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# Self-Structure Functioning and Nightmare Frequency: The Role of Nightmare Proneness

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**Abstract**

Nightmares are distressing dreams that occur across psychological conditions and may reflect underlying vulnerability in the regulation of internal experience rather than symptoms of specific psychiatric disorders. This study examined relationships among self-structure self-functions (regulation and integration of internal experience), nightmare proneness (a cognitive-affective processing style linked to nightmares), and nightmare frequency in 202 university students. Participants completed measures of self-functioning, nightmare proneness, nightmare frequency, trauma symptoms, and dream recall frequency. Regression and bootstrapped indirect association analyses were conducted while statistically controlling trauma symptoms, gender, and dream recall. Impairments in self-functions were strongly associated with nightmare proneness, and nightmare proneness was associated with greater nightmare frequency. Indirect analyses showed that self-functions were related to nightmare frequency primarily through nightmare proneness, whereas the direct association was not significant. These findings suggest that self-structure functioning influences nightmare frequency indirectly via cognitive-affective processing.

**Keywords**: Nightmares; Nightmare proneness; Nightmare frequency; Self-structure functioning; Self-functions; Cognitive-affective processing

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## 1. Introduction

Nightmares are vivid, dysphoric dreams that typically result in awakening and are easily recalled upon waking [1,2]. Although most individuals experience occasional nightmares, a subset report nightmares frequently enough to cause distress, impaired sleep, or daytime dysfunction [3,4]. Even when nightmares do not meet diagnostic criteria for nightmare disorder, they are associated with a range of psychological difficulties and are increasingly conceptualized as a transdiagnostic phenomenon [5]. Nightmares co-occur with posttraumatic stress disorder, mood and anxiety disorders, and other forms of psychological vulnerability, but they also occur in the absence of diagnosable psychopathology [4,6,7]. This has prompted interest in dispositional factors that may increase susceptibility to nightmares beyond specific psychiatric diagnoses.

One such dispositional factor is nightmare proneness, defined as a trait-like tendency to experience nightmares frequently [8]. Nightmare proneness is moderately stable over time and is consistently associated with nightmare frequency across samples [8–11]. Importantly, nightmare proneness is conceptually distinct from nightmare frequency itself. Whereas nightmare frequency reflects how often nightmares occur, nightmare proneness reflects a broader dispositional vulnerability characterized by

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cognitive, affective, and perceptual features that increase the likelihood that dysregulated internal experiences are expressed as nightmares [9,12]. Individuals high in nightmare proneness do not invariably experience frequent nightmares, nor do all individuals with frequent nightmares score high on nightmare proneness, supporting the distinction between propensity and outcome [10].

The nightmare proneness construct was empirically derived from markers of maladjustment and later integrated with existing nightmare theories [8,12–15]. Recent formulations propose that nightmare proneness reflects a pattern of emotional dysregulation, heightened sensitivity to internal states, and vulnerability to dysphoric affect, which together increase the likelihood that poorly integrated internal experiences become concretized in dream imagery [12,16]. In this framework, nightmare proneness does not necessarily represent a causal mechanism but rather an organizing dispositional context within which nightmares are more likely to occur.

A related line of research has emphasized the role of self-structure functioning in nightmare vulnerability. Self-structure broadly refers to the organization and regulation of internal experience, including the capacity to differentiate, integrate, and modulate affective and cognitive states [17–19]. Impairments in self-structure have been associated with emotional dysregulation, identity diffusion, and vulnerability to psychological distress [19,20]. One influential operationalization of self-structure is provided by the Operationalized Psychodynamic Diagnosis (OPD) system, which conceptualizes personality functioning in terms of adaptive self and interpersonal capacities [21]. Within this framework, "self-functions" refer specifically to the capacity to regulate internal experience, maintain a coherent sense of self, and manage affective states. Given their descriptions [21] and relationships between nightmares and affective distress [14], self-functions of the self-structure were focused on for this study rather than relational dimensions of self-structure, which appear to be more peripherally related to nightmares [22].

Previous studies have reported associations between self-structure functioning and nightmares, including findings linking weaker ego strength, thinner psychological boundaries, and self-fragmentation with increased nightmare frequency [23–26]. More recent work has demonstrated robust associations between impairments in self-structure functioning and nightmare proneness [12,16]. However, prior research has not examined whether self-structure functioning is indirectly associated with nightmare frequency through nightmare proneness when both constructs are considered simultaneously.

The present study addresses this gap by examining the relationships among self-structure functioning, nightmare proneness, and nightmare frequency in a sample of young adult university students. Drawing on theoretical models that emphasize the role of internal organization and regulation in nightmare vulnerability, this study tested whether impairments in self-functions are associated with nightmare frequency indirectly through nightmare proneness. Nightmare proneness is conceptualized here as a dispositional vulnerability that organizes how dysregulated internal experiences are processed, thereby increasing the likelihood of nightmares.

Given evidence linking trauma exposure to nightmares, trauma symptoms were included as a covariate to account for this established risk factor [3,4]. Dream recall frequency was also included as a methodological control, as individuals who recall dreams more frequently are more likely to report nightmares independent of other vulnerabilities [7]. Given previous meta-analytic findings of that women report more nightmares than men [27], gender was also included as a possible covariate. Mediation analyses were conducted to examine indirect statistical associations among theoretically ordered constructs, without assuming temporal order or causal effects.

Based on the theoretical framework and prior findings, three hypotheses were tested: **H1:** Impairments in self-functions will be positively associated with nightmare proneness. **H2:** Nightmare proneness will be positively associated with nightmare frequency when self-functions and covariates are accounted for. **H3:** Self-functions will be indirectly associated with nightmare frequency through nightmare proneness.

## 2. Methods

### 2.1 Participants

Participants were 202 undergraduate students enrolled in psychology courses at a university in the United States. Ages ranged from 18 to 26 years (M = 19.25, SD = 1.44). The sample consisted of 169 females, 31 males, and 2 participants who did not report gender. Participants self-identified primarily as Latinx/Hispanic (79.2%), followed by Asian (12.4%), White/Caucasian (5.9%), "other" (1.5%), or preferred not to say (1.0%). Portions of this dataset have been reported elsewhere [28].

### 2.2 Measures

**2.2.1 Nightmare Proneness**. Nightmare proneness was assessed using a 6-item abbreviated version of the Nightmare Proneness Scale [28]. NPS-6 scores correlated strongly with the original NPS, r = .92 [28]. Participants responded to items using a 7-point scale (1 = strongly disagree to 7 = strongly agree), with higher total scores indicating greater nightmare proneness. The NPS-6 has adequate preliminary validity and internal consistency reliability, e.g., .85 [28].

**2.2.2 Self-Functions**. Self-functions were assessed using the 4-item self-functions subscale of the 12-item version of the OPD Structure Questionnaire (OPD-SQS) [29]. The self-functions subscale assesses the capacity to regulate internal experience and maintain a coherent sense of self. Items are rated on a 5-point scale (0 = fully disagree to 4 = fully agree), with higher scores indicating greater impairment. The subscale has demonstrated good internal consistency reliability, e.g., α = .86–.89, and validity in nonclinical samples [29].

**2.2.3 Nightmare Frequency**. Nightmare frequency was measured using the 3-item Nightmare Frequency Index (NFI-3) [30,31]. Items assess how often participants experience nightmares across different time frames. Responses are made on a 5-point scale (0 = strongly disagree to 4 = strongly agree), with higher average scores indicating more frequent nightmares. The NFI-3 has demonstrated adequate validity and internal consistency reliability, e.g., .76–.87 [28,30,31].

**2.2.4 Trauma Symptoms**. Trauma symptoms were assessed using the 4-item Primary Care Posttraumatic Stress Disorder Screen (PC-PTSD) [32]. Participants indicated whether they had experienced trauma-related symptoms in the past month in relation to a distressing event at any point in their lifetime. Items are scored dichotomously (0 = no, 1 = yes), with higher scores reflecting greater trauma symptom endorsement. The PC-PTSD has demonstrated adequate validity and a one-month retest reliability of .83 [32].

**2.2.5 Dream Recall Frequency**. Dream recall frequency was assessed with a single item adapted from Schredl et al. [33], asking participants how often they recalled their dreams over the past several months. Responses were made on a 5-point scale ranging from 0 = never to 4 = three or more times per week. Adequate validity and a two-week retest reliability coefficient of .76 have been reported [33].

### 2.3 Procedure

As part of a larger study, participants were recruited through an undergraduate research participation pool and completed a secure online survey titled "Personality and Dreams" in exchange for nominal course credit. After providing informed consent, participants completed a battery of self-report measures at the time and location of their choosing. No exclusion criteria were applied other than being at least 18 years of age. The study was approved by the Human Subjects Institutional Review Board of California State University, Bakersfield.

### 2.4 Data Analysis

Analyses were conducted using SPSS version 30 (IBM, Armonk, NY, USA). Descriptive statistics and internal consistency reliability estimates (Cronbach's α) were calculated for multi-item measures. Pearson correlation coefficients were used to examine bivariate associations among variables.

To test study hypotheses, a series of regression and mediation analyses were conducted. First, a linear regression examined whether self-functions were associated with nightmare proneness while simultaneously controlling gender, trauma symptoms, and dream recall frequency (H1). Second, a linear regression examined whether nightmare proneness was associated with nightmare frequency when self-functions and covariates were included simultaneously (H2).

Indirect associations were examined using Hayes' PROCESS macro (version 4.0), Model 4 [34]. Self-functions were entered as the predictor (X), nightmare proneness as the mediator (M), and nightmare frequency as the outcome (Y). An alternative model was also examined in which self-functions were the mediator and nightmare proneness was the predictor. Gender, trauma symptoms, and dream recall frequency were included as covariates in all models. Bootstrapping with 10,000 resamples was used to generate bias-corrected 95% confidence intervals for indirect effects. Indirect associations were considered statistically significant when confidence intervals did not include zero. Mediation analyses were interpreted as indirect statistical associations consistent with theoretical ordering, without assuming causal or temporal precedence.

## 3. Results

### 3.1 Descriptive Statistics, Correlations, and Nightmare Frequency Categories

Descriptive statistics, internal consistency estimates, and bivariate correlations among study variables are presented in Table 1. Internal consistency reliability was acceptable to good for all multi-item measures ($\alpha = .806–.857$). Nightmare proneness was positively correlated with nightmare frequency ($r = .38$, $p < .01$). Impairments in self-functions were strongly correlated with nightmare proneness ($r = .65$, $p < .01$) and moderately correlated with nightmare frequency ($r = .32$, $p < .01$). Trauma symptoms were positively correlated with nightmare proneness ($r = .59$, $p < .01$) and nightmare frequency ($r = .28$, $p < .01$). Dream recall frequency was positively correlated with nightmare frequency ($r = .26$, $p < .01$) and showed a small significant correlation with trauma symptoms ($r = .17$, $p < .05$) but was not significantly correlated with nightmare proneness or self-functions.

**Table 1: Descriptive Statistics, Internal Consistency, and Correlations Among Study Variables**

| Variable | 1 | 2 | 3 | 4 | M ± SD | α |
|---|---|---|---|---|---|---|
| 1. Nightmare proneness | | | | | 22.61 ± 8.63 | .848 |
| 2. Nightmare frequency | .38** | | | | 1.14 ± 1.01 | .857 |
| 3. Self-functions | .65** | .32** | | | 7.75 ± 4.41 | .814 |
| 4. Trauma symptoms | .59** | .28** | .54** | | 2.33 ± 1.54 | .806 |
| 5. Dream recall | .03 | .26** | .06 | .17* | 2.06 ± 1.06 | -- |

**Note.** N = 202. Pearson correlation coefficients are shown below the diagonal. α = Cronbach's alpha. Dream recall was assessed with a single item. $p < .05$, $p < .01$.

Nightmare frequency classifications based on NFI-3 average scores are presented in Table 2. Most participants reported rare (48.5%) or occasional (43.6%) nightmares, with 7.9% reporting having nightmares relatively often. These are consistent with community findings in a large sample [3].

Preliminary analyses indicated significant gender differences on all primary study variables except dream recall frequency. Women, relative to men, reported higher levels of nightmare proneness, nightmare frequency, impairments in self-functions, and trauma symptoms ($ts > 2.72$, $ps < .01$). Given these differences and prior evidence of gender variation in nightmare-related phenomena [27], gender was included as a covariate in all subsequent regression and indirect association analyses.

| Table 2: Nightmare frequency interpretations based on NFI-3 average scores | | |
|---|---|---|
| **Score range** | **Interpretation** | **n (%)** |
| 0.00-0.67 | “Rare” | 98 (48.5%) |
| 1.00-2.67 | “Occasional” | 88 (43.6%) |
| 3.00-4.00 | "Often” | 16 (7.9%) |
| Total | | 202 (100%) |
| Note. NFI-3 = Nightmare Frequency Index (3-item). Score interpretation follows previously published suggestions [31]. | | |

### 3.2 Regression Models Predicting Nightmare Proneness and Nightmare Frequency

Linear regression results are presented in Table 3. The model predicting nightmare proneness accounted for a substantial proportion of variance (adjusted $R^2 = .541$), $F = 59.30$, $p < .001$. Nightmare proneness was positively associated with impairments in self-functions ($\beta = .44$, $p < .001$), trauma symptoms ($\beta = .34$, $p < .001$), and gender ($\beta = .19$, $p < .001$). Dream recall frequency was not significantly associated with nightmare proneness ($\beta = -.07$, $p = .136$).

The model predicting nightmare frequency accounted for a smaller but significant proportion of variance ($R^2 = .208$), $F = 11.42$, $p < .0001$. Nightmare frequency was positively associated with dream recall frequency ($\beta = .24$, $p < .001$) and nightmare proneness ($\beta = .32$, $p < .001$). Self-functions ($\beta = .11$, $p = .213$), trauma symptoms ($\beta = -.02$, $p = .770$), and gender ($\beta = .05$, $p = .482$) were not significantly associated with nightmare frequency when other predictors were included.

| Table 3: Linear Regression Models Predicting Nightmare Proneness and Nightmare Frequency | | | | |
|---|---|---|---|---|
| **Predictor** | **Nightmare Proneness** | | **Nightmare Frequency** | |
| | β | p | β | p |
| Gender (1=male, 2=female) | .19 | <.001 | .05 | .482 |
| Trauma symptoms | .34 | <.001 | –.02 | .770 |
| Dream recall | –.07 | .136 | .24 | <.001 |
| Self-functions | .44 | <.001 | .11 | .213 |
| Nightmare proneness | | | .32 | <.001 |
| | $R^2 = .541$ (adj.), $F = 59.30$, $p < .001$ | | $R^2 = .208$, $F = 11.42$, $p < .0001$ | |

### 3.3 Indirect Association of Self-Functions with Nightmare Frequency Through Nightmare Proneness

Indirect associations between self-functions and nightmare frequency through nightmare proneness were examined using bootstrapped analyses (Table 4). The indirect association of self-functions with nightmare frequency through nightmare proneness was statistically significant ($\beta = .14$; 95% CI 0.052, 0.238). In contrast, the direct association of self-functions with nightmare frequency was not statistically significant when controlling nightmare proneness ($\beta = .11$; 95% CI −0.014, 0.063). Together, these findings indicate that impairments in self-functions were associated with higher nightmare frequency primarily through their association with greater nightmare proneness, independent of trauma symptoms, gender, and dream recall frequency.

In the alternative model, the direct association of nightmare proneness with nightmare frequency was statistically significant ($\beta = .31$; 95% CI 0.017, 0.057). The indirect association of nightmare proneness with nightmare frequency through self-functions was not statistically significant ($\beta = .07$; 95% CI −0.041, 0.176). In other words, it seems less likely that nightmare proneness relates to nightmares through

self-functions and more likely that self-functions relate to nightmares indirectly through nightmare proneness

| **Table 4: Indirect Association of Self-Functions with Nightmare Frequency Through Nightmare Proneness** | | |
|---|---|---|
| **Effect** | **β** | **95% CI** |
| Indirect (Self-functions → Nightmare proneness → Nightmare frequency) | .14 | 0.052, 0.238 |
| Direct (Self-functions → Nightmare frequency) | .11 | –0.014, 0.063 |

## 4. Discussion

The present findings clarify how self-structure functioning relates to nightmare frequency by identifying nightmare proneness as a pathway linking these constructs. Consistent with the hypotheses, rather than exerting a direct association with nightmare occurrence, impairments in self-functions were associated with greater nightmare frequency primarily through their relationship with nightmare proneness. This supports a model in which structural vulnerabilities in the regulation and coherence of internal experience contribute to a way of processing inner experiences that increases susceptibility to nightmares, rather than directly producing nightmares themselves.

By formally testing an indirect pathway linking self-structure functioning to nightmare frequency through nightmare proneness, the present study extends prior work linking aspects of internal organization, emotional regulation, and coherence of self-experience to nightmares [23–26]. Within the OPD framework, self-functions reflect the capacity to regulate internal states, maintain a cohesive sense of self, and differentiate affective experience [21]. Impairments in these capacities may increase susceptibility to poorly integrated internal experiences that are more likely to be experienced as dysphoric or overwhelming. Nightmare proneness amplifies this dispositional context, organizing how such internal experiences are cognitively and affectively processed and increasing the likelihood that they are expressed as nightmares.

Nightmare proneness showed a moderate significant association with nightmare frequency, consistent with previous findings [8–11], supporting the assertion that nightmare proneness reflects a propensity toward frequent nightmares rather than nightmares per se [10]. The present results extend the nightmare proneness literature by showing that nightmare proneness statistically accounts for the association between self-function impairments and nightmare frequency when relevant covariates are considered. Moreover, this pattern suggests that self-structure impairments do not directly result in more frequent nightmares; rather, they are associated with a dispositional style, indexed by nightmare proneness, that increases the likelihood that dysregulated internal experiences manifest as nightmares.

Notably, trauma symptoms were independently associated with nightmare proneness but were not associated with nightmare frequency once nightmare proneness and dream recall were included in the model. This finding is consistent with conceptualizations of adverse experiences as an etiological contributor to vulnerability rather than a proximal determinant of idiopathic nightmare occurrence [35]. Trauma exposure may shape self-structure functioning and dispositional tendencies such as nightmare proneness, which in turn relate more directly to nightmare frequency [12]. The inclusion of trauma as a covariate strengthens confidence that the observed indirect association between self-functions and nightmare frequency through nightmare proneness in the current data is not simply attributable to trauma-related distress.

Dream recall frequency was independently associated with nightmare frequency but not with nightmare proneness, suggesting its role as a possible methodological confound in nightmare research rather than dispositional factor. Individuals who recall dreams more frequently may have a greater focus on dreams and thus opportunity to report nightmares, independent of underlying vulnerability. In the current

findings, controlling dream recall allowed clearer differentiation between cognitive-affective risk (nightmare proneness) and a tendency to report dreams, in general.

Gender differences were observed in preliminary analyses for several study variables, consistent with prior research documenting higher nightmare frequency and related vulnerabilities among women [26]. However, gender did not independently predict nightmare frequency in the multivariable model, suggesting that gender differences operate through associated dispositional and experiential factors rather than exerting a direct effect on nightmare occurrence. Similar findings have been observed previously [36].

The present findings have several theoretical implications. First, they support the conceptualization of nightmare proneness as a meaningful construct that links underlying self-structure functioning to nightmare outcomes. Second, they suggest that self-functions represent a dispositional vulnerability that exerts influence primarily through organizing processing of internal experience rather than direct association with nightmares. This distinction clarifies the respective roles of structural functioning and possible concretizing processing tendencies in nightmare vulnerability [16] and avoids conflating internal organization with nightmare frequency itself.

From a clinical perspective, the results suggest that interventions targeting nightmares may benefit from attending to dispositional and structural factors rather than focusing exclusively on nightmare content or frequency, though such approaches have also found some success [37]. Approaches aimed at improving regulation and integration of internal experience – such as interventions that enhance emotional differentiation, self-reflection, and coherence of self-experience – may indirectly reduce nightmare frequency by altering dispositional vulnerability. Nightmare proneness may thus represent a useful clinical marker for identifying individuals who are more likely to experience persistent nightmares and who may benefit from interventions addressing broader patterns of internal regulation.

Several limitations should be considered when interpreting the present findings. The cross-sectional, self-report design precludes conclusions about temporal ordering or causality. Longitudinal research is needed to clarify relationships among self-structure functioning, nightmare proneness, and nightmare frequency. The predominantly student, female, and Latinx sample may limit generalizability. Replication in more diverse and clinical populations would be of value. Prospective diary methods may further strengthen future research by reducing retrospective bias and capturing within-person variability in nightmare experiences [38]. Finally, examining physiological hyperarousal as a component of nightmare proneness may help clarify its relationship with self-functioning, as both may reflect shared underlying regulatory processes [39].

Despite these limitations, the present study contributes to the growing literature on nightmare vulnerability by clarifying how self-structure functioning relates to nightmare frequency through dispositional proneness. By distinguishing between structural vulnerability, dispositional organization, and nightmare outcomes, the findings provide a more nuanced understanding of the pathways through which internal functioning is associated with nightmares. Future research employing longitudinal designs and multi-method assessment may further elucidate these relationships and inform targeted interventions for individuals experiencing frequent nightmares.

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**Conflict of Interests**

The author declares no conflicts of interest.

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