

**Can Video on Demand Binge-Watching Behavior make you Procrastinate more?
An Experience Sampling Study**

Master Thesis

Master of Science Positive Clinical Psychology and Technology

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Abstract

The emergence of video-on-demand (VoD) streaming services has changed our watching behavior, and cross-sectional studies have already shown some adverse effects on procrastination. As the exact temporal nature of this relationship remains unclear, this post-hoc study used the experience sampling method to understand the association in more detail. Differences between within-person and between-person associations were examined, and the potential moderating effect of self-control was explored. The sample initially completed demographic data and trait assessment on the first day with the Ethica mobile app. Over 14 days, participants completed brief questionnaires in the morning about their watching behavior the previous day and questions about their procrastination behavior in the evening. Data from 66 participants ($M_{Age}=23$ years, $SD_{Age}=5.82$; 81% Female, 94% German) were analyzed using a series of linear mixed models. A weak, positive association between VoD watching behavior on procrastination was found on the same day ($\beta = .07, p < .05$), but not on the next day. A significant effect was found only on the between-person level, which suggests that the association is more likely based on between-person differences. Self-control did not moderate the association between VoD watching and procrastination. The results complemented previous cross-sectional research and showed that on group level, VoD watching and procrastination are weakly associated only on the same day. However, problematic watching and procrastination behaviors were not found in this sample, and the visual analyses suggested a higher association in some subjects. Possible reasons for the results are discussed. Implications and suggestions for future research are considered.

Keywords: Video on Demand, streaming service, binge-watching, VoD watching behavior, procrastination, self-control, experience-sampling method, young adults

Can Video on Demand Binge-Watching Behavior make you Procrastinate more?

An Experience Sampling Study

Due to the technological revolution in our century and the invention of Video on Demand (VoD) streaming services such as Netflix or Amazon Prime, our media watching behavior has changed. VoD streaming services are used now by more than 350 million people worldwide. A study by Netflix and Harris Interactive showed that already in 2013, 61% of the adult VoD streaming service users binge-watched at least once a week (Schweidel & Moe, 2016). Streaming services are more convenient than traditional appointment viewing because it allows unlimited watching of series and movies at any given time (Flayelle et al., 2020; Jenner, 2017). The freedom to watch any given time as much as one wants has led to a phenomenon known as "binge-watching". The term "bingeing" is most commonly used to describe pleasure-seeking and possible self-harming behaviors (Flayelle et al., 2020; Jenner, 2017). In other words, binge-watching describes excessive watching behavior, where people watch VoD content for an extended period of time in a single sitting. Nevertheless, it is not easily definable as different definitions are used in research to classify an "extended period of time", such as more than 2 hours or more than three episodes (Starosta & Izydorczyk, 2020). Therefore, it is not easy to operationalize the concept in research. Jenner (2020) attempted to integrate the different definitions by identifying three distinct similar characteristic mechanisms of binge-watching: (1) the viewer can control both the material and the time spent watching it, (2) daily life challenges are the only interruptions between episodes watched, and (3) viewing occurs via VoD streaming services such as Netflix. Due to the increasing popularity of streaming services, several studies have focused on understanding the potential motivations and consequences of binge-watching. However, traits and risks associated with watching behavior still need more in-depth research.

Consequences of Binge-watching behavior

Several studies have identified positive and negative consequences of binge-watching. According to Yoo et al. (2020), the five prominent positive reasons and motivations for binge-watching are relaxation, social interaction, information seeking, efficiency, and pleasure. The reasons for social interaction were also cited in the study by Rubenking et al. (2018). Rubenking et al. (2018) showed that watching and talking about VoD content, such as the series on VoD platforms, positively affects social relationships. Moreover, the reason for pleasure by Yoo et al. (2020) is also in line with the mood management theory by Zillmann (2000). Zillmann (2000)

explained in his study that entertainment could regulate people's moods due to the hedonistic motivations for watching. Therefore, similar to other leisure activities, watching VoD content may also help increase well-being (Granow et al., 2018).

In addition to the positive components, there are also potentially harmful consequences of VoD consumption. Several studies have found a link between binge-watching VoD content and negative physical and psychological well-being indicators. These include unhealthy lifestyle habits, neglect of other activities, and procrastination (Flayelle et al., 2020; Starosta & Izydorzycyk, 2020). Concerning procrastination, this is especially practiced to escape from everyday tasks and neglect duties (Flayelle et al., 2020). The motivation to use VoD to procrastinate is particularly evident among young adults (Flayelle et al., 2020; Ort et al., 2021; Rubenking et al., 2018; Starosta & Izydorzycyk, 2020). In consequence, binge-watching is often thought to be potentially harmful to our daily lives, as using VoD to avoid important daily activities can lead to other problematic behaviors and situations in everyday life (Flayelle et al., 2020).

VoD Watching Behavior and Procrastination

To examine the problematic behaviors and situations, two types of procrastination need to be considered. On the one hand, there is procrastination measured on the trait level. A trait is a personality characteristic that is relatively fixed and which stays relatively consistent with an individual (Merrill & Rubenking, 2019). The cross-sectional study of Merrill and Rubenking (2019) already demonstrated a weak but significant positive association between binge-watching behavior on VoD content and trait procrastination. They implied that a tendency to procrastinate and use VoD services as a reward predicts a higher frequency of binge-watching (Merill & Rubenking, 2019). Furthermore, they showed that trait procrastination is one of the most frequently mentioned reasons by VoD viewers for binge-watching VoD content.

On the other hand, procrastination is also measured at the state level. The state of procrastination describes the senseless but also voluntary and intentional postponement of planned and essential tasks at a given time and moment, despite harmful consequences in a daily context (Flayelle et al., 2020; Hailikari et al., 2021; Solomon & Rothblum, 1984; Starosta et al., 2019; Steel, 2007). With state procrastination, the essential but undesirable activities are replaced by more desired but less necessary activities, such as watching behavior (Steel, 2007).

As previously mentioned, considerable research shows an association between watching behavior and trait procrastination (Merrill & Rubenking, 2019). However, this study is based on

cross-sectional study designs, limiting the ability to examine the temporal relationship between VoD watching and procrastination in a daily context. Thus, it remains unclear whether state procrastination acts as either a predictor or a consequence of VoD consumption behavior or if they are reciprocal. Watching behavior could also be a potential predictor of actual subsequent state procrastination. However, no studies to date have examined this. Not considering the relationship between problematic watching and state procrastination can have serious consequences, such as a lack of (academic, work, and personal) achievement and, therefore, a decrease in well-being (Steel, 2007).

Watching VoD content, Procrastination, and Self-control

One personal resource that can contribute to both procrastinating and binge-watching less is self-control. Self-control is a widely researched concept defined as the ability to control oneself in difficult situations and withstand desirable actions compared with undesirable but necessary activities (Hofmann et al., 2012). This finding is exemplified in the work of Hofmann et al. (2017), who illustrated that media consumption, such as binge-watching VoD content, was one of daily life's biggest self-control failures. Hofmann et al. (2017) further illustrated that lower self-control could increase the frequency of binge-watching and procrastination (Hofmann et al., 2017; Starosta & Izydorczyk, 2020). Therefore, higher self-control can serve as a buffer against problematic binge-watching behavior.

Research has shown that a lack of self-control can result in short-term consequences, namely a lack of control over daily tasks and loneliness (Starosta & Izydorczyk, 2020). These consequences, in turn, can increase depressive feelings and promote isolation (Starosta & Izydorczyk, 2020). Moreover, when media consumption is used to put off other important obligations, it can also develop a "guilty pleasure" feeling (Hofmann et al., 2017, p. 15). This feeling causes negative emotions and affects the well-being, for which Hofmann et al. (2017) advise to find a balance with media consumption behavior. Otherwise, problematic watching behavior due to a lack of self-control can further enhance the need to distract oneself from the outside world and daily problems (Rubenking et al., 2018).

Experience Sampling Method

To date, mainly cross-sectional research has been conducted to investigate binge-watching and potential correlates. In these studies, retrospective measurements are taken at one specific time, which carries an increased risk of recall error (Levin, 2006). Consequently, cross-sectional research

is influenced by participants' recall performance, which is highly dependent on current mood and results in less representative findings (Conner & Barrett, 2012).

Moreover, cross-sectional studies can only establish inter-individual effects (between-person) and are limited in analyzing intra-individual effects (within-person). On the one hand, intra-individual effects provide inferences about how variables are related over time within an individual. On the other hand, inter-individual effects (between-person) reveal individual differences based on the average of the sample. Many psychological models and theories often infer intra-individual associations (within-person) from inter-individual measurements (between-person) (Hamaker, 2012). Studies have shown that this assumption is rarely met and that between-person and within-person associations can substantially differ in magnitude or direction (Curran & Bauer, 2011). Due to the measurement at only one specific time in cross-sectional studies, intra-individual analyses are not possible. Multiple longitudinal measurement points are required to distinguish between-person and within-person associations (Curran & Bauer, 2011). Therefore, this study uses data collected with the experience sampling method (ESM).

ESM is a means for collecting intensive longitudinal data, allowing various statistical analyses to examine relationships between behavior and feelings over time more in-depth. With the ESM study design, memory impairments can be reduced. Thoughts, emotions, and behaviors can be more accurately measured due to the multiple daily measurement points measuring momentary, dynamic, and individual states in a longitudinal study design (Myin-Germeys et al., 2018). As this study will examine the association of procrastination, VoD watching and self-control in daily life, it is advantageous to have longitudinal data and real-life assessments measured daily. With ESM, the temporal associations between procrastination and VoD watching can be explored in more detail to develop possible future interventions for the targeted group.

This Study

The present study is a post-hoc analysis based on ESM data collected by Hanhoff (2021) as part of his bachelor thesis at the University of Twente. His work showed a weak but significant positive correlation between state procrastination and watching VoD content (Hanhoff, 2021). By using his ESM data, this study aims to obtain a clearer picture of state procrastination and VoD watching behavior and their association over time. In detail, it will be investigated whether watching behavior is associated as a predictor or consequence of procrastination on the same day and the day after. The longitudinal data will also be used to examine potential differences in the

temporal relationship at the within-person and the between-person level. In addition, self-control is explored as a potential moderating variable, as it is unclear if and how self-control moderates the relationship between VoD watching and state procrastination in terms of the temporal nature. As stated previously, binge-watching is a problematic terminology due to the many different views in previous studies. Therefore, to simplify the concept of binge-watching in this study, the focus will be on the pure usage time of VoD streaming services. Exploratory data analysis will be used to answer the following research questions:

1. To what extent is watching VoD services associated with procrastination on the same day?
2. To what extent is watching VoD services associated with procrastination on the next day?
3. Do temporal associations between VoD watching behavior and procrastination differ on the between-person and within-person level?
4. Does the level of self-control moderate the relationship between VoD watching behavior and procrastination?

Methods

Design

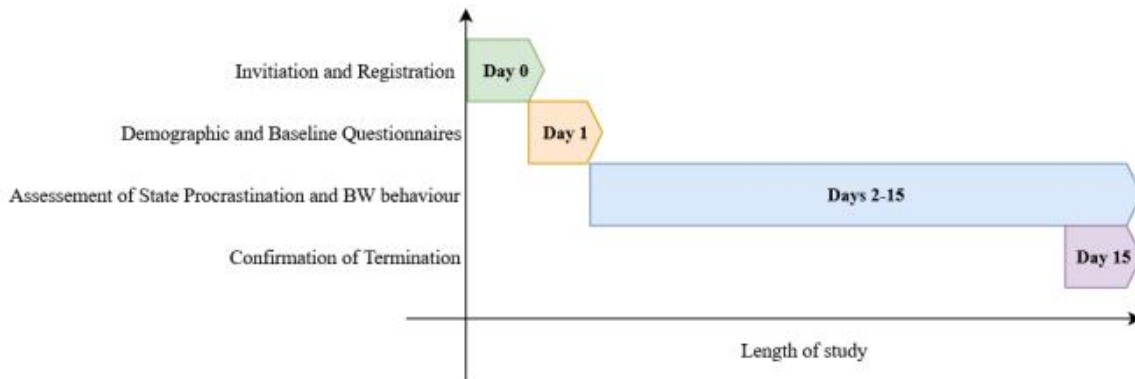
The study by Hanhoff (2021) was a collaborative project with six undergraduate students who collected data together, measuring various constructs such as self-control, procrastination, motivation, sleep, snacking behavior, stress, fear of missing out, and loneliness. The study was approved by the Ethics Committee of the Faculty of Behavioral Sciences (ECBMS) at the University of Twente (210327). Data were collected using the ESM. Convenience sampling was used to recruit participants. The study was conducted over 15 days, from April 8 to April 23, 2021. Participation in the study was voluntary, and each participant gave informed consent.

Figure 1 shows the temporal sequence of the study design (Hanhoff, 2021). Baseline measurements were taken on the first day. Momentary assessments were collected over fourteen days. This was based on Van Berkel et al. (2017) review, which recommended fourteen days as an appropriate study duration for ESM. The decision for the number of measurements per day was supported by the suggestions of Conner and Lehman (2012) and Csikszentmihalyi and Larson (2014), which stated that the maximum number of signals for measurements is 10. In this study, the researcher used an item in the morning where participants could answer questions about their watching behavior the previous day between 9:00 a.m. and 12:30 p.m. In the evening, between

06:00 p.m. and 12:00 a.m., participants were asked about their level of procrastination that day. All responses were recorded using the Ethica application, which participants were required to download to their phones at the beginning of the study (Ethica, 2022).

Figure 1

Hanhoff (2021) Study Design Timeline



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

Participants

To be eligible for participation in the study, four inclusion criteria were formulated: (1) participants had to be over 18 years of age, (2) sufficient English proficiency was required to understand the content of the questionnaires, (3) participants had to use at least one VoD streaming service, and (4) ownership of an Android or iOS smartphone was required to ensure compatibility with the smartphone application Ethica (Ethica, 2022). A total of 81 respondents participated in the ESM study. The number of respondents was above the recommended suggestions of a minimum sample size between 30 and 40 for ESM studies (Van Berkel et al., 2017).

Materials

Data from three different questionnaires will be used for the current study. These included: (1) the demographic questionnaire, (2) the daily morning questionnaire measuring the quantity of VoD watching over time, and (3) the daily evening questionnaire measuring state procrastination (see Appendix C). In addition, this study uses the baseline measure of trait self-control measured by Schwerdtner (2021) during the same data collection.

Ethica Smartphone Application

The smartphone application Ethica enabled the data collection for the whole period (Ethica, 2020). The Ethica application enabled push notifications to be sent for the daily questionnaire. The app also closed the questionnaires after they expired to ensure that data collection was truly momentary. This allowed momentary and coherent data to be collected (Ethica, 2020).

Demographics Questionnaire

The demographic questionnaire gathered information about the participant's age, gender, nationality, and occupation (see Appendix C). Furthermore, participants were asked to indicate all the regular VoD streaming services they use. Multiple answers were possible, such as "Netflix", "Amazon Prime", or "I do not use streaming services".

Baseline Questionnaire

The thirteen-item Brief-Self-Control Scale (BSCS) by Tangney, Baumeister, and Boone (2008) was used to measure trait self-control. Participants could answer items on a five-point Likert scale between 1 (*not at all like me*) to 5 (*very much like me*). An example item would be '*I am good at resisting temptation*'. The scale's total score is calculated by taking the mean of all items, with higher scores indicating a higher level of self-control (Tangney et al., 2008). Studies on the original 15-item version have reported a Cronbach's alpha of $\alpha = .85$ ((Tangney et al., 2008). In Schwerdtner's (2021) study, only nine items were inadvertently used, resulting in a Cronbach's α of .72, which is still adequate. Due to a slightly different sample in this study, the reliability of the BSCS has also shown to be adequate, with $\alpha = .68$.

Daily Questionnaire

Daily VoD Watching Behavior. One item was used to assess daily VoD watching behavior. This was asked in the morning and included the time spent watching VoD on the previous day (0= *I did not watch* to 6 = *more than 5 hours*).

Momentary Assessment of State Procrastination. One item had to be answered at the end of each day to measure the state of procrastination. The item was, "*I intentionally put off a task today that is personally important to me, even though it was unreasonable to put off this task,*" and was rated on a five-point Likert scale (1= *disagree* to 5= *agree*).

Procedure

Before the start of the study, participants received instructions and information about the study in an invitation email (see Appendix A). The email included instructions on downloading the Ethica application, creating an account, and registering for the study (see Appendix B). After

signing up for the study, participants were able to read the informed consent form (see Appendix B). The next day, the study began with the demographic and baseline questionnaires with a push notification at 9:00 am. A total of 10 minutes was required to complete the questionnaires on the first day. The two weeks of daily measurements then began the next day. The daily measurements included the short questionnaires in the morning and evening, which took about two minutes each day. The questionnaires expired at the end of the specified periods. At the end of the fourteen days, participants received a debriefing in which they were thanked for their participation and announced the end of the study.

Data Analysis

Data were analyzed using the IBM SPSS 27 statistical program. A statistical significance of 95% (two-sided $\alpha = .05$) was set for all statistical tests. Microsoft Excel was used to visualize the results and to support the findings. Respondents who did not meet the inclusion criteria or completed less than 70% of the daily questionnaires were excluded from the analysis (Myin-Germeys & Kuppens, 2021; Van Berkel et al., 2017). The data was prepared for further analysis by recoding the BSCS scale and relabeling the data. The reliability of the BSCS was calculated via Cronbach's alpha (Cohen, 1988). Descriptive statistics, frequencies, means, and standard deviations of the demographic data and self-control scale were calculated for descriptive purposes. Then, various methods of visualizing the data were used to examine the variability of the data.

The research questions were all analyzed and statistically tested using a series of linear mixed models (LMM) analyses, which included a first-order autoregressive covariance structure (AR1) for the repeated measures. LMM analyses were chosen because they account for the nested structure of the data based on the repeated measures and can handle missing measurement points (Verhagen et al., 2016). For each LMM, the predefined subject variable was name, and the repeated variable was time points (in days). To compare the strength of the association between VoD content viewing and procrastination, standardized and unstandardized estimates were calculated (Nieminen et al., 2013). Standardization was done by calculating the z-scores of the dependent and independent variables (Nieminen et al., 2013).

To answer the first question, a lagged analysis was performed for the relationship between same-day VoD content watching and procrastination. The lag (1) function was applied to compare procrastination and watching behavior on the same day, as daily watching behavior was measured in the morning of the following day, while procrastination behavior was measured in the evening

on the same day. To analyze the relationship between the two on the same day, procrastination behavior was lagged by one day. For this delayed analysis, the first day for each participant was excluded from the analysis. First, an LMM was conducted with the lagged variable of procrastination set as the dependent variable and VoD viewing time as the fixed covariate. Second, an LMM was conducted with the lagged variable of VoD watching set as the dependent variable and the lagged variable of procrastination set as the fixed covariate. The same LMMs were used without the lagged procrastination variable to answer the second research question.

Curran and Bauer's (2011) person-mean centering approach was used for the time-varying covariate for the third research question. This approach can be used to distinguish associations between persons and within persons statistically. For this purpose, a daily mean of VoD watching behavior and procrastination was calculated for each participant. This represented the person's mean and was required for the between-person association. For within-person association, the person-centered means were calculated by subtracting the within-person means from the reported watching time for each day. Both the person mean and person-centered values were entered as fixed covariates in an LMM. To answer the fourth research question, another LMM was conducted with the daily procrastination score as the dependent variable and the previous day's VoD watching behavior, self-control, and their interaction term as fixed effects. This was also done by taking VoD watching behavior as the dependent variable and taking the procrastination behavior, self-control and their interaction term as fixed effects. Thus, VoD watching was taken as the predictor and consequence.

Results

Characteristics of the Sample

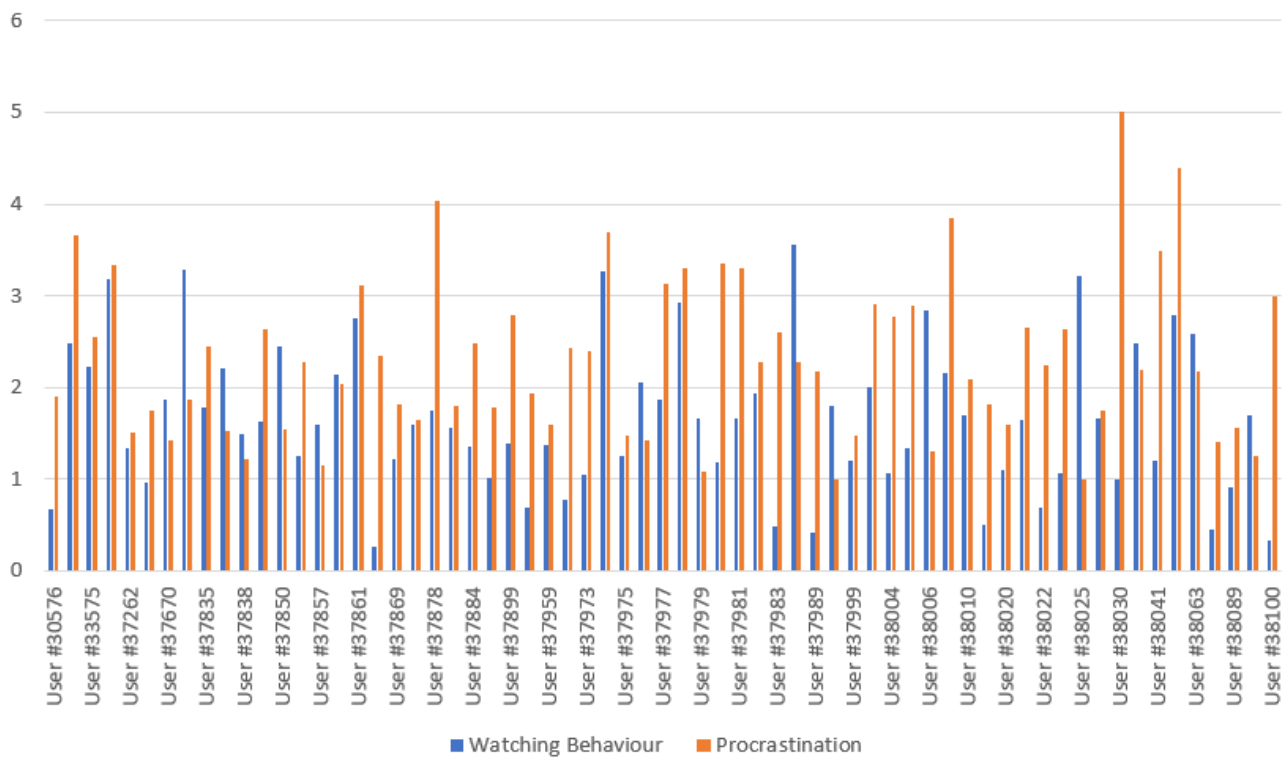
Of the 81 respondents, 15 were dropped due to a response rate of less than 70% and missing data in the questionnaire, which resulted in a response rate of 81% for the remaining 66 respondents. A total of 902 assessments were collected during the study period. The mean age of the sample was 23.01 years ($SD_{Age} = 5.82$), reflecting a young sample. 81% of the respondents were female, and 19% were male. In addition, most of the sample were German (94%) and students (79%). Finally, all participants regularly used VoD services.

On average, the sample watched 1.72 hours of VoD per day ($SD_{Hours} = 1.58$). In addition, the sample answered their daily level of procrastination on a scale of 1 (*disagree*) to 5 (*agree*). On the procrastination scale, the average response of the sample was 2.26 ($SD_{Procrastination} = 1.47$),

meaning that on average, the sample neither agreed nor disagreed that they procrastinated intentionally. The standard deviations for watching behavior and the degree of procrastination were relatively high, suggesting substantial variability in the responses. This variability in the data is visible in Figure 2. In Figure 2, the mean amount of watching and the mean degree of procrastination are shown for each participant over the 14 days. It can be seen that for most participants, watching behavior and procrastination level were similar and that participants with a high watching behavior also had a high procrastination behavior. Some participants showed much higher levels of procrastination and low levels of watching behavior (see Figure 2, participant #38030). Some showed higher levels of watching behavior but low levels of procrastination. Regarding the level of self-control, participants scored a mean score of 2.88 ($SD_{Self-control} = 0.49$), indicating that the sample rated themselves relatively moderate in terms of self-control.

Figure 2

Bargraph Displaying Marginal Means of State Procrastination and VoD watching amount per Participant



Note. The figure shows 66 participants, but only every second participant is labeled on the axis

Association of watching behavior procrastination the same day

To see if VoD watching behavior was related to same-day procrastination behavior, lagged LMMs were performed for the procrastination variable (Table 1). The result showed that there was indeed a significant but weak positive relationship between VoD use as a predictor and same-day procrastination as the outcome. This means that the more participants' used VoD, the more they procrastinated. Figure 3 illustrates this relationship, where the orange line represents the mean level of procrastination for all participants, and the blue line represents the mean amount of VoD watching for all participants over the two weeks. The two lines move roughly parallel to each other at most time points (e.g., Day 6 or Day 11). Thus, when the amount of watching was lower, the level of procrastination was also lower. On some days, opposite movements were observed, such as on day 9, when watching behavior slightly decreased while procrastination behavior increased. No association was found between procrastination as the predictor variable and VoD watching as the outcome variable (Table 1). Thus, procrastination did not predict watching behavior on the same day in this sample.

Table 1

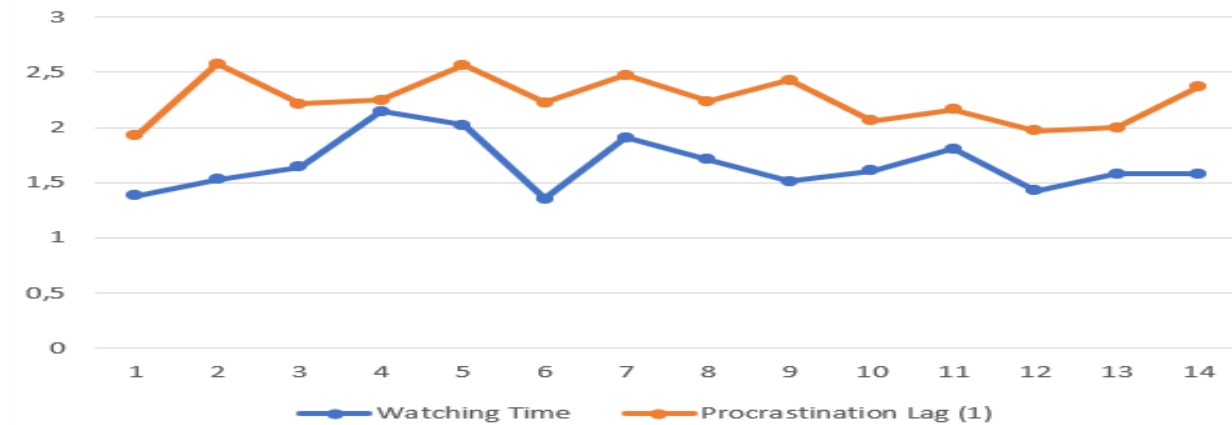
LMM Analyses of the Association of Watching Behavior and Lagged Procrastination on the Same Day

Parameter	B[SE]	β [SE]	F[df]	p
Procrastination Lag (1) as a predictor on the same day				
VoD watching	0.07 [0.04]	.07[.04]	3.33[744.23]	.07
Procrastination Lag (1) as an outcome on the same day				
VoD watching	0.07 [0.03]	.07[.03]	3.97[739.07]	.05*

Note. B = unstandardised estimate, β = standardised estimate, SE= standard error, F = F value, df = degrees of freedom, p = significance, * p < .05

Figure 3

Line Graph Displaying the Positive Association and Means of State Procrastination and VoD watching amount on the Same Day



Association of watching behavior and procrastination the next day

In contrast to the same-day association, no significant results were found for procrastination as a predictor for VoD watching the next day ($\beta=.05$, $SE=.04$, $p=.191$) or VoD watching as a predictor for procrastination the next day ($\beta=.05$, $SE=.03$, $p=.132$). Thus, procrastination and VoD watching were not associated the next day.

Between-and within-person association of VoD watching behavior and procrastination

The disaggregated analyses are presented with the person mean for the between-person analyses and the person mean-centered for the within-person analyses (Table 2). The between-person associations were weak and significant for the same day when procrastination was considered the predictor and outcome of VoD watching. The within-person association was not significant (Table 2). Figure 4 displays the within-person associations between watching behavior and procrastination on the same day. For some participants, there was no association, and for others, there was a strong positive or negative relationship.

Table 2

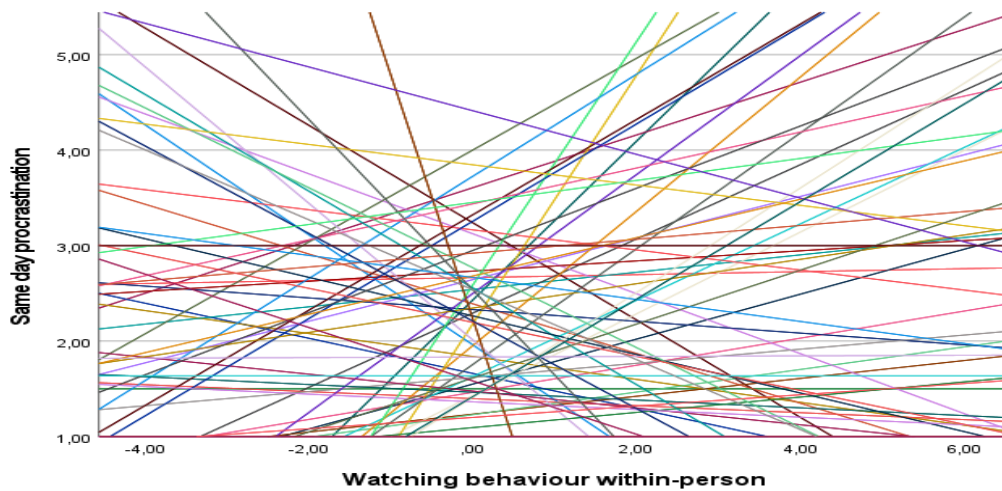
Linear Mixed Model Analyses of Within- and Between-person analyses on the Same Day and the Next Day

Parameters	B[SE]	β [SE]	F[df]	p
Procrastination Lag (1) as a predictor on the same day				
Person Mean (Between-person)	0.19[.10]	.10[.05]	3.60[173.26]	.05*
Person mean-centered (Within-person)	0.09[.44]	.01[.04]	0.04[399.57]	.83
Procrastination as a predictor the next day				
Person Mean (Between-person)	0.20[.10]	.10[.05]	3.60[173.26]	.06
Person mean-centered (Within-person)	0.09[.44]	.01[.04]	0.04[399.57]	.83
Procrastination Lag (1) as an outcome on the same day				
Person Mean (Between-person)	0.16[.07]	.17[.08]	4.81[183.56]	.03*
Person mean-centered (Within-person)	0.04[.04]	.05[.04]	1.19[679.72]	.28
Procrastination as an outcome on the next day				
Person Mean (Between-person)	0.14[.08]	.15[.08]	3.66[177.46]	.06
Person mean-centered (Within-person)	0.03[.04]	.03[.04]	0.59[687.88]	.44

Note. B = unstandardised scores, β = standardised scores, SE= standard error, F = F value from, df = degrees of freedom, p = significance, * p < .05

Figure 4

Scatter plot of the same day VoD watching by procrastination for each participant



The moderating effect of self-control

Finally, moderation analyses were conducted to examine the moderating effect of self-control on the relationship between VoD watching and procrastination. The results showed that self-control did not significantly affect the relationship (Table 3). This applied to the same-day and next-day moderating effect (Table 3). However, self-control showed a moderate negative correlation with procrastination and VoD watching separately, meaning that the higher the self-control, the lower the level of procrastination and VoD watching (Table 3). In Figure 5, the moderation effect of self-control is displayed when procrastination is the outcome in the association with VoD watching. In the figure, the difference in the association between the same day and the next day can be seen for participants with high and low self-control. Participants with higher levels of self-control procrastinated and watched VoD services less on both days than participants with low self-control.

Table 3

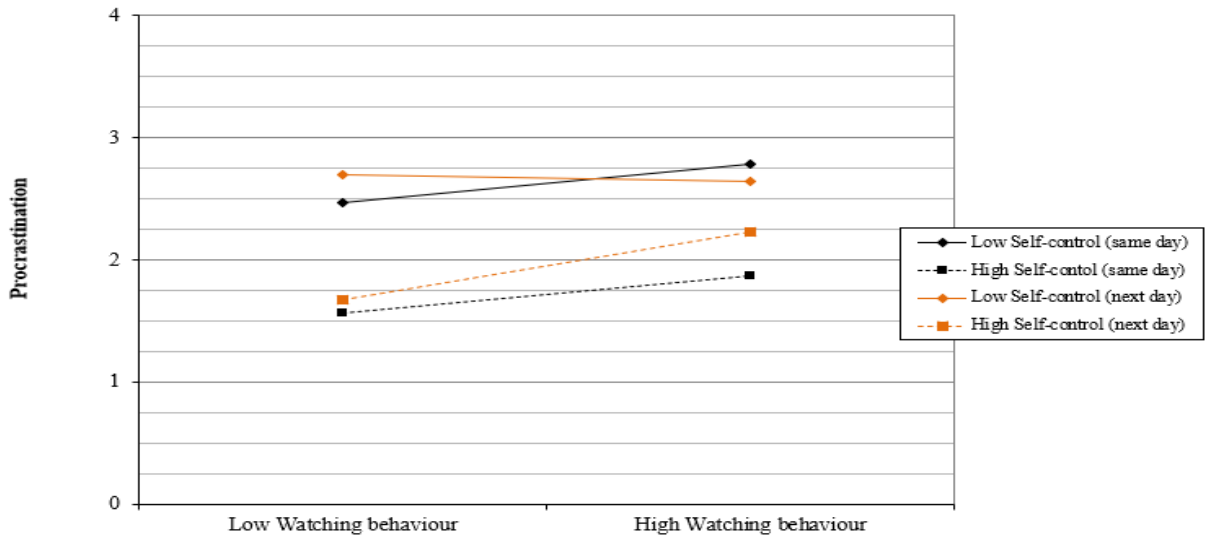
Linear Mixed Model Analyses of the Moderating Effects of Self-control on the Relationship of VoD watching behavior on Procrastination

Parameters	B[SE]	β [SE]	F[df]	p
VoD watching as the outcome the same day				
Procrastination (Lag 1)	.14[.25]	0.05[.04]	1.74[744.50]	.55
Self-control	-.62[.24]	-0.22[.05]	17.99[181.86]	.01*
Interaction of Procrastination (Lag 1) and self-control	-.03[.09]	-0.04[.04]	0.15[746.41]	.699
VoD watching as the outcome the next day				
Procrastination	0.23[.40]	0.04[.04]	1.31[762.17]	.33
Self-control	-0.70[.28]	-0.19[.05]	10.18[191.79]	.01*
Interaction of Procrastination and self-control	0.03[.08]	0.02[.04]	0.58[757.72]	.67
Procrastination (Lag 1) as an outcome the same day				
Watching behavior	.05[.21]	0.05[.04]	0.06[653.72]	.80
Self-control	-.44[.19]	-0.15[.05]	5.09[351.97]	.03*
Interaction of watching behavior and self-control	-.01[.08]	-0.01[.04]	0.01[680.441]	.98
Procrastination as an outcome the next day				
Watching behavior	-0.12[.21]	0.04[.38]	1.31[762.17]	.25
Self-control	-0.55[.19]	-0.15[.05]	10.18[191.79]	.02*
Interaction of watching behavior and self-control	0.05[.07]	0.03[.04]	0.58[757.72]	.45

Note. B = unstandardised scores, β = standardized scores, SE= standard error, F = F value from, df = degrees of freedom, p = significance, * p < .05

Figure 5

Two-way linear interaction of watching behavior (IV) procrastination (DV) and the moderating influence of self-control on the same day and the next day



Note. Self-control is the moderating variable

Discussion

The present study is one of the first to examine the association between watching VoD streaming services and the degree of state procrastination in daily life in detail. The examination was done through a post-hoc analysis using ESM data collected by Hanhoff (2021), which allows for an understanding of the processes between the variables and their temporal nature (Conner & Lehman, 2012). The results of this study show that VoD watching is associated with and predicts procrastination, but only on the same day and not on the next day. This effect seems to be primarily driven by the differences between individuals. Additionally, trait self-control did not moderate the association between procrastination and VoD watching.

Interpretation of Main Findings

The results of this study are consistent with previous cross-sectional studies. Merrill and Rubenking's (2019) research showed that binge-watching frequency is associated with procrastination. The current study complements this previous finding by revealing the temporal direction of this association. It showed that watching VoD streaming services can weakly predict procrastination on the same day in the way that participants who showed higher watching behavior

also showed more procrastination behavior. One possible explanation could be the majority of students in the sample. Panek (2014) could show that video watching as a leisure activity is associated with less time spent on schoolwork among college students.

Moreover, the reduced time spent on schoolwork can decrease the available time to finish a task, which may increase its complexity (Panek, 2014). This could trigger ego depletion. Ego depletion is a concept invented by Baumeister et al. (2008), which describes the impairment of self-control and self-regulatory processes due to completing complex tasks. This impairment of self-regulatory processes can make it more challenging to resist temptations, such as procrastinating (Baumeister et al., 2008). Consequently, increased task difficulty due to time miscalculation may increase the tendency to procrastinate as self-regulatory processes are impaired.

Next to the significant weak prediction of VoD watching on procrastination, the findings did not show that procrastination predicts VoD watching behavior on the same day. The non-significant findings can have methodological reasons. On the one hand, this can include the conceptual definitions as well as the methodological decisions of the study design from the researcher. Procrastination is a broad concept that can cover multiple activities, including watching behavior next to other media use options (Reinecke et al., 2014; Starosta et al., 2019). As procrastination and watching behavior got measured separately in a semi-fixed schedule, participants may have described the same behavior in different questionnaires. Furthermore, the semi-fixed schedule with fixed time periods could have created expectancy effects due to the daily routine of answering the same questions (Palmier-Claus et al., 2019). However, as intensive longitudinal study designs were seldom used in this field, it is still one of the greatest strengths of this study, allowing for higher ecological validity than cross-sectional data (Conner & Lehman, 2012; Flayelle, 2020).

Besides methodological reasons for the non-significant results of procrastination as a predictor of VoD watching, another explanation could be given by Hofmann et al. (2012). They have shown that some participants who showed higher watching behavior also had difficulties in stopping that behavior and therefore procrastinated more. Thus, procrastination may not predict watching as it gets triggered during the activity. Therefore, it could not be found in this research.

No significant effect could be found when it comes to the temporal association of VoD watching and procrastination on the next day. One reason for this may be that the participants could

build new mental and learning capacities after resting during their sleep (Curcio et al., 2006). Another possible explanation may again be given by ego depletion (Baumeister et al., 2008). The decreased self-regulatory processes due to the complex task might trigger watching behavior more frequently, as shown in the study of Merrill and Rubenking (2019). However, the increase in the watching behavior can also have a relaxation effect (Yoo et al., 2020). Therefore, participants may have enough mental capacity to work on the postponed tasks the next day after they have relaxed with VoD watching. This suggests that VoD watching in this research probably is a form of intentional procrastination behavior, as it does not predict future procrastination (Merrill & Rubenking, 2019). Nonetheless, this intentional procrastination behavior does not appear to have adverse longitudinal effects. It could simply be a new version of watching due to technological advancements (Starosta & Izydorczyk, 2020).

Next to intentional procrastination, there could also be unintentional procrastination behavior with other media. This has been examined in the research done by Hoffmann et al. (2017). They have shown that because of the revolutionary invention and use of media in our century, people often lose control over how much media they consume (Hoffmann et al., 2017). It could be that although watching behavior might have been intentional, there is a wide range of media we could unintentionally procrastinate with. This can include other media platforms such as Facebook, Instagram, or video games. Thus, it would be interesting to measure the extent of different types of media usage next to VoD streaming services.

Furthermore, the study investigated the between-person and within-person associations. The findings show that significant results could only be found for the between-person effect on the same day. This suggests that the overall positive association between the variables on the same day is mainly due to individual differences. This means that, on average, individuals who watched more than others also procrastinated more than others. Nevertheless, the between-person analyses also showed lower degrees of freedom than the within-person analyses. Hence, the statistical power at the between-person level is lower.

Besides the significant between-person analysis, the results for the within-person association were not significant. The non-significant findings suggest that the variables are not associated over time within individuals, which might be due to the analyses on the group level. Even though the within-person data gave information about the association in each participant, the model estimated a single association across all participants. Thus, the data got grouped again for

the analysis. Therefore, individual differences in this association, such as the ones visible in the visualization of the data, might have canceled each other out. At the individual level, however, some significant associations might be worth further investigation.

The specific sample might also influence this study's association between VoD and procrastination. The sample consists mostly of female students in their twenties. Research showed that young adults are the primary media consumers, which could imply that the sample in this study was a general high media consuming sample (Starosta et al., 2019). Additionally, research has shown that men are more likely to stream online content than women (Starosta & Izydorczyk, 2020). As most of the participants were also female, this may explain the weak effects. Therefore, it would be interesting to consider a different sample constellation and whether the same found associations apply.

Lastly, the findings show no moderating influence of self-control on the association between VoD watching and procrastination. However, self-control was negatively associated with both variables independently. This finding is in line with previous research on media use, procrastination, and self-control among college students, where a negative correlation was found between self-control, procrastination and media use (Reinecke & Hofmann, 2016). A decrease in self-control, therefore, seems to increase both procrastination and watching behavior independently to a similar degree. However, it should also be noted that it is difficult to establish a significant interaction effect with longitudinal data because large sample sizes are needed to gain sufficient statistical power.

Implications and Future Research

In this study, the sample was homogenous and analyzed only at the group level. Future research may focus on collecting a more diverse, heterogeneous sample. Most studies on binge-watching have been conducted with college students, so it is recommended that other age groups are included (Starosta & Izydorczyk, 2020). With a more diverse sample combined with individual analyses, groups and individuals at risk for binge-watching behavior and its adverse health aspects can be identified.

Next to the sample, there are also methodological implications. For example, the variable trait self-control was measured only once at the beginning of the study using a self-report questionnaire (Schwerdtner, 2021). It has been shown that there is often little correlation between self-report questionnaires that measure a trait and ESM data that measure the same construct as a

state over time (Conner & Lehman, 2012). Therefore, it would be interesting to measure the construct of self-control at the state level as well.

Another methodological implication is the study design. The study design can be improved by incorporating randomized measurement points that measure state procrastination and VoD watching more frequently and accurately increasing statistical power. In combination with the more frequent measurement points, the independence and overlap of watching behavior and procrastination could be explored while measuring these constructs simultaneously.

Regarding situational implications, the data was collected during a lockdown due to the SARS-CoV-2 pandemic. The pandemic situation is critical because the sample consisted mainly of young female students who had to adapt to a new online environment with limited opportunities for social activities. Future research should examine whether the outbreak and the resulting conditions altered the variables and associations examined in this study. For example, this study found a weak association between VoD watching and procrastination. During the pandemic, the participants mostly had to be at home, which could have increased their VoD watching behavior (Boursier et al., 2021). Consequently, different options to procrastinate, such as going outside and meeting friends, could not be done anymore. Therefore, it could also be that there is no association between VoD watching and procrastination when students do not have to work remotely anymore. Therefore, it would be beneficial to replicate this study in a non-pandemic situation to examine whether the association persists.

Lastly, the findings in this study further underscore the problem with the term “binge-watching”. The different definitions have led to different previous research results, measuring either the episodes or hours of watching or handling binge-watching as a categorical variable with cut-off scores. The different uses of binge-watching terminology are impractical because comparisons with previous studies are difficult. Thus, an advantage of this study is the operationalization of VoD watching behavior as a continuous variable. Measuring it as a continuous variable gives a more precise impression of the daily amount of watching in general and could be an approach for a consistent measurement technique of binge-watching behavior.

Conclusion

In conclusion, the present study was the first to examine in detail the effects of VoD watching behavior on our procrastination using an intensive longitudinal ESM research design. A weak and positive association between VoD watching behavior and procrastination was found. The

temporal association of this association showed that VoD watching predicts procrastination on the same day but not on the next day. One possible explanation given for this finding was the concept of ego depletion. Ego depletion explains the decrease of self-regulatory processes due to the complexity of a task. As VoD watching behavior has shown to decrease the time spent on schoolwork, task complexity of this work might increase, which leads to the impairment of self-regulatory processes and ultimately to more procrastination as the temptations get harder to resist. Furthermore, significant results were found only at the between-person level, which suggests that the weak positive significant findings were based on between-person differences. No moderating effect of self-control on this relationship was found. Future research could focus on an improved ESM design with more randomized measurement points and consideration of self-control measurements at the state level. Furthermore, individual analyses can be applied to identify at-risk groups, especially when used with a more diverse and heterogeneous sample. The current study has contributed to a better understanding of VoD watching behavior and its impact on our procrastination.

References

- Baumeister, R. F., Sparks, E. A., Stillman, T. F., & Vohs, K. D. (2008). Free will in consumer behavior: Self-control, ego depletion, and choice. *Journal of Consumer Psychology, 18*(1), 4-13. doi:10.1016/j.jcps.2007.10.002
- Boursier, V., Musetti, A., Gioia, F., Flayelle, M., Billieux, J., & Schimmenti, A. (2021). Is watching TV series an adaptive coping strategy during the COVID-19 pandemic? Insights from an Italian community sample. *Frontiers in psychiatry, 554*.
<https://doi.org/10.3389/fpsy.2021.599859>
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2 ed.). Hillsdale, New Jersey: Lawrence Erlbaum Associates.
<https://doi.org/10.4324/9780203771587>
- Conner, T. S., & Barrett, L. F. (2012). Trends in ambulatory self-report: The role of momentary experience in psychosomatic medicine. *Psychosomatic medicine, 74*(4), 327. <https://doi:10.1097/PSY.0b013e3182546f18>
- Conner, T. S., & Lehman, B. (2012). Getting started: Launching a study in daily life. In M. R. Mehl and T. S. Conner (Eds.), *Handbook of research methods for studying daily life* (89 – 107). Guilford Press. Retrieved from <https://www.otago.ac.nz/psychology/otago057491.pdf>
- Csikszentmihalyi, M., & Larson, R. (2014). Validity and reliability of the experience-sampling method. *Flow and the foundations of positive psychology* (pp. 35-54). Springer, Dodrecht.
https://doi.org/10.1007/978-94-017-9088-8_3
- Curcio, G., Ferrara, M., & De Gennaro, L. (2006). Sleep loss, learning capacity and academic performance. *Sleep medicine reviews, 10*(5), 323-337.
<https://doi.org/10.1016/j.smr.2005.11.001>
- Curran, P. J., & Bauer, D. J. (2011). The disaggregation of within-person and between-person effects in longitudinal models of change. *Annual review of psychology, 62*, 583-619.
<https://doi.org/10.1146/annurev.psych.093008.100356>
- Ethica*. (2022). Ethica Data. Retrieved 07.03.2022. <https://ethicadata.com>
- Flayelle, M., Maurage, P., Di Lorenzo, K. R., Vögele, C., Gainsbury, S. M., & Billieux, J.

- (2020). Binge-watching: What do we know so far? A first systematic review of the evidence. *Current Addiction Reports*, 7(1), 44-60. <https://doi.org/10.1007/s40429-020-00299-8>
- Granow, V. C., Reinecke, L., & Ziegele, M. (2018). Binge-watching and psychological well-being: media use between lack of control and perceived autonomy. *Communication Research Reports*, 35(5), 392-401. <https://doi.org/10.1080/08824096.2018.1525347>
- Hailikari, T., Katajavuori, N., & Asikainen, H. (2021). Understanding procrastination: A case of a study skills course. *Social Psychology of Education*, 24(2), 589-606. <https://doi.org/10.1007/s11218-021-09621-2>
- Hamaker, E. L. (2012). *Why researchers should think "within-person": A paradigmatic rationale*. In M. R. Mehl & T. S. Conner (Eds.), *Handbook of research methods for studying daily life* (p. 43–61). The Guilford Press. Retrieved from <https://psycnet.apa.org/record/2012-05165-003>
- Hanhoff, J. (2021). *The tale of putting off - An experience sampling study on the effect of procrastination on daily binge watching behaviour [Bachelor's thesis, University of Twente]*. Retrieved from https://essay.utwente.nl/86518/1/Hanhoff_BA_BMS.pdf
- Hofmann, W., Reinecke, L., & Meier, A. (2016). Of sweet temptations and bitter aftertaste: Self-control as a moderator of the effects of media use on well-being [E-book]. *The Routledge handbook of media use and well-being: International perspectives on theory and research on positive media effects* (1st Edition, pp. 211–222). New York: Routledge.
- Hofmann, W., Baumeister, R. F., Förster, G., & Vohs, K. D. (2012). Everyday temptations: an experience sampling study of desire, conflict, and self-control. *Journal of Personality and Social Psychology*, 102(6), 1318-1335. doi: 10.1037/a0026545
- Jenner, M. (2017). Binge-watching: Video-on-demand, quality TV and mainstreaming fandom. *International journal of cultural studies*, 20(3), 304-320. <https://doi.org/10.1177/67877915606485>
- Jenner, M. (2020). Researching Binge-Watching. *Critical Studies in Television*, 15(3), 267-279. <https://doi.org/10.1177/1749602020935012>
- Larson, R., & Csikszentmihalyi, M. (2014). The experience sampling method. *Flow and the foundations of positive psychology* (pp. 21-34). Springer, Dordrecht. DOI: https://doi.org/10.1007/978-94-017-9088-8_2

- Levin, K. A. (2006). Study design III: Cross-sectional studies. *Evidence-based dentistry*, 7(1), 24-25. <https://doi.org/10.1038/sj.ebd.6400375>
- Merrill Jr, K., & Rubenking, B. (2019). Go long or go often: Influences on binge watching frequency and duration among college students. *Social Sciences*, 8(1), 10. <https://doi.org/10.3390/socsci8010010>
- Nieminen, P., Lehtiniemi, H., Vähäkangas, K., Huusko, A., & Rautio, A. (2013). Standardised regression coefficient as an effect size index in summarising findings in epidemiological studies. *Epidemiology, Biostatistics and Public Health*, 10(4). <https://doi: 10.2427/8854>
- Ort, A., Wirz, D. S., & Fahr, A. (2021). Is binge-watching addictive? Effects of motives for TV series use on the relationship between excessive media consumption and problematic viewing habits. *Addictive Behaviors Reports*, 13, Article 100325. <https://doi.org/10.1016/j.abrep.2020.100325>
- Panek, E. (2014). Left to their own devices: College students' "guilty pleasure" media use and time management. *Communication Research*, 41(4), 561-577. <https://doi.org/10.1177/0093650213499657>
- Reinecke, L., Hartmann, T., & Eden, A. (2014). The guilty couch potato: The role of ego depletion in reducing recovery through media use. *Journal of Communication*, 64(4), 569-589. <https://doi.org/10.1111/jcom.12107>
- Reinecke, L., & Hofmann, W. (2016). Slacking off or winding down? An experience sampling study on the drivers and consequences of media use for recovery versus procrastination. *Human Communication Research*, 42(3), 441-461. <https://doi.org/10.1111/hcre.12082>
- Rubenking, B., Bracken, C. C., Sandoval, J., & Rister, A. (2018). Defining new viewing behaviours: What makes and motivates TV binge-watching? *International Journal of Digital Television*, 9(1), 69-85. https://doi.org/10.1386/jdtv.9.1.69_1
- Schweidel, D. A., & Moe, W. W. (2016). Binge watching and advertising. *Journal of Marketing*, 80(5), 1-19. <https://doi.org/10.1509/jm.15.0258>
- Schwerdtner, L. (2021). *The Role of Self-control in regard to the Association between Binge-watching and Sleep over Time: An Experience Sampling Study*. [Bachelor's thesis, University of Twente]. Retrieved from https://essay.utwente.nl/86547/1/Schwerdtner_BA_BMS.pdf

- Starosta, J. A., & Izydorczyk, B. (2020). Understanding the phenomenon of binge-watching—a systematic review [Review]. *International Journal of Environmental Research and Public Health*, 17(12), 1, Article 4469. <https://doi.org/10.3390/ijerph17124469>
- Solomon, L. J., & Rothblum, E. D. (1984). Academic procrastination: Frequency and cognitive-behavioral correlates. *Journal of counseling psychology*, 31(4), 503. <https://doi.org/10.1037/0022-0167.31.4.503>
- Steel, P. (2007). The nature of procrastination: a meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological bulletin*, 133(1), 65. <https://doi.org/10.1037/0033-2909.133.1.65>
- Tangney, J. P., Boone, A. L., & Baumeister, R. F. (2008). *High self-control predicts good adjustment, less pathology, better grades, and interpersonal success*. Self-regulation and self-control (1st ed.), 173-212, London: Routledge. <https://doi.org/10.1111/j.0022-3506.2004.00263.x>
- Van Berkel, N., Ferreira, D., & Kostakos, V. (2017). The experience sampling method on mobile devices. *ACM Computing Surveys (CSUR)*, 50(6), 1-40. <https://doi.org/10.1145/3123988>
- Verhagen, S. J., Hasmi, L., Drukker, M., van Os, J., & Delespaul, P. A. (2016). Use of the experience sampling method in the context of clinical trials. *Evidence-based mental health*, 19(3), 86-89. <https://doi.org/10.1136/ebmental-2016-102418>
- Yoo, J., Lee, J., & Lee, D. (2020). A verification of motivations for over-the-top binge and short viewing of audio-visual content. *New Review of Hypermedia and Multimedia*. <https://doi.org/10.1080/13614568.2020.1865464>
- Zillmann, D. (2000). Mood management in the context of selective exposure theory. *Annals of the International Communication Association*, 23(1), 103-123. <https://doi.org/10.1080/23808985.2000.11678971>

Appendices

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 a video on demand (VOD) watching behavior and health-related concepts. With the help of our questionnaires, we would like to gain more insights into your viewing behavior 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 behavior!

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 behavior.

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, behavior, 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, behavior, and feelings. 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 recognized 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?

Very bad

Very good



Tap on the line to start!

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.

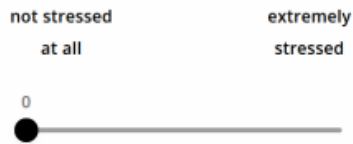
Have a nice day! 

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?



Tap on the line to start!

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