

Aversive bedtime routines as a precursor to bedtime procrastination

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Bedtime procrastination, which has been defined as “needlessly and voluntarily delaying going to bed, despite foreseeably being worse off as a result” is a prevalent phenomenon that has been linked to sleep deprivation in the general population (Kroe-se, de Rid-

der, Evers, & Adriaanse, 2014; Kroese, Evers, Adriaanse, & de Ridder, 2014; Kroese, Nauts, Kamphorst, Anderson, & de Ridder, in press). Unlike people who suffer from sleep disorders, bedtime procrastinators are able to get sufficient sleep, yet they become sleep deprived because they stay up late against their own better judgment (e.g., to watch reruns of *The X-files*, update their Facebook status, or continue polishing a report for work; Nauts & Kroese, 2016).

Procrastination typically involves delaying tasks that are considered aversive (Blunt & Pychyl, 2000; Milgram, Marshevsky, & Sadeh, 1995). With bedtime procrastination, it seems unlikely that task aversion plays the same role, given that sleeping is one of people’s favorite activities (Gershuny, 2013). As an alternative explanation, we hypothesized that people may be averse to certain preparatory activities that are inextricably linked to going to bed. In this paper, we present some preliminary data that provide initial evidence that aversion to bedtime routines contributes to bedtime procrastination.

The dark side of flossing?

Research on general procrastination suggests that task aversiveness is one of the main predictors of procrastination, and that people generally procrastinate on tasks that they find boring, difficult, scary or otherwise unpleasant (Blunt & Pychyl, 2000). We therefore hypothesized that people might procrastinate on going to bed because they are averse to certain activities that they “have to do” before getting into bed. Establishing a soothing bedtime routine is one of the most commonly heard recommendations for improving sleep hygiene (e.g., Mindell, Telofski, Wiegand, & Kurtz, 2009). However, adults’ bedtime routines may often consist of chores (e.g., walking the dog, locking the door) and activities related to personal hygiene (e.g., taking out contact lenses, flossing) that people may be averse to. In those cases, we believe, the aversiveness of those activities can make it that the bedtime routine undermines, rather than supports, people’s intentions to hit the pillow at a reasonable hour.

An initial indication that, for some people, aversive bedtime routines may contribute to bedtime procrastination was found in a qualitative study on the causes of bedtime procrastination (Nauts, Stut, & Kamphorst, 2016). In this study, one participant reported the following:

“If you could just go straight from the couch to bed, there would be no problem. That would be ideal [-]. You still need to carry out activities before you can go to bed. I think that plays a role [in causing bedtime procrastination].” (woman, 24 years old)

As this quote suggests, part of the problem with bedtime procrastination seems to be that people dislike preparing for bed. At night, when people are finally enjoying some “me time” or “slack time”, overcoming “end-of-day inertia” by getting up from the couch and engaging in active, semi-obligatory activities may seem like an almost insurmountable obstacle. To find some first exploratory evidence for this assertion, we conducted two studies to ascertain the relationship between bedtime procrastination and bedtime routine aversiveness.

Bedtime routine aversiveness and bedtime procrastination

Study 1a. The goal of Study 1a was to investigate whether aversion to one’s bedtime routine was related to bedtime procrastination. In total, 271 participants in the US completed the study through Amazon’s MTurk. Thirty-seven participants were excluded from the sample because they worked night shifts, suffered from a sleep disorder, or gave inconsistent answers (i.e., one participant indicated being over 18 years old, yet listed his age as 12), resulting in a final sample of 234 participants (135 men; aged 19 to 79, average age 37.10, $SD = 13.48$). Of these participants, 64.6% were employed, 7.4% were students, 7.0% was retired, and 21.0% indicated being unemployed/homemaker/other.

To help participants think about their bedtime routines, we listed 11 activities (e.g., setting the alarm clock, taking a shower). Participants were asked to indicate how frequently they perform each of these behaviors before bedtime (on a 5-point scale ranging from “almost never” to “almost always”). As Table 1 shows, the activities most people performed “often” or “almost always” were brushing one’s teeth (76.1%) and setting the alarm clock (63.4%).

Next, participants answered 10 questions about the aversiveness of their bedtime routine, keeping their bedtime activities in mind (10 items, $\alpha = .83$, e.g., “I tend to put off my bedtime routine when I am tired”; “Sometimes I feel too tired to start my bedtime routine when it is time to go to bed”). After completing these questions, participants completed a bedtime procrastination scale (Kroese, De Ridder, et al., 2014; $\alpha = .91$, example item “I do not go to bed on time”¹). In line with our predictions, bedtime routine aversiveness was significantly related to bedtime procrastination, $r = .44$, $p < .001$. This indicates that people were more likely to engage in bedtime procrastination to the extent that they rated their bedtimes as more aversive.

Study 1b. The results of Study 1a suggest that bedtime routine aversiveness is related to bedtime procrastination. However, because the aversion scale in Study 1a included items related to people’s propensity to delay their bedtime routines (e.g., “I tend to put off my bedtime routine when I am tired”), we aimed to replicate the results of Study 1a using a more process-pure measure of aversion. In Study 1b, we again measured bedtime procrastination and bedtime routine aversiveness, but this time, we only included questions about how unpleasant people find their bedtime routines, without any questions about people’s inclination to avoid their bedtime routines. For exploratory reasons, we additionally investigated whether aversion to other activities that are related to sleep (e.g., waking up, the things one has to do tomorrow, and sleeping) also predicts bedtime procrastination.

¹ Study 1a was part of a larger study on determinants of bedtime procrastination and, as such, consisted of several other measures and questionnaires next to the ones reported in the present paper (e.g., a self-control scale and questions about fatigue). A full list of these materials can be obtained through the authors.

Table 1
Activities that are part of participants' bedtime routines, and percentage of people who indicated performing these activities "often" / "almost always"

Activity	% of participants who do this "often" or "almost always"
Brush your teeth	76.1
Set the alarm clock	63.4
Wash your face/remove makeup	44.9
Take a shower	26.7
Do the dishes	23.9
Comb hair	23.9
Take out contact lenses	21.4
Pick an outfit for the next day	17.3
Prepare bag for the next day	16.5
Pack lunch	16.0
Clean up the house	14.8

Method

Two-hundred-and-forty-two participants in the US completed the survey through Amazon's MTurk. Forty-three participants were excluded from the sample because they worked night shifts or suffered from a sleep disorder, resulting in a final sample of 199 participants (122 men; aged 19 to 67, average age 34.24, SD = 10.55). Of these participants, 70.9% were employed, 3.0% were students, 3.5% was retired, and 22.6% indicated being unemployed/homemaker/other. Participants read the following introductory text:

"Before going to bed, people generally perform a sequence of actions in preparation of going to bed. You can think of walking the dog, brushing one's teeth, removing one's make-up, taking out one's contact lenses, etc. This is called a bedtime routine. Please think of what your bedtime routine looks like, and indicate to what extent you agree with the following statements."

Next, participants were asked to answer four questions about the aversiveness of their bedtime routines ($\alpha = .90$; example item "Having to perform

my bedtime routine is annoying."). Moreover, they were asked to answer questions about wake-up aversion (4 items, $\alpha = .91$; example item "I dislike getting up in the morning"), tomorrow aversion (4 items, $\alpha = .88$; example item "When it is almost time to go to bed I look forward to tomorrow"; reverse scored), and sleep aversion (4 items, $\alpha = .89$; example item "I find sleeping pleasant"; reverse scored). After this, participants completed a bedtime procrastination scale (Kroese, De Ridder, et al., 2014, $\alpha = .90$).

Results

In line with our expectations, bedtime routine aversiveness was again related to bedtime procrastination, $r = .31$, $p < .001$. This suggests that people who rate their bedtime routines as more aversive are more likely to engage in bedtime procrastination. Bedtime procrastination was also significantly correlated with wake-up aversion ($r = .46$, $p < .001$) and tomorrow aversion ($r = .29$, $p < .001$), but not with sleep aversion ($r = .11$, $p = .11$). Bedtime routine aversiveness remained a significant predictor of bedtime procrastination,

even after controlling for the other types of aversion (wake-up aversion, tomorrow aversion, and sleep aversion), $\beta = .19$, $p = .005^2$. In sum, these data suggest that when people procrastinate about going to bed, it is not because they dislike sleeping but rather because they find their bedtime routines aversive, or are averse either to waking up or to the activities that await them the following day. The aversiveness of bedtime routines predicts bedtime procrastination even after other factors (aversion to sleep, tomorrow, and waking up) have been accounted for.

Discussion

In the present research, we investigated whether aversive bedtime routines may be a contributing factor to bedtime procrastination. In line with our expectations, we found that people who rated their bedtime routines as more aversive were more likely to engage in bedtime procrastination. Aversion to waking up and to the activities that await them the following day were also related to bedtime procrastination, but aversion to sleep was not.

One question that remains is *why* people find their bedtime routine aversive. What exactly is aversive about taking out contact lenses or flossing one's teeth? It may be the case that people find these activities aversive regardless of context, for example, that people dislike flossing in general because they find it to be tedious, painful or disgusting. However, it is also possible that these activities are experienced as aversive because they are part of preparing for bed. If this is the case, these activities would be experienced as less aversive at other times of the day. As we have suggested, part of why people dislike preparing for

bed stems from having their "slack time" or "me time" cut short. After a hard day's work, many people enjoy engaging in leisurely activities such as watching television (Kroese et al., in press). When their workday is finished, the cooking and cleaning has been done and the children are finally put to bed, people can kick back, relax, and enjoy a time of the day in which there is nothing they are obliged to do. In our view, the activities comprising bedtime routines may be considered aversive in part because they often consist of *obligatory* chores, viz. things that *have to be done* at a time of the day when many people enjoy finally not *being obligated* to do anything at all.

Lastly, besides cutting people's slack time short, bedtime routines may be considered aversive because they require shifting from a state of rest and relaxation to a state of being relatively active. As such, these tasks form a wedge between two periods of rest (namely leisure time and sleep). At night, when people are tired, getting up to walk the dog (especially when it is dark and cold outside) or walking upstairs to floss may sometimes seem like an almost insurmountable hurdle, because doing so requires people to overcome their inertia.

More research is needed into the mechanisms by which aversion to certain activities affects bedtime procrastination, as well as into the question of why people find certain activities aversive in the first place. What our data do already suggest, however, are some interesting new avenues for interventions that may promote sleep. For if aversive bedtime routines indeed interfere with people getting sufficient sleep, it might be relatively simple to diminish bedtime procrastination by streamlining people's bedtime routines, reducing their aversiveness, or shifting them to another time. Instead of walking the dog, taking out contact lenses, and flossing right before going to bed, people could simply try to conduct the activities that they are averse to at an earlier point in the evening. For example, people could take out their

² Additionally, aversion to getting up remained a significant predictor ($\beta = .40$, $p < .001$). Sleep aversion and tomorrow aversion did not significantly predict bedtime procrastination.

contact lenses right after dinner, or brush their teeth when they put their children to bed. This way, people can go (almost) straight from their couch to bed, thereby sidestepping one of the precursors to bedtime procrastination.

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