FOMO Predicts Bedtime Procrastination and Poorer Sleep Quality via Rumination

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Objectives: Bedtime procrastination is linked to compromised sleep quality and is an increasingly common phenomenon affecting sleep and well-being among young adults. Although research effort has been devoted to studying the predictors of bedtime procrastination, fear of missing out (FOMO), which is an emotion common among young adults, is rarely studied. Therefore, in the present study, we examined a hypothesized serial mediation model. The model hypothesized that FOMO would predict bedtime procrastination via rumination, and that bedtime procrastination would subsequently predict poorer sleep quality. **Methods:** We recruited 213 participants (aged between 17 and 30) to complete a series of questionnaires that measured FOMO, bedtime procrastination, sleep quality, and rumination. We performed conditional process analyses with SPSS PROCESS Macro (Model 6) to test the hypothesized model. **Results:** We found support for the hypothesis, where FOMO predicted rumination, which in turn, predicted bedtime procrastination and subsequently poor sleep quality. **Conclusion:** The findings shed light on the underlying mechanism and sleep-related outcome of the association between FOMO and bedtime procrastination. They provided the foundation for further research to develop interventions targeted at reducing bedtime procrastination and improving sleep quality.

Keywords: Bedtime Procrastination, Fear of Missing Out, Rumination, Sleep Quality.

Poor sleep quality is typical among college students and is detrimental to their physical and mental health.[1] It is associated with the feeling of fatigue[2] and difficulties sustaining attention and regulating emotions.[3] Bedtime procrastination, which is an intended delay in bedtime without valid external causes,[4] is one of the common predictors of poor sleep quality.[5,6]

Because bedtime procrastination is an example of maladaptive self-regulatory behaviors,[4] a line of research has examined various behavioral factors contributing to the procrastination of bedtime, such as daily online streaming and use of social media pre-bedtime.[7] However, as behavioral factors are often driven by psychological factors,[8] another line of research has examined psychological factors associated with bedtime procrastination, such as self-regulatory resources.[8] Fear-of-missing-out (FOMO) on the pleasant experience that others may be having[9] is a psychological variable

associated with the dysregulation of behaviors.[10] Despite being rarely studied in the context of bedtime procrastination, FOMO could be a potential predictor of bedtime procrastination since it may lead to disruption in self-regulatory behaviors, which could include procrastination in bedtime.

There is indirect evidence linking FOMO to bedtime procrastination. People experience FOMO when their need for relatedness is not satisfied.[9] As a response to the feeling of FOMO, they feel compelled to stay up-to-date on the lives of others to avoid being left out.[9] Such an attempt might happen more frequently and intensely in the evening before bedtime when people are taking a break from work and school.[5] Therefore, there is reason to expect that FOMO may result in people loosening their self-regulation and spending more time satisfying social needs, especially in the evening, and eventually delaying their bedtime.

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However, the limited studies that attempted to provide direct evidence of the association between FOMO and bedtime procrastination did not support the prediction. Zhang et al.[11] conducted a longitudinal study examining the effects of problematic smartphone use and FOMO on both bedtime procrastination and sleep duration among Chinese adolescents. They found that baseline FOMO did not significantly predict whether a person procrastinated their bedtime 6 months later. Although not supporting the prediction, Zhang et al.'s[11] finding is not surprising because FOMO, a construct low in temporal stability,[9] is not a suitable variable to predict bedtime-related behaviors 6 months later. What remains unanswered is whether FOMO can directly predict concurrent bedtime procrastination. Further, Zhang et al.[11] speculated that FOMO might not be directly associated with bedtime procrastination. Rather, FOMO might affect bedtime procrastination indirectly via a mechanism. As such, it is important to examine the mechanism linking FOMO indirectly to bedtime procrastination.

People who experience FOMO are concerned about negative social evaluation.[12] They are anxiously attached, experience insecurity in social relationships, and try to seek social reassurance.[13] Therefore, they always ruminate about social interactions, constantly engaging in repetitive, negative thoughts to cope with unpleasant feelings about social relationships.[14] Such a coping mechanism of rumination is maladaptive as it engages ruminators in frequent, repetitive negative thoughts, which do not generate effective solutions.[15] Also, when coping strategies are developed, ruminators may feel that these strategies are not effective in meeting their social needs. This drives the individual to feel more distressed about their unresolved problems.[16,17] Coupled with a tendency to be attracted to short-term rewards than long-term benefits,[18] ruminators are trapped in a vicious cycle of engaging in inappropriate coping strategies and experiencing prolonged stress. When such a cycle occurs nearing bedtime where self-control is low,[19] a person who ruminates more would struggle to break the cycle, as compared to their counterparts who ruminate less, and therefore, would end up going to bed later than intended.

Therefore, in the present study, we aimed to examine rumination as the mechanism linking FOMO indirectly to bedtime procrastination and sleep quality. We predicted that FOMO would predict rumination, which would subsequently predict bedtime procrastination. Bedtime procrastination would then predict poor sleep quality. Figure 1 illustrates the conceptual framework which is based on the literature review and the serial mediation model tested in the study.

Figure 1
Conceptual Framework based on the Literature Review
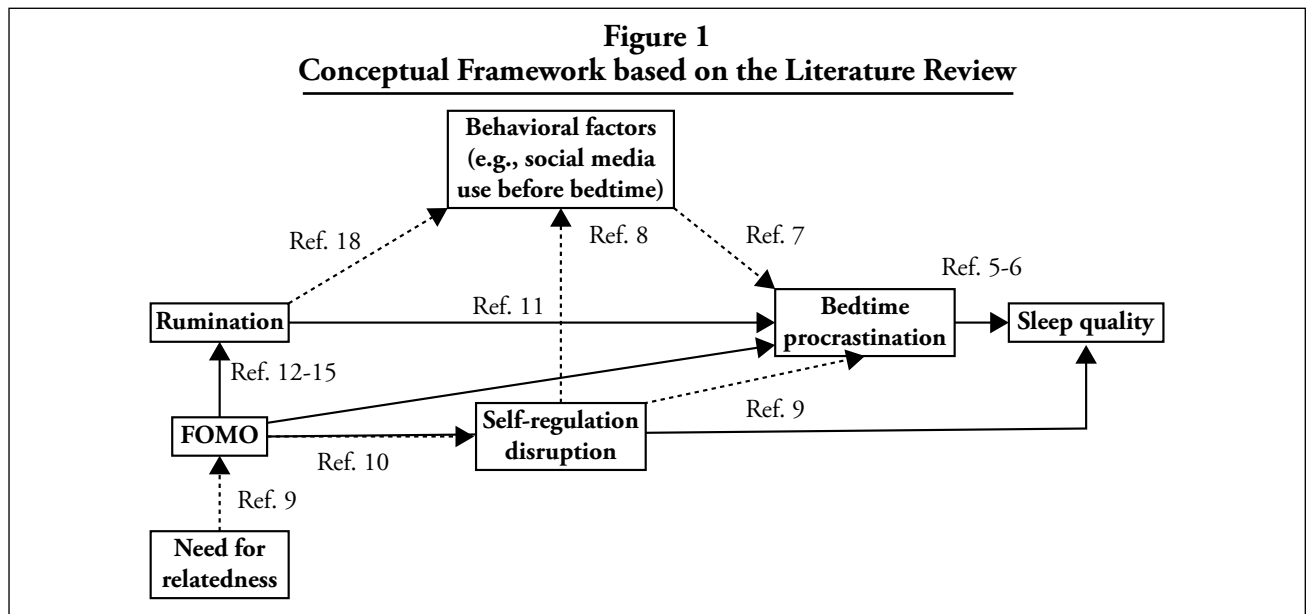
METHODS
Participants and Design

We recruited a sample of 213 participants who met the following inclusion criteria: (1) those who have not been clinically diagnosed with any forms of sleep conditions by a medical professional; (2) those who do

not do nightshift work; and (3) between the ages of 17 and 30. We restricted the age range because young adults are more susceptible to bedtime procrastination.[20] We initially recruited a total of 411 participants, a sample size which met the recommended sample size using the G*Power analysis (version 3.1.9.4; effect size of f^2 = 0.15 and power of 0.95). Of these 411 participants, 94 of which were recruited from the institution's research participant pool and were awarded one research credit in fulfilment of a requirement of their Psychology subjects. The remaining participants were recruited through social media platforms with no compensation. Of all the 411 participants, we removed 198 participants as they did not meet the criteria for the study or did not complete the survey. This left the sample size for data analyses 213 (women = 171, men = 37, nonbinary/third genders = 3, prefer not to say = 2).

We employed correlational design. FOMO was the predictor, sleep quality was the outcome variable, and rumination and bedtime procrastination were the mediating variables.

Measures

Screening items: Participants completed 2 basic screening questions to check if they fulfilled the inclusion criteria. These questions were: *My current employment requires me to do nightshift work?* and *I am clinically diagnosed with at least a form of sleep condition(s) by a professional?* that were in a response format of yes or no.

Fear of missing out (FOMO): We assessed FOMO using the 10-item FOMO scale,[9] which measures the level of anxiety that one experiences from missing social events (e.g., in-person, online) occurring within their social circle. Participants rated how well each item reflected their own experience in the past month on a 5-point rating scale from 1 (*not at all true of me*) to 5 (*extremely true of me*). Examples of the items include *I got anxious whenever I did not know what my friends were up to* and *Whenever I missed out on a planned get-together it bothered me.* The FOMO scale had a high Cronbach's alpha and good internal consistency in other studies.[21] In the present study, the scale also demonstrated high internal consistency (α = .85). The scores on all items were summed up to form FOMO scores, with higher scores indicating a higher level of FOMO.

Rumination questionnaire: We used the Rumination-Reflection Questionnaire[22] to assess rumination. The original scale consisted of 2 subscales:

(1) Rumination subscale, which examines the extent to which an individual engages in neurotic self-attention thinking style; and (2) Reflection subscale, which assesses how much one reflects. As rumination is a variable of interest in the present study, only the Rumination subscale was used. The subscale encompasses 12 items rated on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree).* Participants rated each item based on their level of agreement or disagreement with the statements with reference to their experience in the past month. Items on the scales included *Sometimes it was hard for me to shut off my thoughts about myself* and *I tended to ruminate or dwell over things that happen to me for a really long time afterward.* It had high reliability in a previous study[23] and a Cronbach's Alpha of .74 in the current study. We averaged the responses on all items for each scale, with higher scores reflecting a higher level of rumination.

Bedtime procrastination: We measured bedtime procrastination using the Bedtime Procrastination Scale (BPS).[4] It contains 9 items relating to sleeping habits and behaviors which are indicative of bedtime procrastination. Items include *I had a regular bedtime which I kept to.* Participants rated how well each item applied to their experience in the past month on a 5-point Likert scale from 1 (*never*) to 5 (*always*). Studies by Kroese et al.[4] and Sirois et al.[24] found the BPS to hold high levels of reliability and consistency. The scale had a Cronbach's alpha of .73 in the present study. We reverse scored and averaged the responses. Higher scores reflect a higher level of bedtime procrastination.

Sleep quality index: To measure sleep quality, we used the Pittsburgh Sleep Quality Index (PSQI),[25] a self-report scale used to assess an individual's subjective sleep quality over a span of one month. It contains 19 items that are divided into 7 subscales, such as sleep latency, habitual sleep efficiency, and subjective sleep quality. Four items relating to sleeping habits were open-ended questions. The remaining questions were rated from 0 to 3. Participants provided responses based on how applicable each item was in most days and nights in the last month. Scores on each subscale were computed based on the instructed scoring methods[2] to form a global PSQI score ranging from 0 to 21, with higher scores indicating poorer sleep quality. The PSQI demonstrated adequate to good internal consistency with studies reporting Cronbach's alpha of .59[26] and .83.[27] The scale also was reported to hold good test-retest reliability in various samples.[28]

Although the PSQI had an internal consistency of .61 in the present study, it was similar to the values reported in previous studies.[26]

Demographic characteristics: The information about demographics, which include age, gender, employment, personal and caregiving responsibilities, and taking of medication that affects sleep, were collected from participants as they were variables which could affect bedtime procrastination and sleep quality. Participants were provided with an open-ended question to indicate their age. They also indicated their gender from the following options: female, male, nonbinary/third gender, and prefer not to say. Employment options included full-time employment, part-time employment, self-employed, full-time student, and others. The remaining questions were in a "yes" or "no" response format.

Procedure

We recruited participants through different social media platforms, such as Facebook and Instagram. The study also was advertised on the university's SONA System, a research participant management platform.

All interested participants accessed the survey on Qualtrics through a survey link. On Qualtrics, participants first read an information sheet containing relevant information about the study and provided their informed consent by selecting either "agree" or "disagree" to participate. Upon giving consent, participants were then required to respond to the screening scale. Participants who selected "yes" for either question did not meet the inclusion criteria for the study and were directed to a "thank you" page. Participants who met the inclusion criteria were directed to complete a set of questionnaires on Qualtrics relating to FOMO, bedtime procrastination, sleep quality, and rumination. The sequence of the questionnaires and the sequence of the items within each questionnaire were presented in a randomized order to each participant, except for demographic questions, which were always the last to be completed. After completing the survey, a "thank you" note was displayed.

RESULTS
Assumption Testing

We checked the assumptions of multiple regression prior to the main analyses. All study variables except for rumination had significant results in the Shapiro-Wilk test, which is indicative of a violation of the normality assumption. However, because multiple

regression is robust against violations of the normality assumption,[29] we did not transform the variables. All variables, otherwise, satisfied the assumptions of homoscedasticity, absence of multicollinearity, and absence of univariate and multivariate outliers.

Preliminary Analyses

We performed Pearson's correlation analyses to examine how rumination, FOMO, bedtime procrastination, and sleep quality were associated with each other. Age also was included in the analyses to determine if it affects sleep quality. Because the results showed that sleep quality was not significantly associated with age, age was not controlled as a covariate in the main analysis. Table 1 shows the correlation analysis findings.

Table 1
Correlation Coefficients of the Associations among Age, FOMO, Rumination, Bedtime Procrastination, and Sleep Quality

Variables	Age	FOMO	Rumination	BP	SQ
Age	-				
FOMO	-.17*	-			
Rumination	-.27**	.30**	-		
BP	-.12	.15*	.28**	-	
SQ	-.10	.10	.37**	.29**	-
Mean	22.38	23.91	3.34	3.62	6.64
SD	2.89	7.70	0.54	0.64	2.87

Note.
FOMO = fear of missing out; BP = bedtime procrastination; SQ = sleep quality. Higher scores of SQ indicate poorer SQ.
*p < .05, **p < .01.

Subsequently, we conducted an independent-sample t-test and ANOVAs to determine the effects of demographic variables on sleep quality. The results revealed that full-time employees and full-time students had better sleep compared to people with other forms of jobs (Table 2). In addition, individuals without personal responsibilities tended to have better sleep as compared to their counterparts with personal responsibilities (Table 2). Other demographic variables, including gender, caregiving responsibility, and medication, were unrelated to sleep quality. Based on these results, occupation and personal responsibilities were controlled as covariates in the main analyses. However, because of the gap in the numbers of female and male participants, we ran another analysis by including gender as the third covariate. If the results do not differ from the analyses using 2 covariates, it suggests that gender did not have a significant influence on the findings.

Table 2
Effects of Categorical Demographic Variables on Sleep Quality

Demographic Variable		Men	Women	Non-binary/ Third Gender	Prefer not to say		F value
Gender	N	37	171	3	2		1.14
	M	6.30	6.66	9.00	8.50		
	SD	2.82	2.85	2.65	6.36		
Demographic Variable		FT-Employee	PT-Employee	Self-Employed	FT-Student	Others	F value
Occupation	N	66	8	1	128	10	2.45*
	M	6.08	6.63	7.00	6.75	9.00	
	SD	2.64	2.62	-	2.91	3.13	

Table 2
(Cont'd)

| Demographic Variables		No	Yes	F value
Do you have personal responsibilities that have prevented you from sleeping in the past month?	N	147	66	
	M	6.30	7.41	7.01**
	SD	2.66	3.18	
Do you have any caregiving responsibilities for children 6 years and below that prevented you from sleeping in the past month?	N	204	9	
	M	6.67	6.00	0.47
	SD	2.86	3.20	
Have you been taking any medicine that may have affected your sleep in the past month?	N	199	14	
	M	6.63	6.79	0.04
	SD	2.82	3.64	

Note.
FT = Full-Time, PT = Part-time. Higher scores on the means and standard deviations indicate poorer sleep quality. *p < .05, **p < .01.

Hypothesis Testing

To test the hypothesis, we conducted serial mediation analyses using PROCESS (Model 6) with FOMO as the predictor (X), rumination as the first mediator (M_1), bedtime procrastination as the second mediator (M_2), and sleep quality as the outcome variable (Y). To support a significant serial mediation effect, the following conditions should be fulfilled: (1) X predicts M_1 significantly (path a_1); (2) M_1 predicts M_2 significantly (path d); (3) M_2 predicts Y significantly (path b_2); (4) the indirect effect of X on Y via M_1 and M_2 serially is significant. The indirect effects were tested using 5000 bootstrap resampling. We ran 2 sets of analyses, each with or without occupation and personal responsibility as covariates. The results were similar. We also ran an additional analysis by entering occupation, personal responsibility, and gender as covariates. The results showed that adding gender as an additional covariate did not affect the findings. Below we reported the findings from the analysis which included occupation and personal responsibility as covariates (Figure 2).

Figure 2
Statistical Diagram for Serial Mediation Mode

Indirect Effect = 0.01* (Through MV1 & MV2)
Indirect Effect = 0.03* (Through MV1)
Indirect Effect <0.01 (Through MV2)
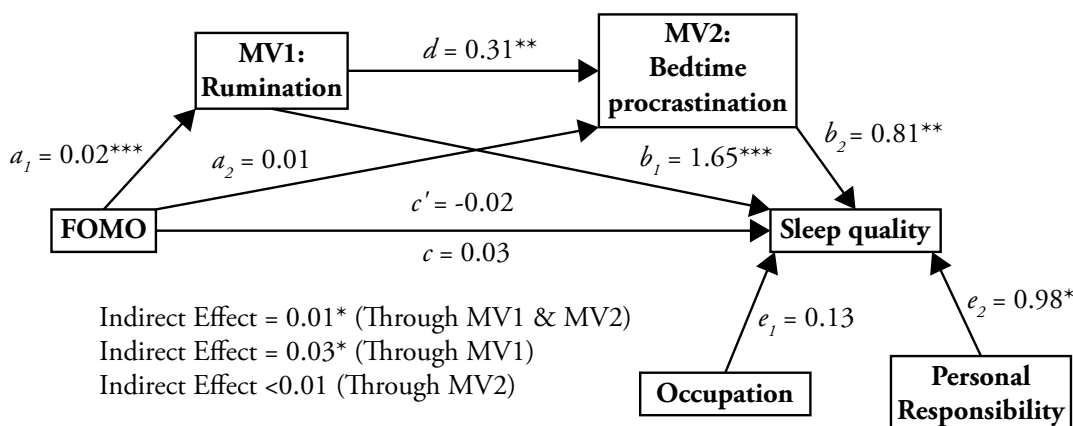
FOMO did not predict sleep quality (path c), β = .07, t(209) = 0.98, p = .33, and explained 6.1% of the variance in sleep quality (Figure 1). It predicted a higher level of rumination (path a_1), β = .27, t(209) = 4.24, p < .001, but it did not predict bedtime procrastination (path a_2), β = .06, t(208) = 0.89, p = .38. Rumination predicted a higher level of bedtime procrastination, β = .26, t(208) = 3.68, p < .01, and poorer sleep quality, β = .31, t(207) = 4.48, p < .01 (path d & b_1). Bedtime procrastination also predicted poorer sleep quality (path b_2), β = .18, t(207) = 2.75, p < .01.

When both rumination and bedtime procrastination were considered as the mediators, there was a statistically significant indirect effect of FOMO on sleep quality via these mediators serially, indirect effect = .005, CI [.00, .01]. When rumination was considered as the only mediator in the relationship between FOMO and sleep quality, the indirect effect was also significant, indirect effect = .03, CI [.01, .05]. However, when bedtime procrastination was considered as the only mediator, the indirect effect was not statistically significant, indirect effect < .01, CI [-.01, .02]. The direct effect (path c') was not significant, β = -0.04, t(207) = -0.66, p = .51. The significant paths a_1, d, b_2, and indirect effect via M_1 and M_2 showed that the hypothesis was supported.

DISCUSSION
Summary of Findings

In the current study, we aimed to examine rumination as the mechanism linking FOMO indirectly to bedtime procrastination and sleep quality. Using a correlational approach, we found support for our hypothesis, where rumination and bedtime procrastination serially mediated the association between FOMO and sleep quality. In other words, FOMO predicted rumination, which in turn, predicted bedtime procrastination, and subsequently poorer sleep quality. Additional findings showed that when considering rumination as the sole mediator, it significantly mediated the association between FOMO and sleep quality. However, when considering bedtime procrastination as the sole mediator, it did not mediate the association between FOMO and sleep quality, mainly due to the nonsignificant link between FOMO and bedtime procrastination.

Theoretical Implications

We aimed to fill the gap in the literature by examining whether FOMO could predict concurrent bedtime procrastination directly. In the study by Zhang et al.[12], FOMO did not predict whether a person procrastinates bedtime at a 6-month follow-up. As FOMO is a rather transient construct,[10] we were interested in finding out whether FOMO predicts concurrent bedtime procrastination. Our findings showed that FOMO could not predict concurrent bedtime procrastination as well. The lack of direct association between FOMO and bedtime procrastination is intriguing since coping with FOMO might delay bedtime. Zhang et al.[12] speculated that FOMO and bedtime procrastination might not be directly associated with each other but rather indirectly connected via a mechanism. Therefore, we examined how FOMO and bedtime procrastination are indirectly connected via rumination. We found that FOMO was associated with bedtime procrastination indirectly via rumination, and that bedtime procrastination subsequently predicted poorer sleep quality.

People pursue a sense for relatedness in interpersonal relationships (e.g., with friends, family members, and co-workers),[30] especially for individuals with high FOMO.[9] To cope with the need for relatedness, people high in FOMO engage in social activities in-person and via social media for fear of missing out on new content in their social circles.[31] Their mind could be occupied with repetitive, negative self-referential thoughts, ruminating about how socially disconnected they themselves are.[9, 15]

Ruminators adopt maladaptive coping strategies in dealing with stressful situations. They lack self-efficacy and are unwilling to commit to resolving stressful situations.[16] When resolving a stressful situation, they tend to choose ineffective solutions, typically those that come with short-term rewards,[18] which further aggravates the situations.[32] In the context of FOMO, when coping with FOMO by ruminating about social relationships, people might resort to ineffective solutions,[14] which unfortunately do not help resolving FOMO. Furthermore, the lack of self-efficacy also leaves them feeling more distressed about FOMO. When the attempt to resolve FOMO using rumination happens around bedtime, people are occupied by the attempt to resolve FOMO, such as engaging in social media, and eventually delay their bedtime.

Although we showed a statistically significant direct effect of rumination on bedtime procrastination, this direct effect may be mediated by behavioral factors, such as social media use prior to bedtime (Figure 1).[7,18] Therefore, this hypothesized mediating effect requires future studies to support.

Practical Implications

Research on bedtime procrastination is receiving more attention, but what drives individuals to procrastinate bedtime and the health consequences of bedtime procrastination is still not widely studied. The findings from our study revealed that FOMO affected bedtime procrastination indirectly and that rumination was the mechanism through which the effect took place. The findings may shed light on the approaches or treatments to reduce bedtime procrastination and improve sleep quality. In particular regulating FOMO and reducing rumination may play important roles in reducing bedtime procrastination and subsequently improving sleep quality.

Understanding what triggers FOMO may help overcome FOMO-related bedtime procrastination. Research has shown that checking posts on social media may trigger FOMO.[33] This is because such posts inform individuals with FOMO of the desirable activities that others were having in the physical world[33] and in the virtual world (such as virtual concerts and new release on Netflix).[34] In one study, Brown and Kuss[35] observed that a 7-day abstinence from social media decreased participants' perceived level of FOMO and improved social connectedness and mental well-being. Whereas totally abstaining from social media use is effective in reducing FOMO, a milder approach that aims to reduce social media use also was found to be effective. Alutaybi et al.[36] proposed the FOMO-R (FOMO-Reduction) intervention approach that combines the technical approach (e.g., using technical functions like filter and autoreply) and the psychoeducation approach (e.g., self-talk and education on FOMO).[36] Both approaches directly and indirectly affect the frequency of social media checking. Alutaybi et al.[36] reported that the intervention was regarded as an acceptable approach and was effective in reducing FOMO. In a study by Pillion et al.[37], technology was also found to be helpful for parents in limiting their adolescent children's screen time and social media use in such a way that it resulted in earlier bedtime.

Apart from behavioral control, changing one's focus of attention may help overcome FOMO and rumination. People with FOMO are distracted by social media and the desire for social inclusion,[37] whereas ruminators bias their attention to negative information.[38] Mindfulness, a practice which directs our attention to the present, was associated with reduced bedtime procrastination by attenuating boredom.[6] Past studies also documented the effectiveness of mindfulness in reducing rumination by controlling smartphone use before going to sleep, and thus, promoting sleep health.[39] Preliminary findings suggested that mindful, positive engagement in social media might be helpful in mitigating the negative impacts of social media use.[40] Despite the existing evidence, further research effort is needed to provide direct evidence as to how mindful social media engagement attenuates rumination and bedtime procrastination and improves sleep quality.

Increasing one's social well-being is an approach that should not be overlooked. Providing social support to strengthen perceived social connectedness might mitigate the feeling of FOMO.[35] Social support also benefits ruminators by reducing their tendency to ruminate daily and by buffering the negative impacts of rumination.[41]

Limitations and Suggestions for Future Studies

The present study provided a glimpse into the association between FOMO and bedtime procrastination and the underlying mechanism. Although the findings should be interpreted with care due to the limitations of the study, they provided a foundation for future studies in this line of research.

Some participants in the present study received SONA credit points for their participation, whereas some did not receive any incentives. The motivation of participation may have affected the study findings. However, we were unable to examine how it could affect the findings as the data were anonymous, making it impossible to identify participants who received SONA credit from those who did not receive incentives. Future studies should take incentives and motivation for participation into consideration.

Our findings could have been affected by confounding variables that might affect correct interpretation of results. Although we tested and controlled for the effects of some potential covariates in the study, such as gender, education, medication, and personal and caregiving responsibilities, other potential confounding variables were not included. For instance, chronotype is a variable that is generally linked to bedtime procrastination and sleep quality, where the evening type individuals are more likely to procrastinate bedtime and have more sleep disturbances.[42,43]

Our sample was disparate in terms of numbers of female and male participants. Although subgroup analyses may shed some light on the generalizability of the findings to both genders, the analyses were

not feasible in this case due to the small number of male participants (n=37), which might compromise the analysis power. Nevertheless, a preliminary analysis and an additional main analysis showed that gender did not affect the outcome variable and the main analysis findings. It is advisable to use a balanced sample in the future study to examine the generalizability of the findings.

We adopted a cross-sectional correlational design and recruited young adults as samples, an approach which might not be able to capture any relevant growth trajectory that might occur during young adulthood. Young adults are in a transitional phase, when they could be in a transition from full-time studying to full-time working. Such a transition may cause changes in FOMO, rumination, bedtime procrastination, and sleep quality. For example, young adults who are studying full-time may have more mental capacity to focus on social media and social networks. As they transition into full-time jobs, when the schedule is tighter and the lifestyle is different, they might have insufficient capacity for social media and FOMO. Alternatively, they might be more likely to experience FOMO and rumination as their work lives reduce their chances for social interactions. Given evidence showing that students procrastinate bedtime more than nonstudents and working adults do,[44] the transition in lifestyles might also affect FOMO and rumination, be it positively or negatively. As such, future studies could consider adopting a longitudinal approach to investigate the trajectory changes in the relationships among FOMO, rumination, bedtime procrastination, and sleep quality.

Adolescents are another population that we did not focus on in the present study and should not be overlooked in bedtime procrastination research. During adolescence (or secondary/high school level), despite having a stricter school timetable to follow as compared to college, bedtime procrastination is still prevalent in this age group.[45] Contributing factors could include seeking peer social approval and experiencing peer pressure, which play important roles in adolescents' cognition and behaviors and FOMO.[32] Relatedly, frequent social media use[31] also may contribute to bedtime procrastination and FOMO in this age group.

We discussed earlier some strategies to tackle FOMO and rumination (e.g., FOMO-R, mindfulness, and social support) and predicted that these strategies could subsequently reduce bedtime procrastination that is triggered by FOMO and rumination. Behavioral factors (e.g., social media use) may explain how rumination affects bedtime procrastination. Therefore, direct evidence is required to examine how these strategies could alleviate FOMO and rumination, which then reduces the occurrence of the behaviors that promote bedtime procrastination (e.g., social media use) and subsequently reduces bedtime procrastination.

CONCLUSIONS

The present study identified an indirect association between FOMO and bedtime procrastination and that rumination was the underlying mechanism in the association. People who experienced FOMO had a greater tendency to ruminate about their social relationships, which in turn, increased bedtime procrastination and subsequently compromised sleep quality. Our results present novel insights into the indirect association between FOMO and bedtime procrastination and provide important practical implications on the development of interventions targeted at reducing FOMO and bedtime procrastination. Several limitations were raised highlighting a need for further empirical research to be conducted.

Human Subjects Approval Statement

All procedures performed in studies involving human participants were in accordance with the ethical standards of the Human Research Ethics Committee of James Cook University (approval number: H8562). We obtained informed consent from all participants.

Conflict of Interest Disclosure Statement

The authors declare no conflict of interest.

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