder et al., 2000). The frequency with which trauma-related dream disturbances are experienced over time can vary as a function of the trauma's severity, including the extent of trauma exposure and associated danger (*e.g.*, Duval and Zadra, 2010; Krakow et al., 1995; Wood et al., 1992).

Child abuse constitutes one of the better documented chronic traumas. Its impact on behavioral, psychological, and social variables can appear throughout the individual's development (Cicchetti and Lynch, 1995; Margolin and Gordis, 2000), and children who are victims of abuse and neglect (A/N) are at greater risk of developing psychopathology and associated psychological distress later in life (*e.g.*, Banyard et al., 2001; Medrano et al., 2002; Min et al., 2007). Few studies, however, have investigated the frequency and correlates of DD in victims of childhood A/N. One study (Noll et al., 2006) of 78 women 10 years after disclosure of substantiated abuse during childhood found that they continued to experience significant sleep disturbances (including nightmares), even after controlling for comorbid depression and posttraumatic stress disorder (PTSD). Similarly, college students who report having nightmares "often" are twice as likely as students without nightmares to have experienced childhood traumatic events, including physical and sexual abuse (Agargun et al., 2003). These findings indicate that even when maltreatments cease to occur, some victims of childhood maltreatment continue experiencing dream-related disturbances well into adulthood.

There is increasing awareness that the frequency of DD and the waking distress that bad dreams and nightmares engender (reactions and concerns of the dreamer during waking hours over experiencing disturbed dreaming) are only moderately intercorrelated and that DD-related distress rather than frequency best predicts global waking psychopathology (*e.g.*, Belicki, 1992a; Blagrove et al., 2004; Levin and Nielsen, 2007). DD-related distress may reflect a broader personality disposition characterized by heightened reactive emotional distress (Levin and Nielsen, 2007) and possibly mediates the relationship between DD frequency and waking psychopathology.

The main goal of the present study was to investigate the relationships between a history of childhood maltreatment, the frequency of DD (*i.e.*, bad dreams and nightmares), their associated distress, and the presence of psychopathology. Because different forms of maltreatment frequently co-occur in victims (Higgins and McCabe, 2001), a range of maltreatments were investigated and examined as a function of their severity. Some investigators distinguish emotionally dysphoric dreams that awaken the individual from sleep (nightmares) from negatively toned dreams that do not awaken the dreamer (bad dreams) (Blagrove and Haywood, 2006; Zadra and Donderi, 2000), whereas the term DD has been used to include both (*e.g.*, Levin et al., 2009). The present study focused on bad dreams and nightmares, using the waking criterion to distinguish the two, as well as the more encompassing construct of disturbed dreaming.

The following predictions were tested:

1. The severity of childhood maltreatments will be positively correlated with a) nightmare and bad dream frequency, b) levels of DD associated distress, and c) higher scores on measures of waking psychopathology.
2. DD distress will account for a significant and unique proportion of the variance in reported disturbed dreaming frequency beyond the effect of psychopathology and childhood trauma.

Planned Statistical Analyses

Consistent with findings showing that different forms of maltreatment can coexist in victims (Hazen et al., 2009), preliminary data analyses revealed significant overlap in the types of maltreatments investigated in the present study. Similarly, participants who reported the most severe forms of maltreatments also reported more than one form of abuse or neglect. To assess this complex set of relations, we used a cluster analysis to identify patterns of maltreatment. A cluster analysis, which allows one to systematically identify, organize, and describe behavioral patterns observed within a group of individuals (Borgen and Barnett, 1987), was performed to group participants based on similarities in the types of childhood maltreatment experienced. Specifically, participants' scores on five variables measuring childhood maltreatments (covering psychological, physical, and sexual abuse as well as emotional and physical neglect) were investigated. Using participants' standardized raw scores, homogenous groups were formed according to the Ward ascendant hierarchical clustering algorithm, based on squared-Euclidean distance coefficients (Borgen and Barnett, 1987). The number of groups formed was determined by the percentage of change in the agglomeration coefficients. The final clusters were

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identified using a nonhierarchical typological analysis (*k* means) conducted as a function of the number of groups and the centroid values for each profile in the preceding hierarchical analysis (Hair et al., 1995; Milligan, 1980).

Next, analyses of variance (ANOVAs) were used to compare the different groups based on the severity of childhood A/N on the following variables: nightmare and bad dream frequency, nightmare distress, and psychopathology. Post hoc comparisons were computed to distinguish each level of the independent variable and to test our predictions. Finally, a sequential regression analysis with variables entered in a predetermined hierarchical order was used to determine the specific contribution of each of the variables in predicting DD frequency. These analyses also evaluated the contribution of measures of psychopathology and of nightmare distress beyond trauma effects in explaining the variance in the frequency of DDs.

METHODS

Participants

Participants were undergraduate students recruited as nonpaid volunteers from a series of undergraduate psychology classes. Prospective participants were told that the study concerned variability in dream recall and the relationship between personality measures and dream content. A total of 520 students expressed interest in the study and were provided with the required materials and detailed instructions at the beginning of their class. Of these, 466 (89.6%) completed the questionnaire measures required for the present study. The original sample included 74 male and 392 female participants. Because of the low percentage of male subjects in our sample, their relatively homogenous responses to key questionnaires (*e.g.*, low rates of maltreatment), and the nature of the study, they were excluded from further analyses. Forty women were also excluded on the basis of their age, which was three or more standard deviations above the group's mean age. The final sample thus included 352 female undergraduate students aged between 19 and 24 years (mean [SD], 21.4 [1.2] years).

Procedure

After expressing interest in the study, participants were provided with a packet containing a battery of self-report questionnaires. These included measures of childhood A/N, psychopathology, nightmare distress, and recall of everyday dreams, bad dreams, and nightmares. All materials were completed at home by the participants and the questionnaires were returned to the experimenter within 2 weeks of their reception. The protocol was accepted by the Université de Montréal's Ethics Committee and a signed consent form was obtained from each participant.

Questionnaires

The validated French version of the 28-item Childhood Trauma Questionnaire (CTQ; (Bernstein and Fink, 1998; Bernstein et al., 2003; Paquette et al., 2004) was used to investigate participants' childhood history of A/N. The severity of five types of maltreatment (scales) was assessed as defined in the CTQ: psychological abuse (verbal assault on a child's sense of worth or well-being, or any humiliating, demeaning, or threatening behavior directed toward a child by an older person), physical abuse (bodily assaults on a child by an older person that poses risk of, or result in, injury), sexual abuse (sexual contact or conduct between a child and an older person), emotional neglect (the failure of caretakers to provide a child's basic psychological and emotional needs), and physical neglect (the failure of caretakers to provide a child's basic physical needs). Each type of maltreatment is assessed with five items, each with a 5-point Likert scale ranging from "never true" to "very often true." Severity levels for each type of maltreatment were obtained by summing the scores for each scale item.

The CTQ has been validated in both clinical and nonclinical populations (Bernstein and Fink, 1998; Bernstein et al., 2003; Paivio and Cramer, 2004; Paquette et al., 2004) and demonstrates good test-retest reliability (Bernstein and Fink, 1998; Paquette et al., 2004). Internal consistency of the short version varies between 0.60 and 0.92 (Bernstein and Fink, 1998) and a French-Canadian study obtained similar alphas ranging between 0.68 and 0.91 (Paquette et al., 2004).

The recall frequency of everyday dreams, bad dreams, and nightmares was assessed with items derived from a Sleep and Dream Questionnaire (Zadra and Donderi, 2000; Zadra et al., 2006) that evaluates several dimensions of dream experiences. Dream recall frequency was measured with a question requiring participants to estimate the number of dreams typically recalled per week. Four questions required participants to estimate the number of bad dreams and nightmares experienced during the past year and during the past month. These questions served as the 12- and 1-month retrospective self-report measures of incidence, respectively, and were combined to create a single self-report estimate of DD (total number of bad dreams and nightmares) experienced per month. Consistent with previous work, nightmares were defined as very DDs that wake up the sleeper and bad dreams as very DDs that do not cause the sleeper to awaken.

The French version of the 13-item Nightmare Distress Questionnaire (NDQ; Belicki, 1992b; St-Onge et al., 2009) was used to measure the participants' level of waking distress associated with their DDs. The NDQ is the most widely used global measure of waking nightmare-related distress and was validated on four samples and a total of 540 undergraduate students. Internal consistency coefficients for the NDQ vary between 0.83 and 0.88 (Belicki, 1992b) and an equivalent value of 0.83 was obtained in the present study.

Finally, participants completed two standardized measures of psychological well-being. Trait anxiety was assessed with the French version of the State-Trait Anxiety Inventory (STAI; Gauthier and Bouchard, 1993; Spielberger et al., 1983), whereas the French version of the Beck Depression Inventory (BDI-II; Beck et al., 1996; Bourque and Beaudette, 1982; Byrne and Baron, 1994) was used as to measure depression. Both of these widely used instruments possess excellent psychometric properties, and the validated French versions have been shown to have comparable alphas around 0.90 (Bourque and Beaudette, 1982; Gauthier and Bouchard, 1993).

RESULTS

The two most frequently reported forms of maltreatment were psychological in nature. Specifically, emotional neglect and psychological abuse were reported by 38.6% and 29.2% of the participants, respectively. Conversely, the least frequently reported forms of maltreatment were physical abuse (9%), physical neglect (15.6%), and sexual abuse (17.1%). These results, based on the CTQ cutoff scores (Bernstein and Fink, 1998), are comparable with the CTQ-based findings from another Canadian study of college students (Paivio and Cramer, 2004) and with results from a representative sample of the Quebec population (Paquette et al., 2004).

As expected, a considerable overlap was observed among the five types of maltreatment investigated (*i.e.*, psychological abuse, physical abuse, sexual abuse, emotional neglect, and physical neglect). More than half of the women in the present study (53.1%) reported a history of childhood A/N. Of this group, 26.3% reported having experienced two forms of maltreatment, 12.3% reported having experienced three types of maltreatment, 6.4% reported four maltreatments, and 4.8% reported having experienced all five types of childhood maltreatment.

Subtypes of Abuse Victims

Using the five types of maltreatment and the percentage of change in the agglomeration coefficients, the cluster analysis based on squared-Euclidean distance coefficients yielded four groups

distinguished on the basis of the type and severity of childhood maltreatments experienced. The first group, termed *No Abuse and/or Neglect* (No A/N), included 147 women who obtained the lowest scores on all of the CTQ indices, indicating no significant experience of childhood maltreatment. The second group, termed *Low Abuse and/or Neglect* (Low A/N), included 117 women who obtained low scores on items related to the physical abuse, sexual abuse, and physical neglect dimensions of the CTQ but higher scores on the psychological abuse and emotional neglect scales. The third group, termed *Moderate Abuse and/or Neglect* (Moderate A/N), was composed of 63 participants who obtained average scores on the psychological abuse, emotional neglect, and physical neglect indices but very low scores on the scales of physical and sexual abuse. The last group, labeled *High Abuse and/or Neglect* (High A/N), was composed of 25 women who reported the most severe forms of psychological abuse and physical and emotional neglect, as well as those reporting a history of sexual and/or physical abuse. No significant age differences were found between groups. It is noteworthy that the four groups generated via the cluster analysis are statistically organized according to a hierarchy based on the severity of reported A/N across categories but that such a hierarchy exists naturally in abusive and neglectful families (Paquette et al., 2004).

Recall of Dreams, Bad Dreams, and Nightmares

Participants with no history of maltreatment (No A/N group) reported recalling a mean (SD) of 4.40 (2.51) dreams per week. The mean (SD) number of dreams recalled for the Low, Moderate, and High A/N groups was 4.15 (3.02), 4.23 (2.74), and 5.21 (2.83) respectively. A one-way ANOVA revealed no significant group differences in the estimated number of dreams recalled per week ($F_{3,\ 343}$ = 1,04, $p = 0.076$).

Figure 1 presents the mean number of bad dreams and nightmares experienced per month for each of the four groups. The mean (SD) estimated frequency of bad dreams experienced per month by participants in the No A/N group was 2.18 (3.67). Participants in the Low, Moderate, and High A/N groups reported a mean (SD) of 2.39 (3.34), 2.85 (3.70), and 3.99 (4.55) bad dreams per month, respectively. An ANOVA showed that the group means were significantly different ($F_{3,\ 331} = 3.44$, $p = 0.017$). Scheffe's post hoc comparisons revealed that the High A/N group reported a significantly higher ($p < 0.05$) mean bad dream frequency than did the No A/N group. This difference represents a medium effect size ($\eta^2 = 0.05$) (Cohen, 1988).

The mean (SD) estimated frequency of nightmares experienced per month by participants in the No A/N group was 0.90 (1.70). Participants in the Low, Moderate, and High A/N groups reported a mean (SD) of 0.88 (1.61), 0.99 (1.31), and 2.69 (5.53) nightmares per month, respectively. An ANOVA showed that the group means were significantly different ($F_{3,\ 326} = 2{,}89$, $p = 0.036$, $\eta^2 = 0.05$). Scheffe's post hoc tests revealed that the High A/N group reported a significantly higher mean nightmare frequency than did the No A/N group.

Because the measures of bad dream and nightmare frequency were strongly intercorrelated ($r = 0.62$) and yielded comparable results in our preliminary analyses, they were combined to form a single composite measure of DD for use in a hierarchical multiple regression. Composite scores were obtained by standardizing the component variables, summing them, and using logarithmic transformation to normalize the scores. The means reported herewith correspond to the original nontransformed values. Comparative means for the separate and combined bad dream and nightmare frequencies are included in Figure 1.

Nightmare Distress

Of the four groups, women in the No A/N group reported the lowest level of DD distress (mean [SD], 21.6 [6.1]), whereas the highest distress scores were obtained by the High A/N group (mean [SD], 26.9 [6.8]). Scores for the Low A/N group (mean [SD], 22.8 [6.3]) and Moderate A/N group (mean [SD], 23.5 [6.9]) fell in between. There was a small ($\eta^2 = 0.04$) but significant between-group difference ($F_{3,\ 344} = 5.31$, $p = 0.001$). Post hoc analyses revealed a significant

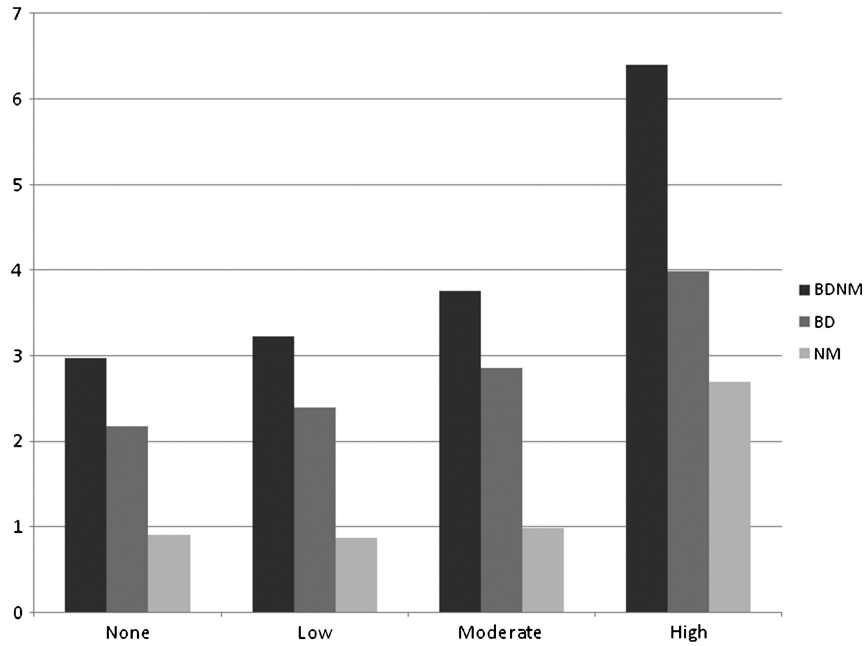

FIGURE 1. Distribution of bad dreams (BD), nightmares (NM), and bad dream + nightmare (BDNM) frequency per month as a function of childhood A/N severity.

TABLE 1. Correlations Between Measures of DD (Bad Dreams and Nightmares), a History of Childhood A/N, Psychopathology, and Nightmare Distress

		A/N					
	DD	Low	Moderate	High	STAI-T	BDI-II	NDQ
DD frequency	1.000						
Low A/N	−0.007	1.000					
Moderate A/N	0.057	−0.330***	1.000				
High A/N	0.163**	−0.202***	−0.135	1.000			
STAI-T	0.289***	0.069	0.223***	0.102	1.000		
BDI-II	0.220***	0.020	0.162**	0.129*	0.625***	1.000	
NDQ	0.418***	−0.008	0.061	0.183***	0.362***	0.285***	1.000

*$p \leq 0.05$.
** $p \leq 0.01$.
*** $p \leq 0.001$.

difference between the High and No A/N groups as well as between the High and Low A/N groups.

Psychopathology

The No A/N group showed the lowest levels of trait anxiety as measured by the STAI (mean [SD], 36.1 [9.3]), followed in order by the Low A/N group (mean [SD], 41.7 [9.2]), the Moderate A/N group (mean [SD], 45.5 [9.6]), and the High A/N group (mean [SD], 44.2 [8.7]). An ANOVA showed that the group means were significantly different ($F_{3,\ 347} = 15.22$, $p = 0.001$). Scheffe's post hoc comparisons revealed that the women in the No A/N group had significantly lower anxiety scores than did the women in each of the three other groups. The corresponding effect size was large ($\eta^2 = 0.13$).

The No A/N group also showed the lowest level of depression as measured by the BDI-II (mean [SD], 7.0 [6.2]), followed in order by the Low A/N group (mean [SD], 9.4 [7.7]), the Moderate A/N group (mean [SD], 11.8 [9.1]), and the High A/N group (mean [SD], 12.5 [9.7]). An ANOVA showed that the group means were significantly different ($F_{3,\ 327} = 7.793$, $p = 0.001$). Scheffe's post hoc comparisons revealed that the depression scores of the women in the No A/N group were significantly lower than those for the Moderate and High A/N groups. The corresponding effect size was medium ($\eta^2 = 0.07$).

Regression Model

A hierarchical multiple regression was used to investigate the mediator effect of measures of psychopathology and nightmare distress on the relation between the severity of childhood A/N reported by our participants and their estimated frequency of DD (*i.e.*, bad dreams and nightmares) per month. The independent variables were entered in the analysis following a three-step process. Correlations between variables included in the sequential regression analysis are presented in Table 1.

The four levels of A/N severity were first entered into the regression equation to predict DD, and their resulting contribution was significant ($p = 0.004$). The presence of childhood maltreatment explained 3.2% of the variance in the women's self-reported frequency of DD. The analysis of the standardized regression coefficients clearly indicates that the presence of severe childhood maltreatment is the best predictor of an increased frequency of bad dreams and nightmares. The low and moderate levels of A/N do not contribute significantly to this prediction. The first step of the regression model is presented in Table 2.

To determine the contribution of psychopathology in the prediction of DD frequency, scores obtained on the STAI-T and BDI-II were added to the model. As seen in Table 2, the contribution of these variables was significant ($p = 0.001$), accounting for 9.5% of the variance in the monthly frequency of DDs. The analysis of the regression coefficients after the addition of the psychopathology variables to the model revealed that only the measure of trait anxiety (but not depression) contributed significantly to the prediction of DD frequency. A history of severe childhood A/N, however, remained a significant predictor of bad dream and nightmare frequency. The second step of the regression model with the added measures of psychopathology is presented in Table 2.

Finally, participant scores on the NDQ were entered in the third step. As seen in Table 2, inclusion of the NDQ resulted in a significant contribution to the model ($p = 0.001$), accounting for

TABLE 2. Frequency of DDs (Bad Dreams and Nightmares) as Predicted by Severity Level of A/N Intensity Level, Psychopathology Measures, and Nightmare Distress

Independent Variables	β Coefficients			Adjusted			
	Step 1	Step 2	Step 3	R^2	ΔR^2	ΔF	F
Low A/N	0.086	0.023	0.020	0.032	0.042	4.54**	4.54**
Moderate A/N	0.125*	0.034	0.031				
High A/N	0.197***	0.141**	0.090				
STAI		0.244***	0.137*	0.095	0.068	11.89***	7.67***
BDI-II		0.048	0.023				
NDQ			0.357***	0.203	0.108	43.02***	14.42***

* $p \leq 0.05$.
** $p \leq 0.01$.
*** $p \leq 0.001$.

20.3% of the variance in DD frequency. With all the variables included in the regression, scores on the NDQ were the best predictor of the women's frequency of disturbed dreaming independently of their history of childhood maltreatment and waking levels of psychopathology. Trait anxiety, however, made a significant unique contribution, accounting for a portion of the variance in DD frequency. A replication of these results using Mediate (Preacher and Hayes, 2008) to specifically test the mediation effect of multiple mediators on a multicategorical independent variable proved to be nonsignificant.

DISCUSSION

The general findings are consistent with the literature showing that dream-related disturbances are among the most persistent and frequently reported symptoms in trauma victims. The present study, however, further clarifies the relationship between disturbed dreaming and a history of maltreatment while taking into account the role of nightmare distress and waking psychopathology.

The results indicate that when compared with women with no history of childhood maltreatment, women reporting more severe forms of maltreatment also report higher frequencies of DD. The four groups of women investigated showed no appreciable differences on measures of everyday dream recall. Thus, the higher frequency of bad dreams and nightmares observed in women reporting more severe forms of childhood maltreatment cannot be attributed to greater levels of overall dream recall. DDs thus comprise a greater proportion of these women's recalled oneiric experiences.

Why disturbed dreaming continues to affect victims of childhood maltreatment years or even decades after its occurrence remains unclear. Some contemporary theories view dreaming as functionally significant, particularly in emotional regulation or adaptation (*e.g.*, Cartwright et al., 1998; Hartmann, 1998; Levin and Nielsen, 2007), and considerable evidence indicates that rapid eye movement sleep (where most dreaming tends to occur) benefits emotional processing and emotional memory consolidation (Diekelmann et al., 2009; Walker and van der Helm, 2009). With regard to trauma-related dreams and nightmares, dreaming may serve a function of emotional adaptation to emotionally salient and traumatic events (Stickgold, 2008). Disturbed dreaming may thus arise and persist when dreaming fails to accomplish its putative function of emotional regulation within sleep. In addition, the repeated recall of idiopathic or trauma-related nightmares may expose victims to their past trauma and sensitize them to trauma memories. This possibility is supported by work (Cuddy and Belicki, 1992) showing that themes of violence, including physical aggressions and negative sexual activities, are overrepresented in the dream content of adult victims of physical and sexual abuse during their childhood as compared with controls.

Our results showing that women reporting more severe forms of maltreatment also experience higher levels of nightmare distress add to previous findings showing that DD-related distress represents a key clinical variable that needs to be assessed separately from and in addition to DD frequency (Belicki, 1992a; Blagrove et al., 2004; Levin and Nielsen, 2007). Although nightmare distress is related to indicators of psychopathology and a history of childhood maltreatment, the findings show that it also predicts and explains a unique and significant portion of the variance in DD frequency.

The significance and persistence of DD-related distress reported by our victims of childhood maltreatment may reflect broader psychological dispositions that have been described in relation to nightmares. One possibility includes increased affect distress (Levin and Nielsen, 2007), or the tendency to experience heightened reactive emotional distress, which can render individuals more sensitive and negatively reactive to many experiences. Another would be having thin or permeable mental boundaries (Hartmann, 1991), a personality dimension referring to the degree of separation or overlap between mental states. People with thin boundaries have been described as being more open, trusting, sensitive, and vulnerable to internal and external intrusions. In all likelihood, harmful childhood experiences contribute to the development or intensification of such psychological dispositions, and our findings support the idea that waking distress in reaction one's DDs is an expression of a broader dispositional tendency to experience heightened distress in response to emotional stimuli (Levin and Nielsen, 2007). However, we did not find evidence suggesting that DD-related distress significantly mediates the relation between a history of childhood maltreatment, psychopathology, and DD frequency.

Taken together, these findings highlight the importance of considering disturbed dreaming as a potentially significant clinical problem, even in relatively well-functioning individuals. Many clinicians remain unaware of the distress that can be engendered by chronic nightmares and that a range of cognitive-behavioral interventions exist to effectively treat DD in and of itself (Halliday, 1987; Krakow and Zadra, 2006). As such, disturbed dreaming and its accompanying distress can be addressed directly and need not be viewed as secondary symptoms.

The fact that the women who volunteered for the present study were university students suggests that, on the whole, they had adapted relatively well to their childhood traumas. These women were able to pursue a long-term academic goal requiring a certain degree of financial investment, sustained cognitive effort, and personal determination. One strong point of the present findings thus lies in having obtained significant results in a nonclinical population. The relationship between frequent disturbed dreaming, nightmare distress, and psychopathology might well be more evident clinical settings or among women with a history of maltreatment with lower levels of socioeconomic status (*e.g.*, unemployed high school dropouts, welfare recipients). It could be predicted that the magnitude of the relations reported here would be greater and more clinically salient in such populations. The results also underscore the utility of examining various types of childhood maltreatment as a function of their severity and overlapping structure and nature.

The present study's results are limited by the absence of PTSD assessment, the reliance on self-report measures, and the use of cross-sectional data. In addition, DD frequency was measured by questionnaire, and although retrospective and prospective indices of DD frequency are strongly correlated, the frequency of DD obtained with questionnaires is often lower than values obtained with prospective logs (*e.g.*, Robert and Zadra, 2008). Studies making use of logs in which participants provide written transcripts of each dream recalled are required to allow for the scoring of prospectively collected dream reports with established coding systems (Domhoff, 1996; Hall and Van de Castle, 1966). The collection of such dream material could help refine our understanding of which dream content variables (*e.g.*, emotions, settings, interpersonal interactions) are most strongly associated with affect distress and how dream content differs across different profiles of maltreatment as well as in comparison with healthy controls. How the incidence of disturbed dreaming and measures of dream content and of waking nightmare distress interact and differentially impact people's psychological well-being remains to be elucidated.

CONCLUSIONS

Our results show that dream-related disturbances constitute highly persistent and prevalent symptoms in relatively high-functioning adult women with a history of childhood maltreatment. Furthermore, when compared with women with no history of childhood maltreatment, women reporting more severe forms of maltreatment also report higher frequencies of DD, higher levels of nightmare distress, and greater waking psychopathology. Although nightmare-related distress does not significantly mediate the link between childhood trauma and the frequency of disturbed dreaming, it constitutes an important clinical variable that not only relates to psychopathology and a history of

maltreatment but also explains a unique portion of the variance in DD frequency. More work is need to better understand why and how disturbed dreaming and its associated distress affect some victims of maltreatment years or even decades after its occurrence and how the nature of these relations evolve over time.

DISCLOSURES

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The authors declare no conflict of interest.

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