

Why Lose Sleep? Worry Content and Sleep Disturbance Attributed to Worry

Alexandra Soto¹, William E. Kelly ¹

¹ Department of Psychology, University of the Incarnate Word, San Antonio, Texas, USA

Abstract

Worry is associated with sleep disturbance, but less is known about whether the content of worry contributes to this relationship. This study examined associations between five domains of everyday worry and sleep disturbance ascribed to worry (SAW) among 200 university students. Participants completed measures of worry domains, SAW, and perceived stress. Consistent with expectations, all five worry domains were significantly associated with SAW. Hierarchical regression indicated that worry domains collectively accounted for significant variability in SAW beyond perceived stress. When the worry domains were considered simultaneously, relationship worry was the only domain uniquely associated with SAW. Findings suggest that the content of worry may contribute to understanding worry-related sleep disturbance beyond general perceived stress. Future research should examine whether particular worry contents, especially interpersonal concerns, are differentially associated with subsequent sleep disturbance.

Keywords: Worry; Sleep disturbance; Worry content; Perceived stress; Relationship worry; University students

Received: 2026-10-05
Accepted: 2026-10-25

Correspondence: William E. Kelly

Cite as: Soto A, Kelly WE. Why lose sleep? Worry content and sleep disturbance attributed to worry. JIS. 2026;1(3):e011012. Doi: 10.65030/jis.011012

1. Introduction

Worry is a repetitive cognitive process involving thoughts about potentially negative future events [1]. Although worry is a common experience, more worry has been associated with poorer psychological functioning and well-being [2,3]. Worry also appears particularly relevant to sleep. A systematic review and meta-analysis found that greater worry and rumination were associated with poorer sleep quality, shorter sleep duration, and longer sleep-onset latency in nonclinical populations [4]. Thus, repetitive negative thinking may be particularly disruptive when it interferes with the ability to initiate or maintain sleep.

One approach to examining the worry-sleep relationship focuses specifically on sleep disturbance ascribed to worry (SAW), or the extent to which individuals attribute difficulties initiating or maintaining sleep to worrying thoughts [5]. SAW has been associated with shorter sleep duration and other indicators of sleep disturbance [6], as well as insomnia, fatigue, and daytime sleepiness beyond general trait worry and anxiety [7]. Daily-process research similarly indicates that worry is associated with subsequent sleep difficulties and next-day impairment [8]. Taken together, existing findings provide substantial evidence that greater worry is associated with greater sleep disturbance. However, considerably less is known about whether the content of worry is relevant to this association.

Worry can occur across different areas of life. The Worry Domains Questionnaire (WDQ) [9] assesses five common domains of everyday worry: relationships, lack of confidence, an aimless future, work, and finances. Research using the WDQ has found that worry domains are differentially associated with aspects of psychological functioning and well-being [3,10,11]. More recent research also supports the relevance of considering what university students worry about rather than worry only as a global construct. Davey et al. [12], for example, found academic work, intimate relationships, and concerns about how one is evaluated by others to be prominent sources

of worry among university students. These findings suggest that the content of worry may provide information beyond an individual's general tendency to worry.

There is some evidence that worry content is relevant to sleep. Among college students, greater worry across several domains has been associated with shorter sleep duration [13]. However, associations between particular worry domains and sleep disturbance may also reflect broader perceived stress. Stress is associated with worry [14]. Stress, worry, and sleep difficulties commonly co-occur among university students [15]. Consequently, associations between specific worry domains and SAW among students may partly reflect a more general stress burden rather than something distinctive about the content of worry itself. Examining worry domains after accounting for perceived stress provides a way to evaluate whether worry content contributes additional information to understanding sleep disturbance attributed specifically to worry.

The present study examined relationships between five domains of worry—relationships, lack of confidence, aimless future, work, and finances—and sleep disturbance ascribed to worry among university students. Based on previous research linking worry content with sleep disturbance [13], it was hypothesized that greater worry across these domains would be associated with greater SAW. We further explored whether the worry domains collectively accounted for variability in SAW beyond perceived stress and whether particular domains showed unique associations with SAW when considered simultaneously.

2. Method

2.1 Participants

Participants were 200 students (131 women, 69 men) recruited from undergraduate and graduate psychology courses at a university in the United States. Participants ranged in age from 18 to 54 years ($M = 25.05$, $SD = 7.02$). Most participants identified as White/Caucasian ($n = 125$; 62.5%), followed by Asian ($n = 26$; 13.0%), Latinx ($n = 24$; 12.0%), African American/Black ($n = 14$; 7.0%), and other ($n = 11$; 5.5%).

2.2 Measures

2.2.1 Worry Domains Questionnaire

The 25-item Worry Domains Questionnaire (WDQ) [9] assesses nonpathological worry across five domains: relationships, lack of confidence, aimless future, work, and financial. Following the stem, “Describe how much you worry about the following,” participants rated items (e.g., “that my money will run out”) from 1 (not at all) to 5 (extremely). Higher scores indicate more worry. Adequate 1-month test-retest reliability has been reported for the WDQ total score ($r = .85$) [16], and internal consistency estimates for the subscales have ranged from .73 to .86 [11]. Evidence supporting the validity of the WDQ has also been reported [9,16].

2.2.2 Sleep Disturbance Ascribed to Worry Scale

Sleep disturbance ascribed to worry (SAW) was measured using the 5-item Sleep Disturbance Ascribed to Worry Scale [5]. Items (e.g., “How often do you awake from sleep worrying?”) are rated from 0 (never) to 10 (very often), with higher scores indicating greater sleep disturbance attributed to worrying thoughts. The SAW has demonstrated adequate 1-month test-retest reliability ($r = .83$) [17], and evidence supporting its validity has been reported [6,7].

2.2.3 Perceived Stress Scale

Perceived stress was measured using the 4-item version of the Perceived Stress Scale (PSS) [18]. Participants rated how often they experienced each item during the previous month (e.g., “How often have you felt that you were unable to control the important things in your life?”) using a 5-point scale ranging from 1 (never) to 5 (very often). Higher scores indicate greater perceived stress. Two-month test-retest reliability has been modest ($r = .55$), consistent with the state-like nature of perceived stress [18]. Evidence supporting the validity of the PSS has been reported [18,19].

2.3 Procedure

After providing informed consent, participants completed the questionnaires during regularly scheduled class meetings using paper-and-pencil measures. Participation was voluntary, and students received a small amount of extra course credit for participating. There were no exclusion criteria. The study was approved by the university research ethics board.

2.4 Statistical Analysis

Analyses were conducted using SPSS Version 30 for Windows (IBM Corp., Armonk, NY, USA). Descriptive statistics and coefficient alpha estimates were calculated for all study variables. Pearson correlations were used to examine bivariate associations between SAW and each worry domain. To examine whether worry content accounted for variability in SAW beyond perceived stress, a hierarchical multiple regression was conducted with SAW as the criterion. Perceived stress was entered at Step 1, followed by the five WDQ domains at Step 2. Statistical significance was evaluated using a two-tailed alpha level of .05.

3. Results

Preliminary analyses indicated that age was not significantly associated with any primary study variable, $r_s < .13$, $p_s > .081$. Women and men also did not significantly differ on the primary variables, $t_s < 1.76$, $p_s > .080$. Skewness and kurtosis values were within acceptable ranges (absolute skewness < 1.05 ; absolute kurtosis < 0.53). Descriptive statistics, internal consistency estimates, and correlations with SAW are presented in Table 1. Consistent with the hypothesis, SAW was significantly positively associated with all five worry domains, with the strongest association observed for relationship worry (Table 1).

Table 1: Descriptive Statistics and Associations with SAW				
Scale	r	M	SD	α
1. SAW		17.15	11.11	.870
2. Perceived stress	.48	10.31	3.12	.737
3. WDQ total	.43	52.21	18.56	.934
4. Relationships	.43	9.97	4.61	.816
5. Lack of confidence	.31	10.66	5.07	.810
6. Aimless future	.36	10.67	4.50	.823
7. Work	.28	10.43	4.01	.802
8. Financial	.35	11.71	4.41	.828
Note: N = 200. SAW = Sleep Disturbance Ascribed to Worry; WDQ = Worry Domains Questionnaire. All correlations significant at $p < .001$ (two-tailed).				

As shown in Table 2, results of the exploratory hierarchical regression found that perceived stress significantly accounted for variability in SAW at Step 1. The five worry domains collectively accounted for significant additional variability in SAW at Step 2. In the final model, perceived stress remained significant, and relationship worry was the only worry domain uniquely associated with SAW.

Table 2: Hierarchical Regression Predicting Sleep Disturbance Ascribed to Worry						
	Step 1			Step 2		
	β	t	p	β	t	p
Perceived stress	.48	7.74	<.001	.37	4.80	<.001
Relationship worry				.30	2.78	.006
Lack of confidence worry				-.01	0.13	.901
Aimless future worry				-.16	1.32	.190
Work worry				.02	0.28	.779
Financial worry				.11	1.48	.140
	$\Delta R^2 = .234$, $F = 59.85$, $p < .001$			$\Delta R^2 = .058$, $F = 3.10$, $p = .010$		

4. Discussion

The present study examined whether the content of everyday worry was associated with SAW among university students. Consistent with the hypothesis, all five worry domains – relationships, lack of confidence, aimless future, work, and finances – were significantly associated with SAW. This finding extends previous research linking worry content with reduced sleep duration [13] and is consistent with broader evidence that worry is associated with sleep difficulties [4,8]. Thus, worry related to several areas of everyday life appears relevant to the extent to which individuals experience sleep disturbance that they attribute to worrying.

The exploratory analyses provide a more differentiated picture. Collectively, the worry domains accounted for significant variability in SAW beyond perceived stress. This suggests that the association between worry and sleep disturbance cannot be understood entirely as a reflection of a broader experience of stress. However, when perceived stress and the shared variance among worry domains were considered simultaneously, relationship worry was the only worry domain uniquely associated with SAW. Although this finding requires replication, it raises the possibility that interpersonal concerns may be particularly likely to remain cognitively salient when individuals are attempting to sleep.

There are several possible reasons interpersonal worry might be relevant in this context. Relationship concerns frequently involve uncertainty about other people's thoughts, feelings, or behavior and may not be immediately resolvable through individual action. Worry has also been linked with interpersonal processes outside the sleep context [20]. Future research could examine whether characteristics such as interpersonal uncertainty, unresolved social concerns, or repetitive thinking about relationships help explain why relationship worry showed a unique

association with SAW. Future research might also examine possible influences of attachment style in these relationships.

The findings should be considered in light of several limitations. The cross-sectional design does not establish directionality, and SAW assesses sleep disturbance attributed by respondents to their own worrying rather than objectively measured sleep disturbance. The sample was also limited to students from a single university, which may restrict generalizability. In addition, because the worry domains overlap substantially, their unique regression coefficients should not be interpreted as indicating that the other domains are unimportant to sleep; each was significantly associated with SAW at the bivariate level. Additional research is needed using prospective or diary designs to examine whether fluctuations in particular worry contents predict subsequent sleep disturbance. Such designs might also examine whether recording or scheduling worries influence the relationship between worry content and SAW [21].

Overall, the findings support an association between the content of everyday worry and sleep disturbance ascribed to worry and suggest that worry domains contribute information beyond perceived stress. Although several forms of worry were associated with SAW, relationship worry emerged as its only unique worry-domain correlate. These findings suggest that understanding what people worry about, in addition to how much stress or worry they experience, may provide a more differentiated understanding of worry-related sleep disturbance.

5. References

1. Sweeny K, Karaman OT. Worry: Friend or foe? In: Jacobsen MH, editor. *Dark emotions: Difficult emotional experiences in social and everyday life*. London: Routledge; 2025. p. 54–68.
2. Kircanski K, Thompson RJ, Sorenson JE, Sherdell L, Gotlib IH. Rumination and worry in daily life: Examining the naturalistic validity of theoretical constructs. *Clin Psychol Sci*. 2015;3(6):926-939. Doi: 10.1177/2167702614566603
3. Paolini L, Yanez AP, Kelly WE. An examination of worry and life satisfaction among college students. *Individ Differ Res*. 2006;4(5):331-339. Doi: 10.65030/idr.04030
4. Clancy F, Prestwich A, Caperon L, Tsipa A, O'Connor DB. The association between worry and rumination with sleep in non-clinical populations: A systematic review and meta-analysis. *Health Psychol Rev*. 2020;14(4):427-448. Doi: 10.1080/17437199.2019.1700819
5. Kelly WE. Worry and sleep length revisited: Worry, sleep length, and sleep disturbance ascribed to worry. *J Genet Psychol*. 2002;163(3):296-304. Doi: 10.1080/00221320209598685
6. Kelly WE. Some correlates of sleep disturbance ascribed to worry. *Individ Differ Res*. 2003;1(2):137-146. Doi: 10.65030/idr.01012
7. Kelly WE. Sleep disturbance attributed to worry and its association with insomnia, fatigue, and daytime sleepiness beyond trait worry and anxiety in college students. *Individ Differ Res*. 2017;15:e15004. Doi: 10.65030/idr.15004
8. McGowan SK, Behar E, Luhmann M. Examining the relationship between worry and sleep: A daily process approach. *Behav Ther*. 2016;47(4):460-473. Doi: 10.1016/j.beth.2015.12.003
9. Tallis F, Eysenck MW, Mathews A. A questionnaire for the measurement of nonpathological worry. *Pers Individ Dif*. 1992;13(2):161-168. Doi: 10.1016/0191-8869(92)90038-Q
10. Kelly WE, Markos PA, Ashley L. An investigation of the relationship between worry and alcohol use. *J Worry Affect Exp*. 2005;1(3):89-97.
11. Bai K. Self-actualization predicts lower everyday worry: A positive psychology perspective. *Individ Differ Res*. 2015;13:e13005. Doi: 10.65030/idr.13005
12. Davey GCL, Meeten F, Field AP. What's worrying our students? Increasing worry levels over two decades and a new measure of student worry frequency and domains. *Cognit Ther Res*. 2022;46(2):406-419. Doi: 10.1007/s10608-021-10270-0
13. Kelly WE. Worry content associated with decreased sleep-length among college students. *Coll Stud J*. 2003;37(1):93-96.
14. Kelly WE, Daughtry D. The role of recent stress in the relationship between worry and self-efficacy: Path analysis of a mediation model. *Psychol J*. 2011;8(4):143-148.
15. Ulrich AK, Full KM, Cheng B, Gravagna K, Nederhoff D, Basta NE. Stress, anxiety, and sleep among college and university students during the COVID-19 pandemic. *J Am Coll Health*. 2023;71(5):1323-1327. Doi: 10.1080/07448481.2021.1928143
16. Stöber J. Reliability and validity of two widely-used worry questionnaires: Self-report and self-peer convergence. *Pers Individ Dif*. 1998;24(6):887-890. Doi: 10.1016/S0191-8869(97)00232-8

17. Kelly WE, Forbes A. Temporal stability of the sleep disturbance ascribed to worry scale. *Percept Mot Skills*. 2004;99(2):628. Doi: 10.2466/pms.99.2.628-628
18. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav*. 1983;24(4):385-396. Doi: 10.2307/2136404
19. Lee EH. Review of the psychometric evidence of the Perceived Stress Scale. *Asian Nurs Res*. 2012;6(4):121-127. Doi: 10.1016/j.anr.2012.08.004
20. Parkinson B, Simons G, Niven K. Sharing concerns: Interpersonal worry regulation in romantic couples. *Emotion*. 2016;16(4):449-458. Doi: 10.1037/a0040112
21. Martz D, Curtin L, Whitaker C, Hamer M, Konrad K. Evaluation of written versus mental "worry-time" to treat worry. *Individ Differ Res*. 2015;13:e13003. Doi: 10.65030/idr.13003