Bachelor Thesis

The tale of putting off - An experience sampling study on the effect of procrastination on daily binge watching behaviour

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Abstract

With the overarching rise in popularity of video on demand (VOD) streaming services an interest in investigating binge watching (BW) behaviour has emerged. The process of clearly defining this phenomenon is still in its early stages alongside investigations of several motives for and consequences of BW. Especially the temporal relation with procrastination is still unclear. Consequently, the current study examines whether trait and daily (state) procrastination predict BW behaviour and whether BW behaviour predicts daily (state) procrastination. These research questions were answered by employing an experience sampling method design over the course of two weeks. BW behaviour within this study is defined as both the number of episodes watched (i.e., equal or more than three episodes) and hours spent watching VOD (i.e., equal or more than two hours) over the course of one day. Participants (M_{age} = 22.96; SD_{age} = 5.51; ranging from 20 to 60 years; 82.4% female) were requested to fill in baseline, demographic and short daily questionnaires by using the smartphone application Ethica. Linear Mixed Model (LMM) analyses revealed that both trait procrastination (ß = .11; p = .017). and same day state procrastination (ß = .08; p = .028)., as a predictor variable, showed a significant positive association with weak effects in relation to BW behaviour, within the initial sample. Therefore, indicating that increased levels of procrastination leads to increase of BW behaviour. No association could be found between BW behaviour as the predictor for state procrastination the next day. Future research is encouraged to investigate potential moderating variables, such as self-control and ego depletion.

Keywords: Binge watching, Video on Demand, Experience Sampling Method, Procrastination

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Introduction

Video on demand (VOD) watching has become increasingly present in everyday life within the past few years and is still changing the consumption of multimedia such as films and series. Within one year, the sole use of broadband television, such as streaming services, had already more than doubled amongst the US population. With 2.6 million households in 2014 using VOD services, thereby surpassing standard cable TV (Luckerson, 2014). Amongst the vast and diverse field of streaming services, two giants have emerged that now account for a viewership of roughly 350 million people worldwide using their services: Netflix and Amazon Prime (Cook, 2021). As the name implies, VOD aims at providing the users the ability to watch whenever and whatever they like, thereby making use of smart algorithms to make the viewers more susceptible towards spending more time on their platforms (Oomen, 2020). The overall slow but steady decline of linear broadcasting television and the huge increase in popularity of VOD services led to an interesting phenomenon that first started when DVD boxsets of series were available: binge watching behaviour (Oomen, 2020; Wayne, 2018).

Binge Watching Behaviour

Nowadays the term binge watching (BW) is used more than ever to describe the viewing of multiple episodes of a TV series in one sitting. Congruent evidence suggests that on average 72% of the participants in recent VOD studies engaged in BW behaviour (Flayelle et al., 2020; Starosta & Izydorczyk, 2020). The majority of the population samples engaging in BW behaviour is aged between 18 to 39 years old (Flayelle et al., 2020).

The term BW prompts an association to other terms with the same verb. Having a short look into the clinical history of the term ‘binge’, it becomes apparent that this term is specifically used to describe a form of eating disorder. The so-called binge eating disorder (BED). It describes the uncontrolled consumption of a vast amount of foods in short amount of time without purging or fasting as it is associated with bulimia nervosa (American Psychiatric Association, 2013). The term binge can also be found in association with an addictive disorder such as alcohol use disorder (AUD) (American Psychiatric Association, 2013). Thus, binge-drinking describes the consumption of numerous alcohol beverages, normally more than five within one event (Naimi et al., 2003). This often-assumed negative connotation of the word ‘binge’ has sparked the interest of scientific research to examine (mental) health related motives and outcomes of BW behaviour (Flayelle et al., 2020; Merikivi et al., 2020; Starosta & Izydorczyk, 2020).

The term BW itself has many different conceptualizations, hence there is no coherent definition among the current field of research (Flayelle et al., 2020; Jenner, 2020; Viens & Farrar,

2021). According to the work of Jenner (2020), the common ground within these various definitions can be found within three aspects. First, the viewer does have a certain control over the content and the timely arrangement of watching. Second, the only interruptions between episodes or programmes that are being watched are everyday life obstacles and needs.Third, the watching behaviour is executed on VOD platforms and not standard linear TV (Jenner, 2020). Current literature suggests that the greatest incongruence is found in the division over quantity, thereby meaning either dividing between the amount of episodes watched or overall time spent watching (Flayelle et al., 2020). Viens and Farrar (2021) argue that it is not quite viable to use the former proposed summation of episodes watched, since episodes of series can vary drastically in their length (e.g. from 20mins to 60mins per episode). The pure count of consumed episodes might therefore be misleading. Another interesting but less commonly used definition is the criterion of watching an entire season or series (Flayelle et al., 2020).

It is interesting to have a look at the distinction between general BW (i.e., overall time spent on the VOD platform) versus single program BW (i.e., watching the same series) (Flayelle et al., 2020; Viens & Farrar, 2021). This distinction is an important criterion when aiming to measure BW behaviour, since it allows for either general or specific measurements. Thus, within the frame of the current study BW is defined as both the number of episodes watched (i.e., equal or more than three episodes) and hours spent watching VOD (i.e., equal to or more than two hours) over the course of one day (Flayelle et al., 2020; Viens & Farrar, 2021).

Motives for Binge Watching Behaviour

As for the current state of research, studies were mostly occupied with the potential motives and outcomes of BW behaviour. Moreover, the initial research illustrates widely varying and conflicting findings, presenting both positive and negative predictors and consequences of BW (Flayelle et al., 2020; Ort et al., 2021; Rubenking et al., 2018; Sun & Chang, 2021). There are several different motivations related with BW behaviour that are often centred around the uses and gratification theory (UGT). The theory describes the satisfaction of psychological needs (Flayelle et al., 2020; Shim & Kim, 2018; Yoo et al., 2020). Yoo et al. (2020) propose five motivations for that matter: enjoyment, efficiency, information seeking, social interaction and relaxation. These motivations also show congruency with the findings of Shim and Kim (2017), who distinguished between hedonistic and utilitarian motives. Whereas the former describes the engagement in BW as something that is done for the sole purpose of enjoyment, the latter describes the more practical nature of BW to receive or seek information. Moreover, they used the personality trait terms need for

cognition and need for sensation to describe viewers who engage in BW for cognitive stimulations. Such as elaborated thinking and some food for thought and describing viewers who seek for some novel and varied experiences (Shim & Kim, 2018). Flayelle et al. (2020) also lists high levels of sensation seeking and need for cognition amongst high levels of neuroticism.

BW seems to satisfy the need for social interaction in different ways. On the one hand, viewers might engage with the social environment to talk about the programme or use the programme to fulfil their need for social interactions, especially among lonely viewers (Flayelle et al., 2020; Yoo et al., 2020). The motivational aspect for relaxation is often related to some form of escapism. Therefore, inducing a state of psychological comfort as some form of coping behaviour, alongside with potential addictive qualities (Shim & Kim, 2018). Especially Flayelle et al. (2020) illustrate that emotional regulation correlates with problematic or addictive BW behaviour.

Ort et al. (2021) and Sun and Chang (2021) were able to demonstrate positive associations between problematic BW behaviour and motives for social interaction and loneliness. Furthermore, motives for escapism, stimulation and learning have all been positively associated with problematic BW behaviour (Ort et al., 2021), as well as depression and social interaction anxiety (Sun & Chang, 2021). Both studies used a different conceptualization and scale for measuring the concept of problematic or addictive watching behaviour. Whereas Ort et al. (2021) remodelled a questionnaire for gambling and BED, thus focussing on impaired control, social impairment and uncontrolled amount of series content. Sun and Chang (2021) focussed on the addiction model by Griffiths (2005), thereby examining salience, mood modification, tolerance, withdrawal symptoms, conflict and relapse. Despite the use of different measurement instruments related to addiction, both articles reveal associations to loneliness and social interaction. They both emphasize and demonstrate also that happiness, relaxation and strive for entertainment correlate negatively with their defined concept of problematic BW behaviour. Thus, in line with the findings of Flayelle (2019), BW appears to be a complex phenomenon, which should not be solely compared with other addictions and their assessment criteria, thereby raising the question whether BW is a passion or addiction (Ort et al., 2021; Sun & Chang, 2021).

Consequences of Binge Watching Behaviour

Investigating the potential outcomes of BW brought attention to both positive and negative (mental) health related factors. BW itself is associated with enjoyment, higher levels

of narrative transportation, well-being through autonomous behaviour and usage gratification, such as choosing when and what to watch (Flayelle et al., 2020). According to Rubenking et al. (2018) BW behaviour that results in relaxation, entertainment or enjoyment seems not to be related to problematic or addictive viewing behaviour. However, BW behaviour can result in a vicious cycle when exhibited on a high level. When viewers end a BW session that did not satisfy their viewing needs, they could experience negative feelings such as stress, loneliness, social deprivation and emptiness (Ort et al., 2021; Rubenking et al., 2018). This will in turn facilitate the need to engage in even more BW to satisfy their needs, mostly in the form of escapism. This can result in health problems such as lack of exercise and movements, the decrease of the quality of sleep and manifestation of mental health problems (Ort et al., 2021).

Binge Watching and Procrastination

Several different motives and outcomes in relation to BW behaviour have been investigated over the recent years, as part of the trait of self- and/or impaired control. However, only a few studies seem to specifically focus on the association with procrastination (Flayelle et al., 2020; Starosta et al., 2019). Interestingly enough, the phenomenon of procrastination has been around for decades leading to Solomon and Rothblum (1984) investigating the effects of procrastination within the academic realm. They defined the construct as a needless delay of tasks with imposed subjective discomfort on the individual. Within recent years, research seems to be troubled about a clear and concise definition of procrastination, especially regarding the portrayed behaviour (Gort et al., 2021; Hailikari et al., 2021; Steel, 2007). Klingsieck (2013) thus provides a coherent approach within her systematic review to define procrastination as “the voluntary delay of an intended and necessary and/or [personally] important activity, despite expecting potential negative consequences that outweigh the positive consequences of the delay” (p. 26). To be more specific, chores or activities that are undesired are postponed and substituted with more pleasant activities, such as playing games, sleeping or other activities (Gort et al., 2021; Steel, 2007). Procrastination cannot only be observed on the state level, by solely measuring the immediate unnecessary delay of tasks. It is strongly associated with trait-like structures, such as stable temporal associations over a long time. It is part of the Big Five trait conscientiousness, more specifically the sub-trait self-control and related to high impulsiveness (Eerde, 2003; Steel, 2007).

Potential negative effects of procrastination include lack of (academic) performance and decrease in accomplishing personal aims and overall well-being (Gort et al., 2021;

Klingsieck, 2013; Steel, 2007). Moreover, affectional and cognitive components within clinical psychology have been found to correlate with procrastination, such as depression, anxiety, stress, ADHD and increase in experienced boredom (Klingsieck, 2013). While college students seem to be more prone to procrastinate, with around 70% to 75% procrastinating on a regular basis, the phenomenon is also present among the general population with rates ranging up to 20% (Gort et al., 2021; Steel, 2007).

A systematic review by Flayelle et al. (2020) demonstrates that higher frequency of BW correlates positively in a cluster analysis with procrastination. However, the duration of BW behaviour does not correlate with procrastination. Within the academic realm, the level of procrastination seems to increase levels of TV watching and BW behaviour among college students (Starosta et al., 2019; Steel, 2007). Most research however, does not mention procrastination and BW behaviour explicitly and it remains unclear whether procrastination can act as a motive for or outcome of BW behaviour or both.

Moreover, the current field of research on BW behaviour mostly consists of qualitative and retrospective cross-sectional design studies (Flayelle et al., 2020; Starosta & Izydorczyk, 2020). The main issue with the latter design is that they merely demonstrate correlations, not the temporal nature of associations between data points (Conner & Lehman, 2012). Furthermore, these studies strongly rely on retrospective memory collection, such as diaries or post questionnaires. These chosen methods make the collection of data prone to recall bias. Researchers can also not be sure whether participants really filled in the questionnaires or diary entries on time and on the actual occurrence of the behaviour (Trull & Ebner-Priemer, 2009). To circumvent these issues and ensure that the collected data matches the reality of the participants as close as possible, the current study makes use of an ecological momentary assessment tool called experience-sampling method (ESM) (Conner & Lehman, 2012; Trull & Ebner-Priemer, 2009).

ESM can be defined as the repeated, immediate measurement of individual data points over a certain amount of time (Conner & Lehman, 2012; Hektner et al., 2007). Therefore, ESM achieves accurate insights into the daily behaviour, feelings and cognitions of individuals as they occur, by providing them with prompts throughout several fixed or random time-points to fill out questionnaires that can be fully tailored to the needs of the researcher (Hektner et al., 2007). With the help of modern technology, ESM studies can be performed by digital media such as smartphone applications. This allows for a more convenient and simple process of collecting data by making use of the pre-owned smartphones of the participants, thereby not imposing other tools on them that the potential respondents need to carry on them

at all time (Van Berkel et al., 2017). Due to the potential of the ESM design, procrastination can not only be investigated on the trait level by solely using a baseline questionnaire but also on the state level, thereby making use of momentary assessment methods. ESM allows for momentary measurements of several data points per participant, usually with multiple points collected over the course of a day. Thus, building a strong foundation for investigating temporal associations by performing lagged analysis (Conner & Lehman, 2012; Hektner et al., 2007; Van Berkel et al., 2017). The focus lies on the micro-level, assessing states and fluctuations within and/ or in-between participants, thereby avoiding memory biases, such as the retrospective bias when having a look at traditional self-reports methods (Conner & Lehman, 2012).

Keeping these possibilities in mind, the current research employs the ESM design to further explore daily BW behaviour and its association with procrastination, by answering the following research questions:

Research Question 1: *Does the level of trait procrastination predict binge-watching behaviour of the participants over time?*

Research Question 2: *Does the level of state procrastination predict same day binge-watching behaviour of the participants over time?*

Research Question 3: *Does binge-watching behaviour predict the level of state procrastination of the participants the next day over time?*

Methods

Design

The current study was a joint effort by six bachelor students and approved by the Ethics Committee of the Faculty of Behavioural Sciences (ECBMS) at the University of Twente (210327). This study was employed using ESM as it allows for a thorough investigation of temporal associations of both trait and state procrastination with BW behaviour over time. The participants were recruited via convenience sampling in the networks of the researchers. Therefore, several invitations were sent out on different social media platforms, such as Instagram, Facebook and WhatsApp.The participants did not receive any reimbursements in partaking within the study.

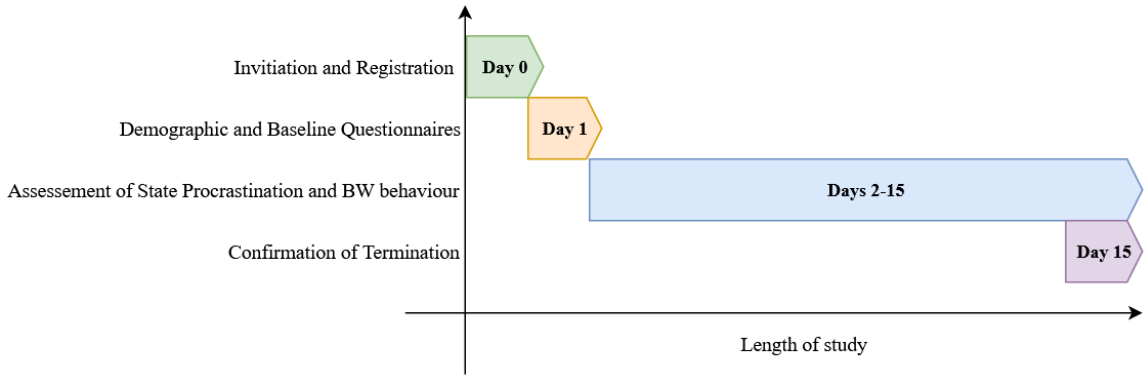
The general study took place over the course of 15 consecutive days, including the baseline measurements, from 8th April until 23rd April 2021 (Figure 1). To be more precise, the momentary measurement instances were initiated over the course of fourteen days, thereby following the findings of Van Berkel et al. (2017) which revealed a median study duration of

fourteen days. At the beginning of the study participants received an invite with clear instructions on how to proceed (see Appendix A for the invitation mail).The Ehtica smartphone application was used to collect baseline and longitudinal momentary data (Ethica, 2020). Within the application participants had the possibility to agree in partaking within this study and were informed accordingly (see Appendix B for consent form). This study consisted of four questionnaires, a demographic questionnaire, a baseline measure comprising the trait procrastination scale by Tuckman (1991), a daily morning questionnaire measuring quantity of VOD watching and a daily evening questionnaire measuring procrastination at state level (see Appendix C for all questionnaires). Thus creating two measurement signals per day, which is supported by preceding literature that demonstrated an appropriate maximum of up to 10 signals per day (Conner & Lehman, 2012; Csikszentmihalyi & Larson, 2014). At the end of the study, participants received a mail, thanking them for their time and participation (see Appendix D for debriefing mail).

In general, three inclusion criteria were formulated in order to be eligible to partake within the study. Only participants over the age of 18 years were eligible for participation, since previous studies revealed a high prevalence rate for BW between the age of 18 and 39, as shown by the systematic review by Starosta and Izydorczyk (2020). Furthermore, participants were required to have a sufficient knowledge of the English language in order to understand the content and questionnaires of this study. Due to the nature of this study, examining specifically the usage behaviour of VOD services, the participants were required to use at least one VOD service. Finally, the participants needed to own a smartphone with either an Android or an iOS system to ensure compatibility perquisites regarding the Ethica application used within this study (Ethica, 2020).

Figure 1

Timeline study design



Note: The demographic and baseline questionnaire were made available throughout the whole study.

Participants

ESM studies are not set out to produce representative results that can be applied to a total population, these studies are mostly exploratory in nature, leading to investigate and understand certain phenomena and relationships within and in-between a group of participants over a certain period of time (Hektner et al., 2007). Moreover, the data obtained is rich as there are many points of measurements, which is why the number of participants required for sufficient results is lower when compared to other quantitative measures (e.g. cross-sectional designs) (Hektner et al., 2007). Van Berkel et al. (2017) demonstrated within a meta-analysis that the mean number of participants for previous ESM studies resulted in 53 respondents. This study yielded a participation rate of 81 respondents.

Materials

Ethica Smartphone Application

The Ethica application for Android and iOS smartphones, developed by Ethica Data, enabled the collection of ESM data. With the help of this research tool, it was possible to develop a unitary user experience for the participants of this study, as they were all able to start and end within the same period by simply downloading the application on their device (Ethica, 2020). Moreover, the participants were able to answer the questions and enter their information within the application on the given time spots throughout the day. The participants were asked twice a day to enter relevant data. Ethica allows for push notifications, which reminded the participant to fill out the questionnaires. Furthermore, the questionnaires expired when the participants did not

answer within a pre-set period (Ethica, 2020). This feature makes sure that the data gathered is truly momentary.

Demographics Questionnaire

The demographics survey entailed questions about age, gender, nationality and occupation. Besides that, participants were also requested to indicate their VOD streaming platform by providing one or multiple answers, they had the opportunity to choose from the following options: *"Netflix", "Amazon Prime", "Disney+", "TVNow", "Joyn", "Youtube", "Sky", "Hulu", "Maxdome", "Dazn", "Other"* and *"I do not use streaming services".*

Baseline Questionnaire

The sixteen-item scale by Tuckman (1991) was used for a comprehensive measurement of the participants' trait levels of procrastination. Within the original questionnaire, a single factor with loadings of the 16 items above .40 could be proven (Appendix C). Moreover, the Cronbach's Alpha showed a high reliability of .86. In a later study of Tuckman (2007), the reported Cronbach's Alpha rose to .89. The answering options in the original studies revolved around a four point Likert-Scale, leaving no room for neutral options (Tuckman, 1991, 2007). However, within this study a five point Likert-Scale ranging from 1 (*Disagree*) to 5 (*Agree*) was used to provide the participants the option to return to neutral when they were uncertain about an item. Moreover, response bias can be prevented, as the participants might feel pressured to provide the most social desirable direction when having to answer on an even point Likert-Scale (Croasmun & Ostrom, 2011). The scale uses a combined rating system, whereas some items must be scored in reverse, the resulting total scale score ranges from 16 to 80, meaning that participants with a higher score tend to display more procrastination behaviour. (Tuckman, 2007). The participants answered items such as *"I needlessly delay finishing jobs, even when they're important"; "Even though I hate myself if I don't get started, it doesn't get me going"* and *"Putting something off until tomorrow is not the way I do it"* (Tuckman, 1991). The Cronbach's Alpha in the current study was calculated and resulted in a good internal reliability score (α = 0.90).

Daily Questionnaire

Daily VOD Watching Behaviour. To assess the daily VOD watching behaviour of the participants, four items were created that were prompted every morning to assess the watching behaviour of the preceding day, based on previous bachelor studies investigating the same phenomenon (Acar, 2020; Lehmkühler, 2020). The overall time spent watching VOD, ranging

from *less than 1 hour* to *more than 5 hours*, was assessed together with the number of episodes. It was decided to include both measurements in order to calculate a cumulative BW variable which combines both the number of episodes and hours spent watching, thus finding a balance within the definitions of BW behaviour (Flayelle et al., 2019; Jenner, 2020; Viens & Farrar, 2021). Furthermore, participants were asked at which times of the day they engaged in VOD watching, choosing between *morning, afternoon, evening and night*. Lastly, they were able to indicate for what reason they engaged in VOD watching, such as *entertainment, stress or procrastination* (see questionnaire in Appendix C).

Momentary Assessment of State Procrastination. The momentary assessment of procrastination was administered each evening for the respective day and entailed two items. (1) The first item was based on the results of the meta-analysis by Klingsieck (2013). She illustrated that the definition for procrastination consisted of several factors, such as the intention to delay a task, the importance of the task and the irrationality of the delay (Klingsieck, 2013). Therefore, the following statement was developed: "I intentionally **delayed a task today** that is personally important to me, although it was unreasonable to put this task off." The participants answer on a five point Likert-Scale, ranging from disagree (1) to agree (5). (2) The second item was concerned with the type of delayed task: "What kind of planned task did you delay?" The participants could choose between several areas, such as job, household or free time.

Procedure

The study took place over the course of 15 consecutive days in total. On the day before the start of the study, the participants received an invitation via mail with concrete instructions. They were asked to download the Ethica application for their smartphone and create an account as a participant. Afterwards they were able to enrol with the use of the study code. Upon enrolment, they had the chance to read through the consent form and had the opportunity to deny or accept the entry to the study No questionnaires were displayed on the day before the study and they could close the application.

On the first day of the study, the participants were asked to fill out the demographic survey and the baseline questionnaire by receiving a notification at 9:00 a.m. Overall, these questionnaires did not take longer than 10 minutes to complete. Nevertheless, they had the chance to pause each baseline questionnaire and fill them out gradually throughout the whole study to prevent stress.

During the following days (day 2 to 14), the participants were asked twice a day to fill out a short questionnaire that should not take longer than two minutes to fill out. In the morning between 9:00 a.m. and 12:30 p.m., they were asked about their overall BW behaviour of the previous day. Whereas, in the evening between 18:00 p.m. and 12:00 a.m. they were asked about their procrastination behaviour on the same day. The participants received a notification at the beginning of every questionnaire and after a period of time if they forgot to fill out the questionnaire, thus in the morning after 135 minutes and in the evening after 180 minutes. If they did not fill out the questionnaire after the end time, the questionnaire expired.

On the final day (day 14), the participants were able to fill out both daily questionnaires for the last time and received a debriefing mail marking the end of the study and thanking them for their participation. Finally, the study was stopped, evaluated and analysed.

Data Analysis

The data obtained via the Ethica application was exported within the CSV format and imported in Microsoft Excel 2016 to allow for a short pre-screening and gaining an oversight of the existing data. Following, the data was merged and entered into IBM SPSS Version 26 for further detailed analysis.

The mean response rate within ESM momentary assessment revolves around 50% to 69% (Van Berkel et al., 2017). Therefore, the cut-off score for the response rate was set to 70% since most participants completed the questionnaire above that threshold. Thus, participants answering less than 70% of the questions were omitted, alongside participants that did not fill out the baseline questionnaires and demographics. R data from the baseline and demographic questionnaire, such as age, gender, nationality, VOD platform used and total scores of trait procrastination were analysed using descriptive statistics and frequencies, obtaining standard deviations, means and proportions.

Taking into consideration the daily measurements, nested within participants, Linear Mixed Models (LMM) were applied to analyse the longitudinal data and answer the research questions. All LMMs were performed with a first-order autoregressive structure (AR1), assuming a slowly decreasing dependency among the data points per participant over time. Besides dealing with the nested structure of the data, The LMM also has the property of accounting for missing values by estimating the missing data accordingly (Verhagen, Hasmi, Drukker, Os, & Delespaul, 2016). The pre-set specified subject variable was id and the repeated variable was day for every LMM. To gain further descriptive information about the VOD watching behaviour Estimated Marginal Means (EMM) were calculated by using the variables episodes watched and hours spent

watching as fixed independent factors respectively. The resulting EMMs were plotted for visualization purposes.

The categorical variables were coded into numeric variables. Thus, the answers to “How long did you watch VOD services yesterday?” were recoded into n hour(s) (e.g. 1-hour - 1). Moreover, “less than one hour” was coded into 0.5, “more than 5 hours” into 6 and “I did not watch” into 0. The BW variable was computed by number of episodes (>= 3) and number of hours (>= 2). The resulting dichotomous variable was dummy coded with a value 1 indicating occurrence of BW behaviour and 0 marking the absence of BW behaviour.

To answer the first research question (RQ1), whether trait procrastination predicts BW behaviour, the variable BW was set as dependent (DV) and the variable trait procrastination as fixed covariate within the LMM. For the second research question (RQ2) , whether state procrastination acts as a predictor on BW behaviour, the variable BW was set as dependent (DV) and the variable state procrastination as fixed covariate within a new LMM. To account for a correct order the Lag (1) function was applied and the first day of each measurement omitted. Thus, BW behaviour and procrastination are analysed on the same day. In order to analyse the third research question (RQ3), whether BW behaviour acts as a predictor on state procrastination (DV), the same procedure, without applying the Lag (1) function, was conducted. Thus, the level of procrastination of the day before was analysed with BW behaviour on the day after. All LMMs were run with both unstandardized and standardized values (z-scores). This allowed for the interpretation of strength and direct comparison of the different standardized regression estimates per covariate.

Results

Demographics

From the initial sample of 81 respondents, six respondents were excluded due to a participation rate below the pre-set threshold of 70% and one respondent was excluded due to missing values in both baseline and demographics questionnaires. Thus, resulting in an overall completion rate of 93%. The average age of the remaining sample was 22.96 years, emphasizing the young group aged between 19-26 years, which accounted for roughly 97% of the respondents. Furthermore, the sample consisted of mostly female (82,4%) German (94,6%) participants. The majority of the sample is composed of students, amounting for 77% of the sample population (Table 1).

Table 1

Demographics of respondents

Demographics		n (%)
Age in years	19 - 26	72 (97.3)
	48 - 60	2 (2.7)
Gender	Male	13 (17.6)
	Female	61 (82.4)
Nationality	German	70 (94.6)
	Dutch	1 (1.4)
	Other European	3 (4.1)
Occupation	Student	57 (77)
	Apprentice	6 (8.1)
	Part-time employee	3 (4.1)
	Full-time employee	5 (6.8)
	Unemployed	1 (1.4)
	Other	2 (2.7)

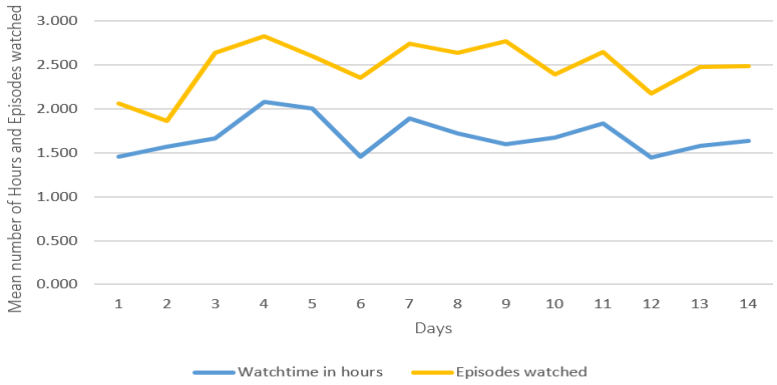
Note: The lowercase letter *n* marks the number of respondents.

Watching Behaviour

The most popular VOD platform was Netflix (94.6%), followed by YouTube (71.6%). Over the fourteen days, Participants indicated that they watched on average 101 minutes of VOD services (M=1.69, SE=0.08). Moreover, they reported watching two and a half episodes per day (M= 2.48, SE=0.22). When looking at the according graph a clear visual correlation between the mean number of hours and episodes over time can be observed. More specifically, when the number of hours go up so do the number of episodes watched. This supports the convergence of both number of episodes and watch-time into one BW variable (Figure 2). About a third of the measurement instances among the sample population fulfilled the pre-defined criteria of BW (33.3%).

Figure 2

Watching frequencies over time in hours and episodes

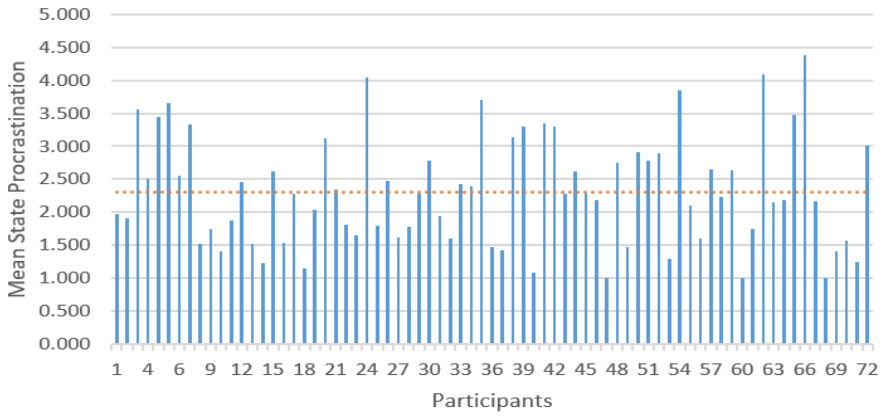


Trait and State Procrastination

Examining the results of the Tuckman Procrastination Scale (Tuckman, 1991), participants reported an overall moderate level of trait procrastination (*M*=44.8, *SD*=11.7). The lowest reported overall score of 16 and the highest reported score of 76, illustrate the wide range of scores on this questionnaire. When looking at the daily measurements of procrastination, participants reported an overall low score on procrastination (*M*=2.28, *SE*=0.07). The graph (Figure 3) visualizes the means over the fourteen days per person and illustrates the fluctuations between the participants, marking the observed individual differences. Being asked about the task participants procrastinated about, 41.7% of the measurement instances revealed that participants did not delay a task, whereas 28.1% of the measurement instances revealed that participants delayed a task concerning educational matters, such as studying.

Figure 3

Mean level of daily state procrastination per participant over the two weeks



Temporal Associations between Procrastination and Binge Watching

In accordance with the pre-defined research questions, three Linear Mixed Model analyses were conducted (Table 2).

Table 2

LMM analyses with covariates

DV	Covariates	Estimate B or β [SE]	95% CI [LB, UB]	F [df1, df2]	p
BW behaviour	Trait Procrastination	.00 [.00]	[.00, .02]	5.8 [1, 230.64]	.017
BW behaviour (standardized)	Trait Procrastination (standardized)	.11*[.04]	[.02, .19]	5.8 [1, 230.64]	.017
BW behaviour	State Procrastination	.02 [.01]	[.00, .05]	4.82 [1, 823.61]	.028
BW behaviour (standardized)	State Procrastination (standardized)	.08*[.04]	[.01, .15]	4.82 [1, 823.61]	.028
State Procrastination (lagged)	BW behaviour	.20 [.11]	[-.01, .42]	3.55 [1, 820.00]	.060
State Procrastination (lagged, standardized)	BW behaviour (standardized)	.07* [.03]	[-.00, .13]	3.55 [1, 820.00]	.060

Note: DV marks the dependent variable. B and SE mark the B-estimate and the standard error. LB and UB represent the lower and upper bound of the 95% confidence interval.

* Standardized z-scores in order to estimate the effect size β.

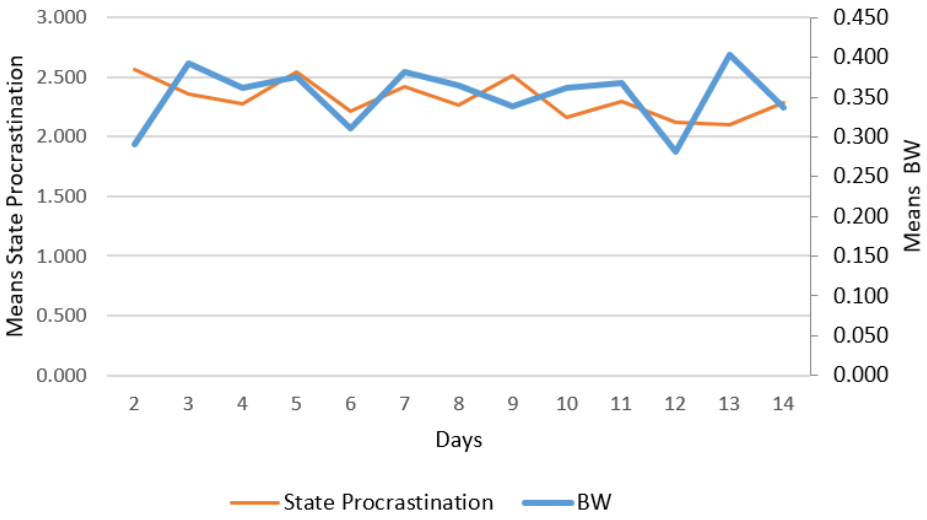
Examining whether trait procrastination predicted BW behaviour over time revealed a significant positive association (F (1,230.64) = 5.8, p = .017), indicating that participants that score high on the Tuckman Procrastination Scale (Tuckman, 1991) are prone to engage in the pre-defined BW behaviour. However, the estimated effect size is weak (β = 0.11, SE = 0.04), thereby demonstrating no strong predictive power of trait procrastination.

The LMM testing whether state procrastination predicted BW behaviour revealed a significant positive association (F (1, 823.61) = 4.82, p = .028), however again with a similar weak effect size (β = 0.08, SE = 0.04). The examination of BW behaviour predicting state procrastination did not reach significance (F (1, 820.00) = 3.55, p = .060) with a weak effect size as well (β = 0.07, SE = 0.03). When observing the graph (Figure 4), it is apparent that the

occurrence of BW behaviour and the level of procrastination appear somewhat linked, forming a slight convergence over time. Nonetheless, there were still deviations noticeable that visualized a lack of association between state procrastination and BW behaviour.

Figure 5

Means of State Procrastination and Occurrence of BW in Mean Percentages



Discussion

The current study aimed at identifying whether a temporal association between procrastination and binge watching behaviour (BW) could be identified by employing an experience sampling method (ESM) over the course of two weeks. Present findings suggest that both trait and state procrastination are predictors of binge watching behaviour over time. Precisely, findings revealed that as levels of trait and state procrastination increase binge watching behaviour tends to increase with it. However, both associations only demonstrated a weak effect, suggesting no substantial impact on participants' BW behaviour. BW behaviour was not significantly associated with state procrastination the next day.

Interpretation of Major Findings

Trait procrastination and state procrastination both predicted BW behaviour at the group level over time. Present findings are in line with previous research, focussing on not only procrastination itself, but also on associated cognitions and affective components. (Flayelle et al., 2020; Reinecke & Hofmann, 2016; Starosta et al., 2019; Steel, 2007). Therefore, this research

complements previous cluster analyses of BW behaviour encompassing self-regulation (Flayelle et al., 2020; Starosta & Izydorczyk, 2020). Differentiating trait versus state procrastination leads to interesting insights. Previous literature suggested that procrastination does fit criteria of character traits, thereby forming connections to conscientiousness and more specifically self-control (Steel, 2007). Keeping this in mind, the predictive qualities of trait procrastination within this study can be further aligned to concepts of impaired self-control. In general, associations with the lack of self- regulatory qualities have been investigated before and revealed significant associations towards the increase of media consumption, such as BW behaviour (Lavoie & Pychyl, 2001; Reinecke et al., 2014; Reinecke & Hofmann, 2016). The current study adds to the literature as it showed that daily levels of procrastination similarly predicted the level of BW behaviour over time. However, only to a weak extent. The findings on the influence of state procrastination on BW behaviour still mark a new territory within the existing symposium of literature, since most studies made use of cross-sectional designs and correlational designs. Cross-sectional studies are not able to provide information on the exact temporal associations between two constructs (Conner & Lehman, 2012). Within this study, it has been confirmed that both trait and state procrastination might be of interest for research on BW behaviour. Whereas, the lack of association between BW and procrastination provides more information on the exact temporal association.

Since most participants of the sample are composed of students, the study seems to reflect the current state of research on procrastination, which is mostly focussed on the academic realm (Gort et al., 2021; Steel, 2007). Moreover, the results are aligned with previous studies investigating procrastination behaviour on media consumption among college students. These studies already demonstrated that gaming, especially interactive video games, TV watching and BW behaviour are associated with procrastination (Reinecke et al., 2014; Starosta et al., 2019; Steel, 2007). It remains unclear why the effect size within the current study remains weak. One reason could be the conceptualization of BW behaviour within this study, specifying BW behaviour as a dichotomous variable and not as a continuous one. Another reason could be the unitary sample composition of students. Due to their educated background, they might be more aware of the potential effects of media consumption and might indulge in BW behaviour, however do not display extreme proportions or levels of this. This possible reasoning would go hand in hand with the results of the cluster analysis by Flayelle et al. (2020), since they depicted a significant relation between the frequency of BW behaviour and procrastination but also demonstrated that the duration of BW, either light or extreme, is not affected by procrastination.

No significant association was found between BW behaviour and procrastination the next day. Whereas, Flayelle et al. (2020); Starosta and Izydorczyk (2020) demonstrated significant correlations between these two variables, however they did not reveal insights about the actual temporal nature of the relationship, be it procrastination as a motivator for BW behaviour or an outcome. Current research was able to examine this more thoroughly by explaining possible confounding variables that could specify the relationship. The concept of self-control affected by ego depletion, describing the decrease of self-regulatory capacities due to effortful tasks, offers an interesting ground for reasoning (Reinecke et al., 2014; Reinecke & Hofmann, 2016). Previous research has demonstrated that self-control and ego depletion are closely related to procrastination behaviour, therefore possibly acting as potential moderator variables between BW behaviour and procrastination itself. Thus, lacking the capacity to regulate oneself or exert self-control as a result of ego-depletion has been found to increase peoples' media use, with binge watching behaviour (Reinecke et al., 2014; Reinecke & Hofmann, 2016). This finding reveals a need for investigating both ego depletion and self-control on a state level, thus potentially yielding more insights on whether a relationship exists or not and specifying the direction.

Strengths

The current study displayed some strengths, mostly due to the ESM study design. The ESM design circumvents interfering factors that are present among cross-sectional or other self-reports assessments, such as recall bias and protocol adherence (Conner & Lehman, 2012; Trull & Ebner-Priemer, 2009). Furthermore, Csikszentmihalyi and Larson (2014) emphasize that participants in general fail to reconstruct experiences afterwards, cultural constructs and stereotypes interfere with the actual experience, making it difficult to assess momentary experience by recall. With the current study design, participants are enabled and encouraged by daily stimuli to answer short questions about their behaviour and experience on a daily basis. Due to the nature of regularly stimuli and time windows for filling out the questionnaires, participants' adherence was strengthened, as they were not able to fill out eventual questionnaires afterwards, thereby not obstructing the ecological validity of the collected data (Trull & Ebner-Priemer, 2009).

Another advantage within the initial employment of the ESM design is the use of the smartphone application Ethica (Ethica, 2020). With the help of digitalized methods of ESM data collection, participants have easier access to the measurement method and less obstacles, as smartphones are already at their fingertips (Van Berkel et al., 2017). This method is also less intrusive, thereby allowing for the natural collection of data points, as participants have the

measuring device nearly always with them. It resembles reality much closer, than previous methods of having to bring an external device or using the diary method, as these activities require more planning (Csikszentmihalyi & Larson, 2014; Van Berkel et al., 2017).

Lastly, this study is an addition to the existing body of research on BW behaviour. More specifically, this study shed light on the phenomenon of both trait and state procrastination in relation to BW. These variables have not been investigated in this manner before, merely in association with the overarching trait conscientiousness and related sub-traits such as (impaired) self-control, impulsiveness and ego depletion on media consumption, not necessarily specifying BW behaviour or procrastination (Flayelle et al., 2020; Reinecke et al., 2014; Reinecke & Hofmann, 2016; Starosta et al., 2019).

Limitations

Besides the aforementioned advantages of the initial study, some limitations need to be considered as well. First of all, the study took place during the SARS-CoV2 pandemic. This is especially relevant since the sample is mostly composed of students having to adapt to online learning strategies within the academic realm. A recent study by Hong et al. (2021) demonstrated that procrastination negatively affected self-regulated online learning as opposed to traditional in class learning. It is possible that procrastination played a much larger role within the current sample due to adaptability issues within the new online learning environment. The overall long-term effects of the corona pandemic are still unknown and yet to be explored.

In context of this study, it is crucial to reflect on some shortcomings of the employed ESM design. Since procrastination was assessed in the evening, participants might have experienced distorted recall, meaning they were not able to reconstruct their level of procrastination for the day correctly. This could have been circumvented by using more assessment moments throughout the day, since the usual assessment frequencies within ESM studies frequent around eight to ten instances per day (Conner & Lehman, 2012; Csikszentmihalyi & Larson, 2014). Moreover, the timing of the assessments might have led to expectancy effects, where the participant might develop a routine to answering the recurring questions, not paying enough attention to the actual content or his experienced levels of procrastination or BW behaviour (Palmier-Claus et al., 2019). This effect could further facilitate social desirability biases, as participants might feel pressured to give answers that resemble and emphasize their positive character traits (Holtgraves, 2004). Most participants might associate BW behaviour with levels of low inhibition or self-control and could feel ashamed to answer truthfully, even though it was assured that the answers were made anonymous.

The sampling method should be addressed as a potential downside as well. Participants were contacted by means of convenience sampling, meaning that researchers were asking for participants in their social environments, thereby unintentionally opting for a mostly high-educated German sample composed of female students. Therefore, potentially falling into the pitfall of selection bias, distorting potential outcomes of the results due to over- or under-estimation (Bethlehem, 2010; Heckman, 1990). However, due to the nature of ESM studies, this issue might have not been too prevalent, since no inferences are drawn for the general population, thus observing solely behavioural patterns and their connections. It is still noteworthy since a more randomized sample could have yielded different outcomes, since procrastination is more prevalent amongst college students (Gort et al., 2021; Steel, 2007).

The last concern that needs to be addressed is the conceptualization of the term binge watching. Previous studies have demonstrated that the current state of research did not agree upon a unitary definition, thus either measuring the number of episodes or the number of hours over the course of one day or within the course of one sitting and not clearly defining a threshold (Flayelle et al., 2020; Jenner, 2020; Starosta & Izydorczyk, 2020). The current study investigated BW behaviour as a dichotomous variable, with a predefined cut-off score. This might affect the power of the results and could account for the weak effect sizes. It would have been interesting to create different levels or a continuous variable measuring the concept of BW behaviour, in order to allow for a broader analysis and differentiated view.

Future Implications

The results of this study shed light on the hitherto underrepresented phenomenon of procrastination within the current field on BW behaviour and offer the opportunity to investigate further possible explanations. It is advised that future research further explores the relations between conscientiousness, self-control, ego depletion and impulsiveness on procrastination and media usage, especially BW behaviour, as previous studies found interesting correlations that support the positive association of procrastination on BW behaviour (Flayelle et al., 2020; Reinecke et al., 2014; Reinecke & Hofmann, 2016; Starosta et al., 2019). Furthermore, future studies might find greater use in employing ESM studies with more assessments per day to account for as much ecological validity as possible.

It would be favourable if future research would allow for a more differentiated view on BW behaviour by creating a continuous variable, measuring the different nuances and potential resulting associations of procrastination and BW behaviour. This generates more insights and is helpful when investigating confounding variables, such as self-control. Taking the current state of

the corona pandemic into account and the uncertainty it created in several research areas, it is advised to investigate the effects after the weakening of the pandemic.

Conclusion

In sum, this study revealed that both trait and state procrastination significantly, although weakly, predicted BW behaviour of the participants over a two-week period As for BW behaviour predicting state procrastination, no significant association could be found. With the implications in mind, future research should perform more exploratory studies, such as ESM designs, to investigate further relations and effect sizes that can account for both variables.

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Appendix A

Invitation emails

Dear Participant,

Thank you very much for taking your time and supporting us with our bachelor thesis study! We will tell you everything you need to know before you can get started.

Overall, the aim of the study is to have a look at video on demand (VOD) watching behaviour and health related concepts. With the help of our questionnaires, we would like to gain more insights into your viewing behaviour over the next 14 days.

As of today, we would kindly like to ask you to download the **Ethica Data** app for either your Android or IOS smartphone. You will use this app on a daily basis to answer our little questionnaires and help us gather data.

Once you downloaded the app and created an account with your mail address, you can click on **Join Study** and enter the following code:

1712

And just like that you are part of our research!

To get started we would like to ask you to read our consent form and indicate whether you like to participate or not. After that you are done for today! **Tomorrow** you will receive your **first two questionnaires**, remember that these might take a little bit longer as these are baseline questionnaires. You probably will need 10 – 15mins to answer them. **After that**, you will receive a morning and an evening questionnaire for the next 14 days. These questionnaires are really short and will take you approximately 3mins in total to complete.

That is all you need to know! We would like to thank you again and wish you a lot of fun answering the questions.

Maybe you can even find out more about yourself!

Your dedicated psychology researchers,

Christine, Naomi, Lara, Annika, Celine and Jeremy

Appendix B

Informed Consent Form

Welcome to our study about video-on-demand (VOD) watching behaviour!

Thank you for your time and support! Please read the following information carefully.

The aim of this research is to explore the relation between VOD watching and (mental) health-related variables. With your participation in this research you will help to make a contribution to the scientific knowledge of VOD watching behaviour.

You can participate in this study if you are at least 16 years old and proficient in English. Ethica is used over a 14-day period to respond to short questionnaires on a daily basis. Please make sure that the notifications on your device for the application (Ethica) are turned on. This facilitates you to answer the questions in the predetermined time frame.

At the start of the study, you will be asked to fill out a baseline questionnaire with questions about demographics, and personality traits. This questionnaire will take around 10 minutes to fill out. From the 8th of April, you will be asked to fill out a short questionnaire twice a day. The questionnaire will be around 5 minutes and the questions asked are about your mood, behaviour and feelings.

This research is not expected to pose any risks. One side effect that can occur is that you might be more aware of your daily mood, behaviour, and feelings. The participation in this study is voluntary. If you wish to withdraw from this research, you can do so at any time without giving a reason.

All your answers will be treated confidentially. Therefore, all personal data (e.g., e-mail, age, gender, etcetera) will be anonymized and will not be published and/or given to a third party.

The study has been approved by the Ethics Committee of the University of Twente, and is thus compliant with internationally recognised guidelines on ethical research.

If any questions or concerns arise before, during or after your participation, do not hesitate to contact the researchers:

Christina Ernsting (c.ernsting@student.utwente.nl), Jeremy Hanhoff, Celine Mezielis, Naomi Nitsche, Lara Schwerdtner

I have fully read and understand the text above and I am willing to participate in this study.

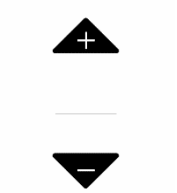
Appendix C

Demographics and General Information

Thank you for participating in our study and welcome to your first questionnaire 😊 With this questionnaire we want to gain some information about you and your background - no worries, just some casual facts. Have fun filling it out!

PS: concerning the whole study coming up: please try to fill out the questionnaires on time! You will receive reminders so you won't forget it since we know how easily that can happen. Still, *if* it happens that you forget to fill out one questionnaire that is okay, please just continue with the next ones, so we can still use the data! Thank you 💟

1. What is your age?



1. What is your gender?

- Female
- Male
- Diverse
- Wish not to disclose

1. What is your nationality

- German
- Dutch
- Other European
- Non-European

1. What is your occupation

- Pupil

- Student
- Apprentice
- Part-time employee
- Full-time employee
- Unemployed
- Self-employed
- Other

1. Which streaming services are you using?

- Netflix
- Amazon Prime
- Disney+
- TVNow
- Joyn
- Youtube
- Sky
- Hulu
- Maxdome
- Dazn
- Other
- I do not use streaming services

Great work! Thank you for your information, if you have a couple more minutes, please take a look at the baseline measurement. Thank you!

Baseline measurement

Please fill out this questionnaire! Thank you!

This questionnaire only needs to be filled out **once**. We know this one is a bit longer than the others (it will take you around 10 minutes to fill it out) but please take your time and answer as honestly as possible. The daily questionnaires will take you **way less** time to fill out, we promise! 😊

1. In the last month, how often have you been upset because of something that happened unexpectedly?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

1. In the last month, how often have you felt that you were unable to control the important things in your life?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

1. In the last month, how often have you felt nervous and "stressed"?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

1. In the last month, how often have you felt confident about your ability to handle your personal problems?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

1. In the last month, how often have you felt that things were going your way?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

1. In the last month, how often have you found that you could not cope with all the things that you had to do?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

1. In the last month, how often have you been able to control irritations in your life?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

1. In the last month, how often have you felt that you were on top of things?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

1. In the last month, how often have you been angered because of things that were outside of your control?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

1. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

1. I am relaxed most of the time

- Very accurate
- Moderately accurate
- Neither inaccurate nor accurate
- Moderately inaccurate

- Very inaccurate

1. I seldom feel blue

- Very accurate
- Moderately accurate
- Neither inaccurate nor accurate
- Moderately inaccurate
- Very inaccurate

1. I get stressed out easily

- Very accurate
- Moderately accurate
- Neither inaccurate nor accurate
- Moderately inaccurate
- Very inaccurate

1. I worry about things

- Very accurate
- Moderately accurate
- Neither inaccurate nor accurate
- Moderately inaccurate
- Very inaccurate

1. I am easily disturbed

- Very accurate
- Moderately accurate
- Neither inaccurate nor accurate
- Moderately inaccurate

- Very inaccurate

1. I get upset easily
    - Very accurate
    - Moderately accurate
    - Neither inaccurate nor accurate
    - Moderately inaccurate
    - Very inaccurate
1. I change my mood a lot
    - Very accurate
    - Moderately accurate
    - Neither inaccurate nor accurate
    - Moderately inaccurate
    - Very inaccurate
1. I have frequent mood swings
    - Very accurate
    - Moderately accurate
    - Neither inaccurate nor accurate
    - Moderately inaccurate
    - Very inaccurate
1. I get irritated easily
    - Very accurate
    - Moderately accurate
    - Neither inaccurate nor accurate
    - Moderately inaccurate

- Very inaccurate

1. I often feel blue

- Very accurate
- Moderately accurate
- Neither inaccurate nor accurate
- Moderately inaccurate
- Very inaccurate

1. Please indicate now, how often do you experience the following feelings: I experience a general sense of emptiness.

- None of the time
- Rarely
- Some of the time
- Often
- All of the time

1. There are plenty of people I can rely on when I have problems.

- None of the time
- Rarely
- Some of the time
- Often
- All of the time

1. There are many people I can trust completely.

- None of the time
- Rarely
- Some of the time

- Often
- All of the time

1. I miss having people around.
   - None of the time
   - Rarely
   - Some of the time
   - Often
   - All of the time
1. There are enough people I feel close to.
   - None of the time
   - Rarely
   - Some of the time
   - Often
   - All of the time
1. I often feel rejected.
   - None of the time
   - Rarely
   - Some of the time
   - Often
   - All of the time
1. I fear others have more rewarding experiences than me
   - Not all true of me
   - Slightly true of me
   - Moderately true of me

- Very true of me
- Extremely true of me

1. I get worried when I find out my friends are having fun without me.
   - Not all true of me
   - Slightly true of me
   - Moderately true of me
   - Very true of me
   - Extremely true of me
1. I get anxious when I don't know what my friends are up to.
   - Not all true of me
   - Slightly true of me
   - Moderately true of me
   - Very true of me
   - Extremely true of me
1. It is important that I understand my friends "in jokes".
   - Not all true of me
   - Slightly true of me
   - Moderately true of me
   - Very true of me
   - Extremely true of me
1. Sometimes, I wonder if I spend too much time keeping up with what is going on
   - Not all true of me
   - Slightly true of me
   - Moderately true of me

- Very true of me
- Extremely true of me

1. It bothers me when I miss an opportunity to meet up with friends.
   - Not all true of me
   - Slightly true of me
   - Moderately true of me
   - Very true of me
   - Extremely true of me
1. When I have a good time it is important for me to share the details online.
   - Not all true of me
   - Slightly true of me
   - Moderately true of me
   - Very true of me
   - Extremely true of me
1. When I miss out on a planned get-together it bothers me.
   - Not all true of me
   - Slightly true of me
   - Moderately true of me
   - Very true of me
   - Extremely true of me
1. When I go on vacation, I continue to keep tabs on what my friends are doing.
   - Not all true of me
   - Slightly true of me
   - Moderately true of me

- Very true of me
- Extremely true of me

1. You are almost done! Just a few questions more 🏁

1. I am good at resisting temptations
    - Not at all like me
    - Not like me
    - Neutral
    - Like me
    - Very much like me
1. I have a hard time breaking bad habits
    - Not at all like me
    - Not like me
    - Neutral
    - Like me
    - Very much like me
1. I am lazy
    - Not at all like me
    - Not like me
    - Neutral
    - Like me
    - Very much like me
1. I say inappropriate things
    - Not at all like me
    - Not like me

- Neutral
- Like me
- Very much like me

1. I do certain things that are bad for me if they are fun
   - Not at all like me
   - Not like me
   - Neutral
   - Like me
   - Very much like me
1. I refuse things that are bad for me.
   - Not at all like me
   - Not like me
   - Neutral
   - Like me
   - Very much like me
1. I wish I had more self discipline
   - Not at all like me
   - Not like me
   - Neutral
   - Like me
   - Very much like me
1. People would say that I have iron self-discipline
   - Not at all like me
   - Not like me

- Neutral
- Like me
- Very much like me

1. Pleasure and fun sometimes keep me from getting work done
   - Not at all like me
   - Not like me
   - Neutral
   - Like me
   - Very much like me
1. I needlessly delay finishing jobs, even when they're important.
   - Disagree
   - Slightly disagree
   - Neither disagree nor agree
   - Slightly agree
   - Agree
1. I postpone starting on things I don't like to do.
   - Disagree
   - Slightly disagree
   - Neither disagree nor agree
   - Slightly agree
   - Agree
1. When I have a deadline, I wait until the last minute.
   - Disagree
   - Slightly disagree

- Neither disagree nor agree
- Slightly agree
- Agree

1. I delay making tough decisions.
   - Disagree
   - Slightly disagree
   - Neither disagree nor agree
   - Slightly agree
   - Agree
1. I keep putting off improving my work habits.
   - Disagree
   - Slightly disagree
   - Neither disagree nor agree
   - Slightly agree
   - Agree
1. I manage to find an excuse for not doing something.
   - Disagree
   - Slightly disagree
   - Neither disagree nor agree
   - Slightly agree
   - Agree
1. I put the necessary time into even boring tasks, like studying.
   - Disagree
   - Slightly disagree

- Neither disagree nor agree
- Slightly agree
- Agree

1. I am an incurable time waster.
   - Disagree
   - Slightly disagree
   - Neither disagree nor agree
   - Slightly agree
   - Agree
1. I'm a time waster now but I can't seem to do anything about it.
   - Disagree
   - Slightly disagree
   - Neither disagree nor agree
   - Slightly agree
   - Agree
1. When something's too tough to tackle, I believe in postponing it.
   - Disagree
   - Slightly disagree
   - Neither disagree nor agree
   - Slightly agree
   - Agree
1. I promise myself I'll do something and then drag my feet.
   - Disagree
   - Slightly disagree

- Neither disagree nor agree
- Slightly agree
- Agree

1. Whenever I make a plan of action, I follow it.
   - Disagree
   - Slightly disagree
   - Neither disagree nor agree
   - Slightly agree
   - Agree
1. Even though I hate myself if I don't get started, it doesn't get me going.
   - Disagree
   - Slightly disagree
   - Neither disagree nor agree
   - Slightly agree
   - Agree
1. I always finish important jobs with time to spare.
   - Disagree
   - Slightly disagree
   - Neither disagree nor agree
   - Slightly agree
   - Agree
1. I get stuck in neutral even though I know how important it is to get started.
   - Disagree
   - Slightly disagree

- Neither disagree nor agree
- Slightly agree
- Agree

1. Putting something off until tomorrow is not the way I do it.

- Disagree
- Slightly disagree
- Neither disagree nor agree
- Slightly agree
- Agree

1. YOU DID IT! We are proud of you, thank you so much for giving us your time 💟 See you again for the daily measurements and like we said, those are not as long as this questionnaire so please keep filling them out 😊

Morning questionnaire

We wish you a wonderful morning 🌞

Please take a moment to reflect and fill out this short questionnaire!

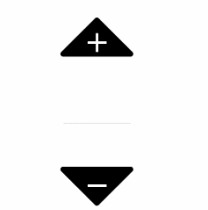
1. How **long** did you watch VOD services **yesterday**?

(If you did not watch a full hour, please just round up/off - e.g., if you watched more than 1 hour and 30 minutes please indicate 2 hours)

- I did not watch
- Less than 1 hour
- 1 hour
- 2 hours
- 3 hours
- 4 hours
- 5 hours

- More than 5 hours

1. How many **episodes** did you watch **yesterday**? (please set the number to 0 if you did not watch any episodes and please count all movies/documentaries you watched also as episodes)



1. At what **time** did you start watching video-on-demand content **yesterday**?

(Multiple answers possible)

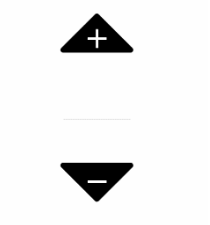
- Morning (6 a.m. – 12 p.m.)
- Afternoon (12 p.m. – 6 p.m.
- Evening (6 p.m. – 11 p.m.)
- Night (11 p.m. – 6 a.m.)
- I did not watch VOD services

1. What were your **reasons** for watching? (multiple answers are also possible)

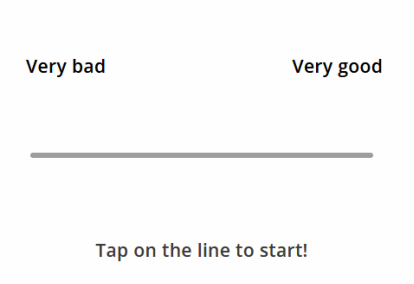
- Entertainment
- Boredom/Nothing else to do
- Stress
- Interest/Curiosity
- Escape from reality/ Distraction
- Peer activity (watching with friends/family)
- Procrastination/Avoidance of responsibilities
- Information seeking
- Relaxation/Taking a break
- Loneliness

- Other
- I did not watch VOD services

1. How many **hours** did you **sleep approximately**?



1. Last night, how would you rate your **quality of sleep**?



1. Did you eat a snack yesterday **after dinnertime**?

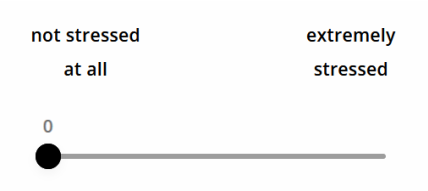
- Yes
- No
- I cannot remember

1. If you ate a snack yesterday during the evening, which **type(s) of snack(s)** did you eat? (Multiple answers possible)

- Chocolate, candy, cake, ice cream or something similar
- Chips, flips or something similar
- Fruit or vegetables or something similar
- Crackers, nuts, yoghurt or something similar
- Other
- I cannot remember

- I did not eat a snack

1. What is your **current stress level**?



1. How **lonely** do you feel at the moment?

- Not at all
- Only a little
- To some extent
- Rather much
- Very much

That's already all we needed from you for now, see you in the evening.

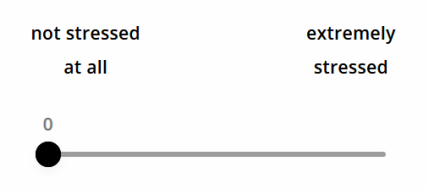
Have a nice day! 💟

Evening Questionnaire

Hello there again,

We hope you had a great day. Now it is time for your evening questionnaire! Please take a short moment and fill it out ✨

1. What is your current stress level?



1. I intentionally delayed a task today that is personally important to me, although it was unreasonable to put this task off.

- Disagree

- Slightly disagree
- Neither disagree nor agree
- Slightly agree
- Agree

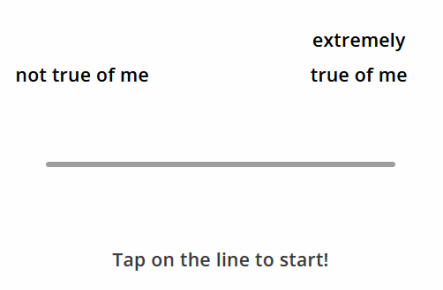
1. What kind of planned task did you delay?

- Household (doing the dishes, cleaning the bathroom etc.)
- Work (projects, phone calls, protocols etc.)
- Education (learning for exam, preparation for lesson etc.)
- Leisure activity (exercise, socializing, hobbies etc.)
- Other
- I did not delay any tasks

1. How **lonely** do you feel at the moment?

- Not at all
- Only a little
- To some extent
- Rather much
- Very much

1. Do you experience the fear of missing out?



That's already everything we need from you right now 🌙 Have a good night, we will see you tomorrow in the morning xx

Appendix D

Debriefing Mail

Dear Participants,

that's it you are done! Thank you so much for your valuable time spent on this study!

As of Thursday evening the first of you were officially done with the study and even those who started later have now the latest completed the study.

We are so excited to see what the results are revealing about the health related concepts we are investigating. Furthermore we are very thankful for your support with our bachelor theses. If you have any questions left, do not hesitate to contact us!

We wish you a great weekend and hope you could learn something about yourself as well!

Your fellow researchers,

Lara, Celine, Annika, Naomi, Christina and Jeremy