

**The Moderating Role of Self-Control on the Relationship Between Work-Family
Conflict and Deliberate Bedtime Procrastination**

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Abstract

Bedtime procrastination is a newly emerging area of research, focusing on the active delay of bedtime and its potential negative impact on health and sleep behavior. This study aimed to explore the relationship between work-family conflict and deliberate bedtime procrastination, with self-control acting as a potential moderator. A total of 149 participants (53.7% female, $M_{age} = 38.8$, 47.6% Dutch, working at least 20 hours per week) took part in this correlational study. Participants completed a baseline questionnaire and a 5-day daily diary, consisting of two short questionnaires per day (morning and evening). Convenience sampling was used for participant recruitment. The study hypotheses posited a positive association between work-family conflict and deliberate bedtime procrastination and further proposed that self-control would moderate this relationship by reducing both work-family conflict and engagement in deliberate bedtime procrastination. However, the results indicated a weak and nonsignificant positive correlation between work-family conflict and deliberate bedtime procrastination ($r = .10, p = .22$). Moreover, the interaction effect between work-family conflict and self-control did not reach statistical significance ($\beta = -.0032, p = .97$), suggesting that self-control does not significantly moderate the relationship between work-family conflict and deliberate bedtime procrastination. The study's findings provide insights into bedtime procrastination, emphasizing the need for future research to explore additional factors and potential mediators/moderators influencing the relationship between work-family conflict and bedtime procrastination. A deeper understanding of factors influencing bedtime procrastination can inform the development of effective interventions aimed at reducing this behavior.

Keywords: deliberate bedtime procrastination, bedtime procrastination, self-control, work-family conflict

The Moderating Role of Self-Control on the Relationship Between Work-Family Conflict and Deliberate Bedtime Procrastination

Sleep is an important part of everyone's life and maintaining a regular sleep schedule has proven to be effective for good mental health (Evans et al., 2021). Despite that apparent knowledge, it occasionally occurs that people postpone their regular bedtime deliberately for many different reasons: some people cannot resist the temptation to stay awake, some feel like they deserve to stay up longer than usual after a long day of work, some see it as the only time during the day that offers some so-called "me-time", while others use the time in the evening to see friends or family (Nauts et al. 2019). This behavior is called bedtime procrastination; it is described as "needlessly and voluntarily delaying going to bed, despite foreseeably being worse off as a result" (Kamphorst et al., 2018, p.1f.).

Since the term bedtime procrastination has just been coined in 2014, there is limited research done on the topic so far (Hill et al., 2022; Kroese et al., 2014; Nauts et al. 2019). This (deliberate) bedtime delay disarranges the general sleep schedule and can cause a vicious cycle of not sleeping enough, being less productive at work, and only having time for a private social life after work or in the evening, causing a bedtime delay and poorer health (Kroese et al., 2014; Zhu et al. 2020). These mentioned factors can create a discrepancy between work and family demands, also called a work-family conflict (Carlson et al., 2000), which in turn might influence people's procrastination before bedtime in the evening. So, although there is first evidence about the negative effects of bedtime procrastination on social life and health, there is no research done that focuses specifically on the relationship between work-family conflict and (deliberate) bedtime procrastination. However, there is some research on the relationship between work-family conflict and health mediated by sleep quality which shows that there is a negative relationship between work-family conflict, poor sleep quality, and poor health (Cheng et al., 2019). Furthermore, a study conducted on

hospital nurses demonstrated how shift work, which influences sleep quality, mediates the relationship between work-family conflict and personal health (Cheng et al., 2019). This example emphasizes the impact of sleep, particularly delayed sleep due to shift work, on work-family conflict, underscoring the need to analyze bedtime procrastination in relation to work-family conflict.

In addition to the limited research conducted on the relationship between work-family conflict and (deliberate) bedtime procrastination, there is also a scarcity of studies examining the role of self-control – the skill of aligning thoughts, emotions, and behavior with personal goals (Kadzikowska-Wrzosek, 2018) - as a moderator in this context. Previous research has explored the impact of self-control on sleep quality: people with a high trait self-control did not show signs of low sleep quality, while people with a low trait self-control explicitly had problems with the quality of their sleep (van Eerde and Venus, 2018). However, research on self-control as a moderator influencing a relationship with bedtime procrastination is limited (Geng et al., 2021) and about work-family conflict and bedtime procrastination, it is yet to be explored.

This study aims to shed light on the possible factors influencing deliberate bedtime procrastination with a specific focus on work-family conflict and moderating effects of self-control. Accordingly, the theoretical framework and reasoning will follow regarding the possible influence of work-family conflict on deliberate bedtime procrastination while looking at self-control as a possible moderator.

Deliberate Bedtime Procrastination

As described above, bedtime procrastination is defined as the active and intentional delay of a person's usual bedtime, while being well aware of the possible negative consequences for the next day (Kamphorst et al., 2018). According to a qualitative study by Nauts et al. (2019), there are three different types of bedtime procrastination: deliberate,

mindless, and strategic. First, there is deliberate procrastination, an actively chosen version of delaying sleep time based on wanting to spend the evening with for example having me-time or going out with friends. In that case, the urge to stay awake longer than the usual sleep schedule allows is stronger than adhering to the routine (Nauts et al., 2019). Secondly, there is mindless procrastination, which as the name suggests focuses on an unconscious delay of the usual bedtime based on the concept of losing track of time while being engaged in something so much that time will be edged out of the focus of attention. However, in contrast to deliberate bedtime procrastination, there is no active intention to go to bed later than usual. Lastly, Nauts et al. (2019) discovered that participants reported going to bed later because they needed to find the perfect time to fall asleep which might not be the case if they try to sleep earlier than that; there is a so-called strategic delay at the display which technically distinguishes itself from procrastination.

In the end, this current study only focused on deliberate bedtime procrastination as the dependent variable (DV) because it is interesting to analyze why people actively delay their bedtime, despite being aware of negative consequences for the following day. This discrepancy is also easier to assess with this type of bedtime procrastination since mindless procrastination is happening unconsciously, and strategic delay does not qualify as direct procrastination. Therefore, deliberate bedtime procrastination will be the focal point of this study, while keeping the two other types in mind for future research.

Work-Family Conflict and Deliberate Bedtime Procrastination

Balancing work next to other demands such as leisure time, family time, and socializing with friends to a satisfactory degree is a potential stressor that can lead to negative effects on mental health and well-being (Nelson et al., 1990). When the requirements of a role, such as being a full-time employee or a parent, start intruding excessively into one's personal or professional life, or when the boundaries between work and personal life become

blurred, a conflict between work and life arises. This conflict can have detrimental effects on job and life satisfaction but can also be the reason for emotional, mental, and physiological strain, in either domain (Carlson et al., 2000; Williams and McCombs, 2023).

The work-home resources (W-HR) model by ten Brummelhuis & Bakker (2012) is a good indicator of the work-home conflict that was included as the independent variable (IV) for this study: it states that the requirements or needs of one area (work resources) use up an individual's resources and hinder their ability to succeed or make progress in the other area (home resources). The term "home" is implemented in this model here instead of "family" because the term home includes more than just family but rather the whole private life outside of the work field. Due to convenience reasons, the term "family" will still be used in the following but is meant to include everything that is meant by "home". The terms "work-to-home" and "home-to-work" each represent a one-way process, with "work-to-home" indicating the active impact of work demands on the home and vice versa. In contrast, the term "work-home" encompasses both directions, combining them into a comprehensive term that acknowledges the reciprocal influence between work and home domains (ten Brummelhuis & Bakker, 2012).

There was a shift from how home and work were perceived. Earlier, they were seen as two oppositely related areas where only one side could flourish when the other suffered which led to strains such as stress and burnout. However, now there are also theories about how for example social support or self-esteem act as factors that both strengthen and enrichen the relationship between the two domains of home and work (ten Brummelhuis & Bakker, 2012). This is also called the spillover effect, where one area influences another area by what the person experienced and learned in one of the areas (Lavassani et al., 2014). Hence, this model leaves the opportunity open for both positive and negative effects of home and work demands influencing each other.

Finally, studies have shown that this conflict between work demands and other life demands is also associated with poorer sleep; especially both the sleep quality and quantity seem to have a negative association with work demands such as the workload (Jones, 2021; Litwiller et al., 2017; Magee et al., 2018). This suggests that an increased workload can result in longer work hours, potentially leading individuals to stay up later than usual in order to fulfill their home obligations and strive for a work-life balance. Since there is still a lack of research that covers the influence of work-family conflict on bedtime procrastination, this study investigated that direct relationship.

Hypothesis 1: there is a positive relationship between work-family conflict and deliberate bedtime procrastination.

Self-Control as a Moderator

Self-control, also interchangeably called self-regulation, is one of the characteristics that can diminish procrastination and probably also bedtime procrastination (Przepiórka et al., 2019). Trait self-control can be described as the “ability to override or change one’s inner responses” (Kroese et al. 2014, p. 2), meaning that the own thoughts and emotions are being replaced by other thoughts and emotions (Baumeister, 2002). This does for example happen when one is distracted by thinking about the next grocery list while one should focus on studying for an exam; in that case, one would use self-control to suppress that unwanted thought of the grocery list and come back to give undivided attention to the studying at hand.

Self-control acts as an antidote to self-regulatory failure which (bedtime) procrastination is claimed to be. According to Kroese et al. (2014), procrastination is associated with low levels of self-control but higher levels of impulsivity – acting unconsciously and based on an urge without thinking ahead. The self-regulation (self-control) theory underlies the idea of procrastination being a self-regulatory failure; the theory states that self-control plays a crucial role in completing demanding tasks that require concentration

and focus, such as studying. Without an adequate supply of self-control, the ability to fulfill the demands of such tasks becomes diminished (Song et al., 2022). Kühnel et al. (2016) underlie the importance of diminished amounts of self-regulatory resources increasing procrastination. Furthermore, an alignment between people's typical circadian rhythm of when they are asleep and awake would refill these resources. A misalignment in that field would lead to inhibited amounts of self-control resources. This might indicate that self-control could be a protective factor for bedtime procrastination, meaning that higher levels of self-control could help to reduce the urge for bedtime procrastination.

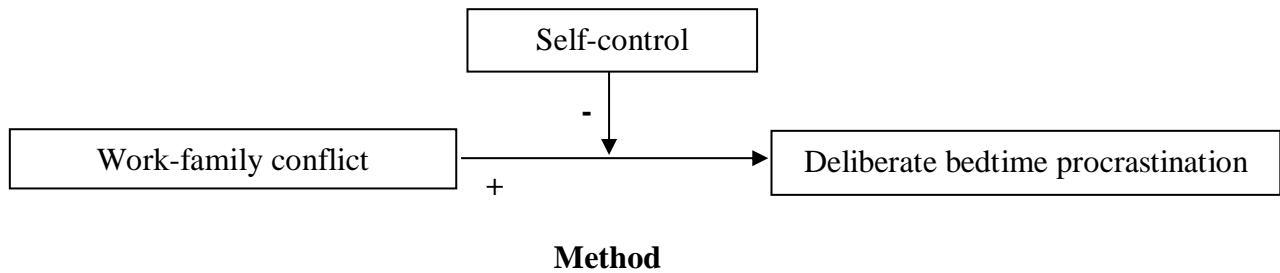
Former studies have shown that there is a relationship between higher self-control and reducing behaviors that lower sleep quality and quantity (van Eerde and Venus, 2018; Wagner et al. 2012). Furthermore, self-control has been effectively used as a moderator before in the context of bedtime procrastination (mediator) in relation to smartphone addiction and depression/anxiety with significant results (Geng et al., 2021). Based on the knowledge that can be derived from recent research about procrastination, it is reasonable to question whether self-control might act as a protective factor in mitigating the relationship between work-family conflict and deliberate bedtime procrastination negatively. This means that even though a person may have a higher work-family conflict - which would presumably affect deliberate bedtime procrastination positively - when this person also has higher levels of self-control, this might be a protective factor and weaken the positive relationship. So, self-control might make it less likely for a person with high work-family conflict to engage in deliberate bedtime procrastination. Since no study examined the moderating role of self-control in the context of the relationship between work-family conflict and deliberate bedtime procrastination, this study will close that gap and help to investigate whether self-control could be used in interventions to reduce deliberate bedtime procrastination.

Hypothesis 2: self-control moderates the relationship between work-family conflict

and deliberate bedtime procrastination, resulting in decreased levels of both work-family conflict and bedtime procrastination (see Figure 1).

Figure 1

The influence of work-family conflict on deliberate bedtime procrastination moderated by self-control



Participants

A total of 149 participants (80 females, 67 males, 1 non-binary/third gender, 1 unknown, $M_{age} = 38.8$, $SD = 13.3$) took part in this study. From the original collected sample size of 191, 42 participants were excluded from the data set because they did not fill out the complete questionnaire including the items necessary for this specific research focus. Therefore, the attrition rate is 21,88%. Of the remaining sample, 47.6% was Dutch, 15.9% German, 13.8% Greek, 5.5% Luxembourgers, 5.5% Romanian, and 11.7% other. The participants worked 37.09 hours on average per week considering contractual working hours plus overtime ($SD = 9.4$).

Research Design and Procedure

The participants were recruited through convenience sampling. Each student of the research team approached individuals from their personal network who met specific criteria. These criteria included being at least 18 years old, working a minimum of 20 hours per week, not being involved in shiftwork or having night shifts during the study period, having sufficient knowledge of the English/Dutch language (as the questionnaire was in English/Dutch), and being available and actively working during the assigned week (without

being on holiday or vacation).

The baseline questionnaire was sent to the participants via email shortly before the main study which happened from 17.04.2023 until 21.04.2023. The baseline questionnaire included for example questions about the participants' age, gender, nationality, their work hours per day and week, and the type of work they engage in. The participants filled out a questionnaire twice a day over those five days; they could fill out the 5 to 7-minute-long questionnaires anytime during the day. In the daily diaries, questions were asked about for example when exactly participants did go to bed, how long it took them to fall asleep, and when they woke up to name a few. Former research has shown that daily diary studies have been effective in operationalizing bedtime procrastination in connection to self-control, sleep quality, sleep duration, procrastination at work, and stress (Bernecker and Job 2020; Kühnel et al., 2018; van Eerde and Venus, 2018). Therefore, this type of research method is reasonable and useful to implement in this study as well. The data was collected and saved anonymously.

Measures

Deliberate Bedtime Procrastination

Originally, there were three items for deliberate bedtime procrastination that have been constructed by this research team but are based on Nauts et al. (2019). However, the reliability was low due to one of the items. Therefore, this item has been deleted and the last two items were: "I deliberately postpone my sleeping time because I want to have some time for myself" and "I intentionally postpone my sleeping time because I want to engage in leisure activities" (see Appendix A). The items were answered by a Likert scale scoring from 1 (*never*) to 5 (*always*) and it has adequate reliability (Cronbach's $\alpha = .80$).

Work-Family Conflict

There is a scale for work-family conflict with an emphasis on the 3-item scale for

work-to-family, utilizing the 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) that centers on the active influence of work demands on family life (Matthews et al., 2010; see Appendix B). There are three more items from the original scale by Matthews et al. (2010) that focus on the reversed influence of family demands on work life; since this study is mainly interested in the work-to-family conflict, only the first three items of the scale were used here. Each of these three items by Matthews et al. (2010) focuses on a different pressure point, namely time (“I have to miss family activities due to the amount of time I spend on work responsibilities”), strain (“I am often so emotionally drained when I get home from work that it prevents me from contributing to my family”), and behavior (“The behaviors I perform that make me effective at work do not help me to be a better parent and spouse. The reliability of the 3 items that have been used for this study is sufficient (Cronbach’s $\alpha = .71$).

Self-Control

This study used a 13-item Brief Self Control measure with each item’s answer ranging from 1 (*not at all like me*) to 5 (*very much like me*) (Tangney et al., 2004). There were nine reversed coded items like “I have a hard time breaking bad habits” next to items such as “I am able to work effectively toward long-term goals” (see Appendix C). Tangney et al. (2004) point out that this brief version of the whole self-control scale shows similarly reliable results. The Brief Self-Control scale shows high reliability, reassuring the usefulness of this scale (Cronbach’s $\alpha = .82$).

Demographics

Demographics included age, sex, ethnicity, hours of work per day and week, living status (living alone, with a spouse or partner, with spouse/partner and child(ren), other), the highest level of education (primary education, high school or equivalent, bachelor’s or equivalent, master’s or equivalent, doctoral or equivalent), type of work contract (permanent, temporary, self-employed, other), job title, whether they are in a leadership position,

classification of the job (blue-collar worker, lower level white-collar worker, upper-level white-collar worker, high management), the field of work, and the amount of time the participants have been in their current job so far.

Results

Statistical Analyses

The assumptions of a simple linear regression have been checked: the linearity check shown in a scatterplot did show a low possibility of linearity between IV and DV. Next to that, normality was also violated and did not guarantee a normal distribution.

Multicollinearity was not an issue here because there is only one predictor variable in this model. However, due to these violations, the following results should be read with caution and would need follow-up research to report valid results that are adhered to the assumptions.

The data analysis was conducted using SPSS Pearson's correlation to examine the relationships among work-family conflict, deliberate bedtime procrastination, and self-control. After that, model 1 of PROCESS macro was used to analyze the simple moderation of self-control on the relationship between the independent variable work-family conflict on the dependent variable deliberate bedtime procrastination.

Preliminary analysis

Hypothesis 1: there is a positive relationship between work-family conflict and deliberate bedtime procrastination.

This hypothesis could not be supported by the data: As Table 1 shows, the work-family conflict and deliberate bedtime procrastination had a weak nonsignificant positive correlation ($r = .10, p = .22$). Additionally, the self-control and work-family conflict had a weak nonsignificant negative correlation ($r = -.16, p = .06$). However, there was one significant correlation between self-control and deliberate bedtime procrastination, namely a negative association ($r = -.311, p < .001$).

Table 1*Correlations, means, and standard deviations for study variables*

Variables	1	2	3
1. Deliberate bedtime procrastination	-		
2. Work-family conflict	.10	-	
3. Self-control	-.311*	-.16	-
M	2.42	2.3	5.11
SD	1.09	.94	.94

Note. $N = 149$. M = mean; SD = standard deviation.

* correlation is significant at the .01 level (2-tailed).

Testing for moderation model

Hypothesis 2: self-control moderates the relationship between work-family conflict and deliberate bedtime procrastination, resulting in decreased levels of both work-family conflict and bedtime procrastination.

Table 2 shows the results of the moderation analysis. Also, this hypothesis could not be supported by the results: the interaction effect between work-family conflict and self-control is not significant ($\beta = -.0032, p = .97$), indicating that self-control does not have a significant moderating effect on the relationship between work-family conflict and deliberate bedtime procrastination. Also, work-family conflict, the IV, showed nonsignificant results ($\beta = .05, p = .51$). However, the moderator self-control itself had a significant coefficient ($\beta = -.35, p < .001$). The R^2 value of .0994 revealed that the predictors explained 9,94% of the outcome with $F(3, 145) = 5.33, p < .001$.

Table 2*Moderation of self-control between work-family conflict and deliberate bedtime**procrastination*

Variables	coefficient	SE	95% CI		p
			LL	UL	
Constant	2.42*	.09	2.24	2.59	.00
work-family conflict	.06	.09	-.12	.24	.51
Self-control	-.35*	.09	-.54	-.17	.00
Work-family conflict x self-control	-.0032	.09	-.19	.18	.97
R ²	.0994				.00

Note. $N = 149$. SE = standard error; CI = confidence interval; LL = lower limit; UL = upper

limit; R² = goodness of fit.

* $p < 0.05$.

Exploratory Analysis

Since deliberate bedtime procrastination as a variable was self-constructed, it seems reasonable to conduct an exploratory analysis that uses the bedtime procrastination scale by Kroese et al. (2014) instead of the self-constructed scale. This way it will be possible to analyze the moderation analysis of the originally proposed research model with bedtime procrastination as the dependent variable, rather than focusing solely on deliberate bedtime procrastination as a specific subtype. This broader approach might provide a more comprehensive understanding of the association between work-family conflict and bedtime procrastination, allowing for a more nuanced exploration of self-control as a moderator.

To test bedtime procrastination there is a 9-item scale that has been created to specifically assess bedtime procrastination (Kroese et al., 2014). Each statement can be answered on a Likert scale from 1 (*never*) and 5 (*always*) and includes four reverse-coded items such as: “I go to bed early if I have to get up early in the morning”. Other items show the opposite direction of intent: “I go to bed later than I had intended” and “I easily get distracted by things when I actually would like to go to bed” (see Appendix D). The reliability of this scale is adequate (Cronbach’s $\alpha = .75$). This scale was also included in the

questionnaires that the participants filled out.

The same statistical tools have been used for the main analysis such as the Pearson correlation and Model 1 of PROCESS macro to analyze the simple moderation of self-control on the relationship between the independent variable work-family conflict on the dependent variable bedtime procrastination. The results show slight differences from the original research model: As Table 3 shows, there is a significant positive correlation between work-family conflict and bedtime procrastination ($r = .23, p = .005$). Even though it is not a strong correlation, it is stronger than the correlation that was found between work-family conflict and deliberate bedtime procrastination ($r = .10, p = .22$; see Table 1 to compare) and significant. Furthermore, the correlation between the moderator variable self-control and bedtime procrastination is also significant ($r = -.29, p < .001$), indicating that self-control and bedtime procrastination have a slightly negative correlation.

Table 3

Correlations, means, and standard deviations for exploratory analysis variables

Variables	1	2	3
1. Bedtime procrastination	-		
2. Work-family conflict	.23*	-	
3. Self-control	-.29*	-.16	-
M	2.86	2.3	5.11
SD	.67	.94	.94

Note. $N = 149$. M = mean; SD = standard deviation.

* correlation is significant at the .01 level (2-tailed).

The main difference between the moderation analysis with deliberate bedtime procrastination and bedtime procrastination is that work-family conflict, the IV, showed a weak yet significant result ($\beta = .13, p = .02$) as shown in Table 4. However, the interaction effect remains nonsignificant ($\beta = -.0382, p = .51$), so there was also no moderation effect of self-control visible in this analysis. The R^2 value of .119 revealed that the predictors explained 11,9% of the outcome with $F(3, 145) = 6.53, p < .001$. This is also just a slight

improvement of roughly 2% from the main analysis result of 9,94% (see Table 2).

Table 4

Moderation of self-control between work-family conflict and bedtime procrastination

Variables	coefficient	SE	95% CI		p
			LL	UL	
Constant	2.86*	.05	2.76	2.97	.00
work-family conflict	.13*	.06	.02	.25	.02
Self-control	-.19*	.06	-.30	-.08	.00
Work-family conflict x self-control	-.0382	.06	-.08	.15	.51
R ²	.1190				.00

Note. $N = 149$. SE = standard error; CI = confidence interval; LL = lower limit; UL = upper

limit; R² = goodness of fit.

* $p < 0.05$.

Finally, the results show that self-control does not moderate the relationship between work-family conflict and deliberate bedtime procrastination and the simple relationship between the IV and DV was also nonsignificant and weak. The additionally conducted exploratory analysis found a significant positive correlation between work-family conflict and bedtime procrastination. Nevertheless, the interaction effect remains nonsignificant which means that self-control does not moderate the direct relationship between work-family conflict and deliberate bedtime procrastination.

Discussion

This research paper focused on work-home conflict as the independent variable for deliberate bedtime procrastination (DV) with self-control as a possible moderator. The first hypothesis was that participants who indicate a higher work-family conflict also show an increase in deliberate bedtime procrastination, leading to a positive correlation between the two variables. However, the results indicate that work-family conflict and deliberate bedtime procrastination have a weak positive correlation that is statistically not significant. Next to that, it was hypothesized that self-control moderates the existing relationship between work-family conflict and bedtime procrastination, meaning that higher levels of self-control

decrease both the amount of work-family conflict and engagement in deliberate bedtime procrastination. Nonetheless, the data suggests that there is no significant moderation effect of self-control on the relationship between work-family conflict and deliberate bedtime procrastination.

These results did not align with the expectations set before the study as neither of the two hypotheses were supported. Bedtime procrastination is a relatively new area of scientific inquiry, and this study's specific design (incorporating work-family conflict and self-control in the context of bedtime procrastination) has not been extensively explored. Consequently, it becomes challenging to compare the results to existing evidence from previous research and pinpoint the precise reasons behind these outcomes. Nevertheless, several factors could account for these unexpected findings:

Firstly, it is possible that the theory development and research question employed in this study were either too narrowly formulated or differently interconnected. It could be worth considering an alternative approach, such as treating self-control as the independent variable instead of work-family conflict in relationship to bedtime procrastination. Kadzikowska-Wrzosek (2018) points out that procrastination is not a result of a lack of motivation but is more based on low levels of self-control. While Kadzikowska-Wrzosek (2018) focused on procrastination in general, it can only be assumed that similar effects could be achieved with the specific subtype of bedtime procrastination. Next to that, an association between low self-control and higher levels of procrastination was found. Although the current study could not identify self-control as a moderator, there was still one significant correlation found between self-control and deliberate bedtime procrastination. The negative association might indicate that the higher the self-control level, the lower the bedtime procrastination tends to be – this interpretation is supported by previous research (Kroese et al., 2014; Kühnel et al., 2016). Therefore, there is a connection between self-control and bedtime

procrastination that should be investigated further and it might be worth it to adjust the research model so that self-control would be the independent variable instead of the moderator of the direct relationship between work-family conflict.

Additionally, Üztemur and Dinç (2022) point out that academic procrastination may be less prominent in students with higher self-control, who are better at managing their emotions and behaviors. Üztemur and Dinç (2022) used self-control as a significant moderator on the relationship between problematic social media use and academic procrastination. While this study focused on another subtype of procrastination, namely academic procrastination, it can only be assumed that similar effects could be achieved with the specific subtype of bedtime procrastination. This also indicates that self-control should be used in future research to investigate the effects that were not supported by the current study.

Another possible reason for the nonsignificant results is that by focusing solely on the active choice aspect of bedtime procrastination, this study overlooked the other two forms of bedtime procrastination identified by Nauts et al. (2019). Since there is no specific scale for the other types of bedtime procrastination yet, it made sense to use the general bedtime procrastination scale by Kroese et al. (2014) for the exploratory analysis of this study, since it provided valid and reasonable results in past research (Feng and Sun, 2022; Kroese et al., 2014; Suh et al., 2022; You et al., 2020). However, the moderation itself was also not significant in the exploratory analysis which may indicate that self-control simply does not affect the relationship between work-family conflict and (deliberate) bedtime procrastination.

The limited number of items on the work-family conflict scale (only three) could be another reason why there wasn't a significant correlation found with deliberate bedtime procrastination. It is interesting to note that these items only focused on the work-to-family direction because former research also proposed three additional items that cover the opposite direction of the family-to-work perspective (Matthews et al., 2010; ten Brummelhuis and

Bakker, 2012). It would be worthwhile for future research to include those additional items to explore the relationship between family and work demands in relation to bedtime procrastination and see if one direction has a stronger link to engaging in bedtime procrastination. According to Carlson et al. (2000), work-family conflict can be understood from six different perspectives, which are based on the three forms of conflict (time-, strain-, and behavior-based) and the two directions (work-to-family and family-to-work). This paper suggests using three items for each perspective, resulting in a total of 18 items for a more comprehensive work-family conflict scale. While using a shorter scale is more convenient for research studies, it might be worth considering a more comprehensive scale in the future to see if it could have made a difference in this study.

Since the results are nonsignificant, there are no direct practical implications about the relationship between work-family conflict and deliberate bedtime procrastination. However, the literature suggests that further research on work-family conflict and deliberate bedtime procrastination could provide practical implications: reducing the stress that comes from both ends of demand, for example, could prevent the work-family conflict from arising in the first place. Gröpel and Dovičovičová (2012) state that the more flexible people can be in their job work and life, the easier they keep in balance; however, this only counts for people who do not engage in procrastination. This indicates that flexibility in a job might be a factor that can help this work-family conflict to arise, while also trying to reduce the amount of procrastination at work. Next to that, Fydrich (2009) discovered that work disruption and procrastination increase negative health patterns such as depression or anxiety disorders which is why it is suggested to work on managing distractions during work time and procrastination to implement a good work-life balance.

Limitations

Despite providing more insight into the relationship between work-family conflict and

deliberate bedtime procrastination, this study has limitations that can be categorized into two main areas. The first set of limitations relates to participant-related factors and the methodology employed. Firstly, participants reported difficulties with the questionnaires, primarily due to language and phrasing issues. This difficulty can be attributed to participants being non-native English/Dutch speakers and potentially lacking familiarity with certain vocabulary. Moreover, the phrasing of the items included by the research team may have contributed to the participants' challenges. Additionally, the use of convenience sampling in this study introduces the possibility of bias, and the results might not be generalizable to a broader population. Furthermore, the reliance on self-reported questionnaires raises concerns about the reliability of the data, as participants' responses may have been influenced by social proof or social desirability biases (Naeem, 2021; Tang et al., 2022), leading to responses that align with perceived expectations.

The second set of limitations pertains to the study's design and measurement instruments. The assumptions for the study's analysis were not fully met, which calls for caution when interpreting the results. As a correlational study, it only allows for describing associations between the independent and dependent variables and does not establish causation. Moreover, two of the three variables used in the study had a limited number of items. The work-family conflict scale consisted of only three items, while the deliberate bedtime procrastination scale, after excluding an item for better internal consistency, comprised just two items. It is possible that these small scales might not have all relevant aspects of the variables they were intended to measure. Lastly, the study experienced a relatively high drop-out rate of 22.88%, which should be acknowledged and considered for future research involving self-report measures.

Recommendations for Future Research

Future research should address the limitations identified in this study and aim to

overcome them whenever possible. To address the most pressing issue of this study, future research should improve upon the construct validity: since our scales might have failed to capture all relevant aspects, the conceptualization of deliberate bedtime procrastination can be improved. While further correlational studies exploring bedtime procrastination would provide valuable insights, it would be particularly intriguing to investigate this phenomenon through experimental designs. Experimental studies would enable the identification of causal relationships and antecedents contributing to bedtime procrastination.

Furthermore, to enhance our understanding of cultural influences, it would provide valuable insights to obtain a more representative sample and conduct comparative analysis across diverse populations, encompassing various cultures. While the present study incorporated a relatively diverse sample from multiple individualistic cultures, the majority of existing research has predominantly focused on collectivist cultures. Therefore, extending the scope of research to include other age groups and nationalities, particularly those with collectivist or individualistic cultural orientations, is very important. Notably, recent studies involving Chinese university students (Geng et al., 2021; Meng et al., 2021; Zhang et al., 2022; Zhao et al., 2022) have shed light on the connections between bedtime procrastination and smartphone addiction, self-control, and personality traits. Hence, exploring both similarities and differences between these samples, including university students and individuals from various age groups, coming from from nationalities with an individualistic cultural context, would yield valuable insights. By comparing the impact of different factors influencing bedtime procrastination within diverse occupational, age, and cultural samples, we can further enrich our understanding of cultural influences on this phenomenon.

Additionally, future research should investigate alternative mediating or moderating

factors beyond self-control that may influence the relationship between work-family conflict and (deliberate) bedtime procrastination, such as stress, personality traits, or social support. Exploring these factors would provide a more comprehensive understanding of the underlying mechanisms at play. Next to that, other factors should be considered and further explored as independent variables in a direct relationship to deliberate bedtime procrastination such as trait anxiety, smartphone addiction, or personality traits (Geng et al., 2021; Zhang et al., 2022; Zhao et al., 2022). By addressing these recommendations, future research can build upon the findings of this study and contribute to a more comprehensive understanding of bedtime procrastination, its antecedents, and its implications for individuals across diverse contexts.

Conclusion

Overall, this paper is contributing to the existing research on bedtime procrastination by expanding its analysis to incorporate work-family conflict and self-control within a convenience sample and using self-report measures. Although the findings of this study did not yield significant results, they provide implications for future research to delve deeper into the various subtypes of bedtime procrastination and explore potential moderators and/or mediators that influence the association between work-family conflict and bedtime procrastination. Hopefully, future investigations will further enhance our understanding of the factors that contribute to bedtime procrastination and develop interventions aimed at reducing its occurrence.

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Appendix A

Deliberate Bedtime Procrastination Scale (self-constructed)

1. I deliberately postpone my sleeping time because I want to have some time for myself.
2. I intentionally postpone my sleeping time because I want to engage in leisure activities.

Appendix B

Work-to-Family Conflict Scale

1. I have to miss family activities due to the amount of time I must spend on work.
2. I am often so emotionally drained when I get home from work that it prevents me from contributing to my family.
3. The behaviors I perform that make me effective at work do not help me to be a better parent and spouse.

Appendix C

Brief Self-Control Measure

1. I am good at resisting temptation.
2. I have a hard time breaking bad habits (R).
3. I am lazy (R).
4. I say inappropriate things (R).
5. I do certain things that are bad for me if they are fun (R).
6. I refuse things that are bad for me.
7. I wish I had more self-discipline (R).
8. People would say that I have iron self-discipline.
9. Pleasure and fun sometimes keep me from getting work done (R).
10. I have trouble concentrating (R).
11. I am able to work effectively toward long-term goals.
12. Sometimes I can't stop myself from doing something, even if I know it is wrong (R).
13. I often act without thinking through all the alternatives (R).

(R) = reversed items

Appendix D

Bedtime Procrastination Scale (9-item)

1. I go to bed later than I had intended.
2. I go to bed early if I have to get up early in the morning (R).
3. If it is time to turn off the lights at night I do it immediately (R).
4. Often I am still doing other things when it is time to go to bed.
5. I easily get distracted by things when I actually would like to go to bed.
6. I do not go to bed on time.
7. I have a regular bedtime which I keep to (R).
8. I want to go to bed on time but I just don't.
9. I can easily stop with my activities when it is time to go to bed (R).

(R) = reversed items