The association of stress and Fear of Missing Out with video-on-demand watching: An experience sampling study

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Bachelor Thesis

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Abstract

Background. In recent years, the overall watching behavior of people changed by using video-on-demand (VoD) streaming services to watch TV shows at the best accessibility. With the changing watching behavior, more scientific interest is drawn to the groups' watching behavior and potential psychological consequences. In addition, scholars have been interested in the psychological factors that motivate individuals to use VoD streaming services more extensively. **Aim.** The current study is focused on examining the association of the group using video-on-demand streaming services and two psychological factors of stress and the Fear of Missing Out. The overall aim is to better understand to what extend the trait of Fear of Missing Out and the state level of stress are associated with the group's watching behavior over time. **Methods.** In this experience sampling study, a phone application was used to measure 75 participants' watching behaviors over a span of 15 days. Over the study period, participants received every morning and evening a questionnaire asking them about their watching behavior the previous day as well as their current psychological well-being. The data was afterward analyzed using Linear Mixed Models (LMMs) analyses. **Results.** In the analysis of the collected data 75 participants were included. The analysis showed that on average the participants spent 1.5 *(SD=* 1.5*)* hours watching VoD streaming services, mostly Netflix, each day. The average amount of episodes the participants watched was 2.4 (*SD=* 3.3) episodes per day. The LLMs analyses showed that there was no significant predictive effect (*p=* .2) of the trait level of FoMO on the hours spent VoD watching over time. Also, the LMMs analyses showed that there is no significant association (*p=*.29) between the trait level of stress and the hours spent watching VoD services. Momentary levels of FoMO *(p=* .94*)* and momentary levels of stress *(p=*.8*)* also did not significantly predict amount of VoD watching on the same day. **Conclusion.** These results indicate that there is no significant association between VoD watching and the psychological factors of FoMO and stress. Trait and state variables of FoMO and stress do not seem to play an important role in the motivation to engage in VoD watching. Further research on this topic should be conducted by looking into more depth of what factors play a role as motivating factor for VoD watching behavior.

Keywords: VoD-watching, stress, Fear of Missing Out, binge-watching, FoMO

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Introduction

Video-on-demand (VoD) streaming services like Netflix, Amazon Prime Video, and Disney+ are nowadays part of everyday life for many people. These VoD streaming services offer the user access to watch TV shows and movies whenever and wherever they prefer (Krings, 2021). For example, the proportion of people using VoD streaming services in Germany was around 53% in 2020 compared to 42% in 2019 (Koptyug, 2020).

VoD streaming services are becoming more and more popular since they offer the users more flexibility by allowing them to decide when, how and what to watch (Rigby, Brumby, Gould, & Cox, 2018). Therefore, the user is in charge of their watching schedule, and does not have to plan their agenda around the schedule of their favorite TV show. Since the VoD streaming services offer the user to watch their TV show at any time, the user is able to watch multiple episodes, even a whole season, in a short time frame or even in one sitting.

One result of having the option to watch multiple episodes of a TV show in a row is the increasing prevalence of the phenomenon of binge-watching. Binge-watching can be defined as the number of hours spent watching VoD streaming services or the watching of multiple episodes of a TV show in one session (Starosta & Izydorczyk, 2020). Due to the increasing number of people binge-watching different TV shows, the scientific research that has been conducted on the topic of binge-watching also increased. Several studies have been conducted on binge-watching, however, with no clear standpoint on what exactly is the best operationalization for the concept of binge-watching (Flayelle et al., 2020). For example, the study by Panda and Pandey (2017) operationalizes binge-watching as watching at least one hour or watching between two and three episodes in one sitting as binge-watching. Whereas a study by Horvath, Horton, Lodge, and Hattie (2017) operationalizes binge-watching as watching more than three hours or watching at least five episodes in one sitting.

The phenomenon of binge-watching and its predictors and consequences is still a relatively new field of research (Starosta & Izydorczyk, 2020). Much of the research about binge-watching to date is focused on the motivations behind binge-watching. Motivations for binge-watching are diverse and multifaceted. Some examples of the motivation for binge-watching are that the individual wants to satisfy their psychological needs of comfort or escape from their own reality (Shim & Kim, 2018).

One specific psychological need to binge-watch different TV shows is that the individual experiences the Fear of Missing Out (Conlin, Billings, & Averset, 2016). This phenomenon of Fear of Missing Out refers to the assumption that people partake in certain

activities not only because they are interested in them, but more because they want to be able to interact with their social group about the activity. As a result, the individual partakes in activities that conform more to the norms of the social group than to their own interests. In the case of binge-watching, the Fear of Missing Out refers to the ability of a group of people to interact with each other about a TV show that the group has watched. The ability of an individual within the group to be part of the discussion about the TV show is determined by whether the individual has been watching the TV show or not. Therefore, it can be crucial for the individual to watch TV shows that are being published on the VoD streaming services to be able to communicate with the other members of the group (Rubenking, Bracken, Sandoval & Rister, 2018). More specifically, the individual partakes in the process of binge-watching to catch up with others within the social group that already watched a TV show.

Previous research that has been conducted on the topic of Fear of Missing Out states that there is a clear association between the level of Fear of Missing Out and the amount of VoD-watching but is not clear on the nature of the association between these two variables (Anghelcev, Sar, Martin, & Moultrie, 2020). Another study by Conlin et al. (2016) indicates as well that there is an association between the amount of VoD-watching of an individual and the level of Fear of Missing Out that individual experiences but does not indicate whether the Fear of Missing Out is a predictor to the amount of VoD-watching. As a result, the research on Fear of Missing Out is not clear whether an increased level of FoMO indicates a higher amount of VoD-watching.

Another factor that may play a predictive role in the watching behavior, besides the aspect of Fear of Missing Out, is the level of stress that is experienced by the individuals. Some studies indicate that stress is a motive for people to engage in binge-watching behavior as a relaxation (Wang, 2019). These studies indicate that individuals with a higher level of stress are more likely to engage in binge-watching behavior as a coping mechanism. VoD watching as a coping mechanism helps the individuals relieve stress which is not under their direct control (Wang, 2019). The factor of stress relief functions for many individuals as a motivator to start watching video-on-demand which often results in binge-watching. The function of stress relief is beneficial for daily stressors that the individual might experience (Flayelle, Maurage, Karila, Vögele & Billieux, 2019). According to the study by Panda and Pandey (2017), the feeling of being less stressed after an episode ended increases the motivation for the individual to continue watching and as a result, the individual hopes that their stress level further decreases. Therefore, the level of stress experienced by an individual functions as a predictor for binge-watching.

The previous research that focused on the variable of stress to examine the individual's watching behavior mostly used a cross-sectional approach to understand the association between these variables (Flayelle et al., 2019; Panda & Pandey, 2017). The review by Flayelle et al. (2019) indicates that stress is associated with the VoD watching behavior, but it is not evident whether stress is a clear predictor of the amount of VoD watching since research investigates the association between stress and VoD watching by asking the participants to recall their stress level before and after spending time using VoD streaming services rather than asking them over a longer period of time right after or right before the individuals engage in VoD watching. Therefore, the research conducted is not clear on the exact association of the state level of stress and the usage of VoD streaming services.

Several methods are available to measure the daily level of stress an individual is experiencing. One method that is used to measure daily emotional states that an individual is experiencing is called experience sampling. Experience sampling is a method where the individual is asked to fill out a short questionnaire on multiple occasions over a longer time period preferably right after the behavior of the interest has occurred (Atz, 2013). With experience sampling, the researcher can get a more accurate insight into the behavior of interest, its context, and other relevant momentary feelings reported by one individual on multiple occasions over a longer period of time. This insight into the behavior is achieved by administering a short questionnaire on multiple occasions over an extended period of time, for example, the individual is asked to fill out a short questionnaire twice a day for two weeks (Larson & Csikszentmihalyi, 2014).

One advantage of experience sampling is that it allows the researcher to measure the behavior and feelings as close as possible to the moment they actually occur. With being able to measure the behavior close to its occurrence, the reliability of the measurement of the behavior and feelings increases. Therefore, the experience sampling method allows for the results to be more trustworthy for further analysis (Lee & Kim, 2015). Another advantage of experience sampling is that the method allows the researcher a better insight into the daily life of the individual without the observation being too invasive. With this better insight into the individual's daily life, the researcher's findings are more accurate and relate to the actual occurrence of the behavior (Larson & Csikszentmihalyi, 2014). Another aspect that is important to consider when using the experience sampling method is that the method allows the researcher more insight into the internal experiences of an individual which cannot be achieved by simply observing the individual over a longer period of time. All in all, experience sampling is a method best used when the behavior is more of an internal process and the

researcher wants to observe the behavior with high reliability close to the occurrence of the desired behavior.

In the current research, the experience sampling method might be particularly useful since the examination of the association of stress and the fear of mission out with binge-watching is an internal process that the individual might not be completely aware of. Therefore, the method of experience sampling allows the researcher to determine the association between these three factors on multiple occasion during the day. These multiple measurements allow the researcher to establish the association as close to the occurrence of the binge-watching behavior as possible.

The current study examined the association of stress and Fear of Missing Out with the amount of VoD watching over time using an experience sampling study design. Based on the literature available, the following research questions were formulated:

1. To what extent does the trait level of Fear of Missing Out and the trait level of stress predict the frequency of VoD watching of the general public?

This research question examines the ability of an individual's trait level of Fear of Missing Out and the trait level of stress to predict the amount of binge-watching over time.

2. To what extent does the watching behavior of an individual vary based on their everyday stress level and the momentary level of FoMO?

This research question examines the association between the everyday stress levels, measured in the moment, the state level of FoMO, and binge-watching on the same day. As such, predictive values of the level of stress and the level of FoMO for the VoD watching behavior of the individual are explored.

Method

Design

The experience sampling method (ESM) was used during this study to collect multiple measurements over an extended time period for each participant. To gather the data to be able to answer both research questions an application called Ethica was used for the data collection. The study was approved by the BMS ethics committee (210327). Participants that were interested in participating in the study, are of the age of 16, and have the ability to participate in the study were included in the target group. Further, the duration of the study was set at two weeks since the researchers wanted to get an insight into the participant's routine regarding their watching behavior while not overwhelming the participants with questionnaires (Conner & Lehmann, 2012). The participants were asked to first fill out a baseline questionnaire to measure trait-like characteristics as well as a demographic questionnaire to better understand the sample. For the duration of the study, the participants were asked to fill out a morning questionnaire as well as an evening questionnaire each day. These two questionnaires each day were used to gain an insight into the watching behavior as well as the state levels of FoMO and stress. The morning questionnaire was administered regarding asking for the watching behavior of the day and night before. Whereas the evening questionnaire was administered to ask for the current level of stress as well as the level of FoMO the participants were experiencing in that moment.

The software that was used to administer the questionnaires was the online application called Ethica (https://ethicadata.com). This application was chosen since everyone with a smartphone is able to download the application onto their device and the usage of the application is straightforward. For the analysis IBM SPSS Statistics for Macintosh, Version 27.0 was chosen. Further, SPSS is capable of working with longitudinal data that is collected in experience sampling.

Participants

The participants for this study were selected based on convenience sampling with the researchers asking within their environments for people to participate in the study. A second requirement for individuals to participate in the study is that they can download the app Ethica and are able to register with an account on Ethica. Also, participants needed to be able to be able to understand and answer the questions of the research in English. The number of people that needed to be recruited for this study was determined to be at least 30 participants (Yu, Xu,

Li, & Shi, 2020). The study supports the claim that a small sample size is sufficient for ESM studies since the repeated measurements of a longer time period allows for more data to be collected for the analysis.

Procedure

As a start for the data collection, the researchers contacted the participants via E-mail with an invitation to join the study via the registration code (*Appendix A*). the participants were asked to join the study on the same day (the 7th of April). After the participants registered on the 7th, the first questionnaires were administered on the 8th of April. The baseline and the demographics questionnaires were administered on the morning of the 8th and did not have an expiration date so that the participants were able to fill out these two questionnaires within their own time.

The first-morning questionnaire was administered to the participants on the 9th of April between the hours of 8 AM and 12.30 PM. The participants received a notification at 8 AM asking them to fill out the questionnaire. The first evening questionnaire was administered to the participants on the 9th of April between the hours of 6 PM and midnight. The participants received a notification asking them to fill out the questionnaire at 6 PM each night.

The morning and the evening questionnaires were administered each day on the same schedule for the duration of which is 14 days. After the study was concluded the participants received an E-Mail thanking them for their participation.

Materials

Ethica.

The application Ethica was used to design the study and to administer the different questionnaires to the participants. Within the app, each participant could fill out the questionnaires and received notifications and reminders to fill out the different questionnaires.

Demographic questionnaire.

The demographic questionnaire contained five items about gender, nationality, occupation, and which VoD streaming services the individual used to watch video-on-demand (*Appendix B*).

Baseline questionnaire.

The baseline questionnaire contained standardized multi-item questionnaires to measure the trait levels of mood, stress level, level of loneliness, amount and quality of sleep, level of Fear of Missing Out, level of procrastination, and behavior of the individual regarding snacking. For this research, only the measurements concerning the level of stress, and the level of Fear of Missing Out were used.

The Perceived Stress Scale (PSS) was used in the baseline questionnaire to assess the general level of stress an individual experience (Cohen, Kamarck, & Mermelstein, 1983). All ten items of the perceived stress scale (ex.: "In the last month, how often have you felt nervous and "stressed"?") were used in the baseline questionnaire (*Appendix C*). The items were answered on a 5-point scale with the choices of never to very often on all ten items. Total scores range from never to very often. The higher the score on the scale, the more stressed the individual is. The reliability of the perceived stress scale was 0.78 in the study by Cohen, Kamarck, & Mermelstein (1983). For the current study, the alpha for the PSS was calculated to be 0.81.

The 10-item Fear of Missing Out (FoMO) scale was used to assess the general level of an individual regarding the Fear of Missing Out (Przybylski, Murajama, DeHaan, & Gladwell, 2013). All ten items from this scale were used in the baseline questionnaire (*Appendix D*). The items were answered on a 5-point scale with the choices of not at all true of me to extremely true of me on all ten items. The higher the score on the scale, the more the individual's level on the Fear of Missing Out appears to be. The reliability of the Fear of Missing Out scale was calculated between 0.87 and 0.90. For the current study, the alpha for the FoMO scale was calculated to be 0.72.

Daily morning questionnaire.

The morning questionnaire that was administered every morning to the participants consisted of ten items. For this research, only the items concerning VoD watching behavior and experienced momentary levels of stress were used.

The items measuring VoD watching behavior of the previous day were based on other research that have been proven successful questions for the topic of VoD watching (Flayelle et al., 2019; Panda & Pandey, 2017). The items that were used in the current study to determine the amount of the participants' VoD watching were "How long did you watch VoD services yesterday?" and "How many episodes did you watch yesterday?" (*Appendix E*). The momentary stress level of the participant was measured using the stress numerical rating scale-

11 (SNRS-11; Karvounides, Simpson, Davies, Khan, Weisman & Hainsworth, 2016). This single-item scale ("What is your current stress level?") is validated single item for stress and used in this study to determine the momentary stress level of the participants on a 10-point Likert scale, ranging from one being not at all to five extremely true.

Daily evening questionnaire.

The evening questionnaire administered every evening to the participants consisted of five items. For this research, two items within the questionnaire were used. First, the evening questionnaire used the same SNRS-11 item to determine the stress level of the individuals in the evening. Additionally, daily Fear of Missing Out was measured with the single-item FoMO scale (*Appendix C*). The single item for Fear of Missing Out ("Do you experience the Fear of Missing Out?") was established by Riordan, Cody, Flett, Conner, Hunter, and Scarf (2020) and has a good test-retest reliability. The scale uses a 5-point Likert scale, ranging from one being not true to five being extremely true.

Data analysis

The program SPSS (version 27) was used for the data analysis. The collected data was downloaded from Ethica and transformed into SPSS. The next step was to exclude participants that were missing more than three days of filling out the questionnaires. The cut-off score for participants was determined to be at three days since those participants who did not fill out the questionnaires for more than three days had too many missing values which altered the analysis (van Berkel, Ferreira & Kostakos, 2017). Further, participants that were outliers for the amount of time spend binge-watching were looked at to establish whether these outliers need to be excluded. For those outliers, the time used VoD watching was compared to the number of episodes watched to check whether both answers match and if resulting the participant needs to be excluded.

The next step for the analysis was to analyze the information gathered by the demographic and the baseline questionnaires. The participants' age, gender, nationality, and watching behavior were analyzed using descriptive statistics.

Due to the longitudinal nature of the data set, a series of linear mixed models (LMMs) was used to analyze the repeated measurement points of the participants. The LLM was suited for the analysis since the model is able to both deal with missing values and the nested nature of the data (Walker, Redform, & Oleson, 2019). The LMM used the repeated covariance type

AR (1), since this first-order autoregressive structure assumes that the measurements within one person are correlated and that the correlation between the measurements over time is systematically decreasing (Simpson, Edwards, Muller, Sen, & Styner, 2019).

To test the association between VoD watching and the trait level of FoMO and the trait level of stress, two LMMs with the hours spent watching VoD streaming services as the dependent variable and the trait of FoMO as fixed covariate was used. The second LMM was focused on the hours spent watching VoD streaming services as the dependent variable and the trait level of stress as fixed covariate factor.

To test the association between VoD watching and the level of FoMO the same day, and the momentary stress levels, three LMMs with the hours spent watching VoD streaming services as the dependent variable and the level momentary level of FoMO, and two stress level measurements were used as fixed covariate were used. The first LMM was focused on analyzing the momentary level of FoMO as fixed covariate. The second LMM that was used to analyze the second research question focused on the level of stress experienced the next day as fixed covariate factor. The third LMM was used to analyze the association between stress experienced the same evening as fixed covariate factor. For all LMMs the p-value was supposed to be smaller than .05 for the association to be significant for unstandardized regression estimates.

To visualize the data, charts were used to display estimated marginal mean over time. For most of the visualizations, line charts were used, except in the case to display an overview of the average watching behavior for each day a bar graph was used.

Results

Descriptive statistics

81 participants decided to initially participate in the study. According to the exclusion criteria, six participants were excluded for analysis since they did not fill out the daily questionnaires regularly. As a result, 75 participants were included in the analysis. The sample was imbalanced in terms of gender (81.3% female), the average age of the participants was 23 (SD=6.9) years. Most of the participants that decided to join the study were of German nationality and were students. Almost all participants indicated that they used the streaming service Netflix when watching on-demand. On average the participants spent each day between one and two hours watching VoD services.

Table 1

Descriptive Statistics of Participants (N = 75)

Variable		Frequency/ Percentage
Age	Min	20
	Max	60
	Mean (SD)	23.4 (6.9)
Gender	Female	81.3 %
	Male	18.7%
Nationality	German	94.7%
	Dutch	4.0%
	Other (European)	1.4%
Occupation	Student	74.8%
	Apprentice	9.2%
	Part-time employee	4.1%
	Full-time employee	7.9%
	Unemployed	1.4%
	Other	2.7%
Platform	Netflix	95%
	AmazonPrime	63.7%
	YouTube	72.5%
	Disney+	30%
	TVNow	18.8%
	Joyn	15%
	Sky	6.3%
	Dazn	5%
	Other	6.3%
Episodes watched	Mean (SD)	2.4 (3.3)
Hours spent watching	Mean (SD)	1.5 (1.5)
Baseline Stress	Mean (SD)	3.1 (.5)
Baseline FoMO	Mean (SD)	2.9 (.75)

Watching behavior participants

Over the 13-days study period, 74.3% of the measurement occasions indicated that the participants spent at least half an hour a day on VoD streaming services. The participants watched on average 2.4 episodes (*SD*=3.3) per day and spent 1.5 hours (*SD*=1.5) each day on average on VoD streaming services (Figure 1).
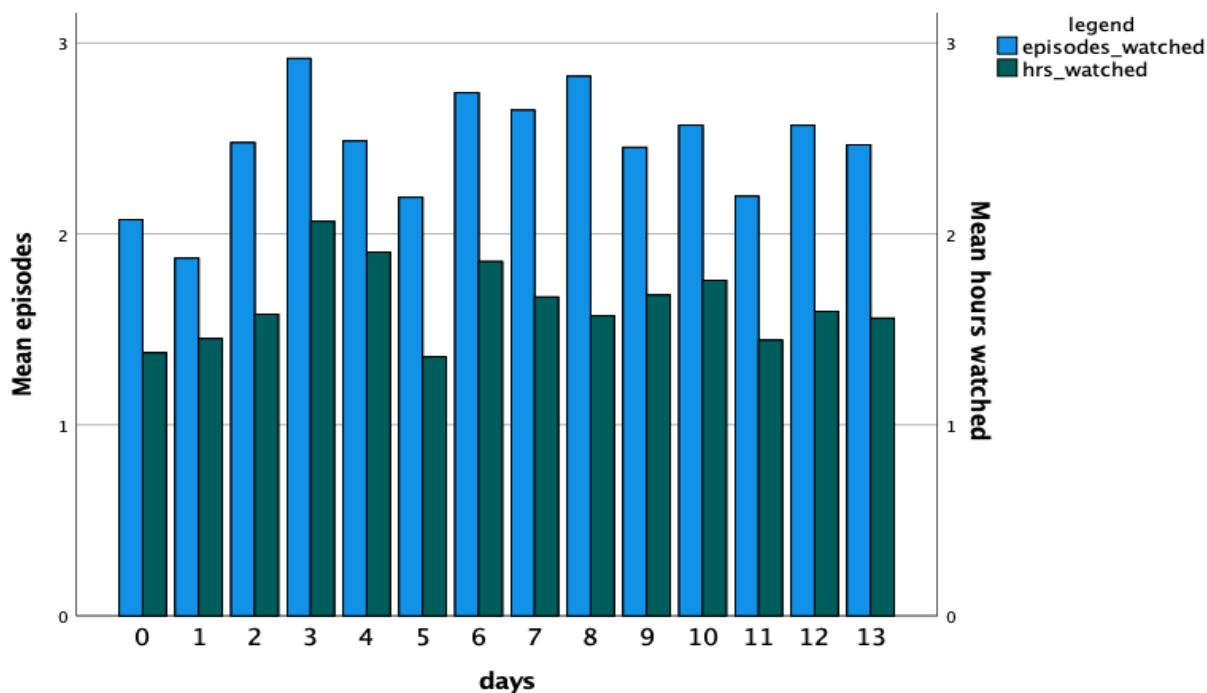

Figure 1. Mean watching behavior over the study period.

In more detail, 26.7% of the participants on average indicated that they did not watch any episode for at least one day of the study period. Whereas 21.7 % of the participants watched one episode and 16.5% watched two episodes of a day. 35.1% of the participants indicated at least during one day of the study period to watch more than 2 episodes (Figure 2).
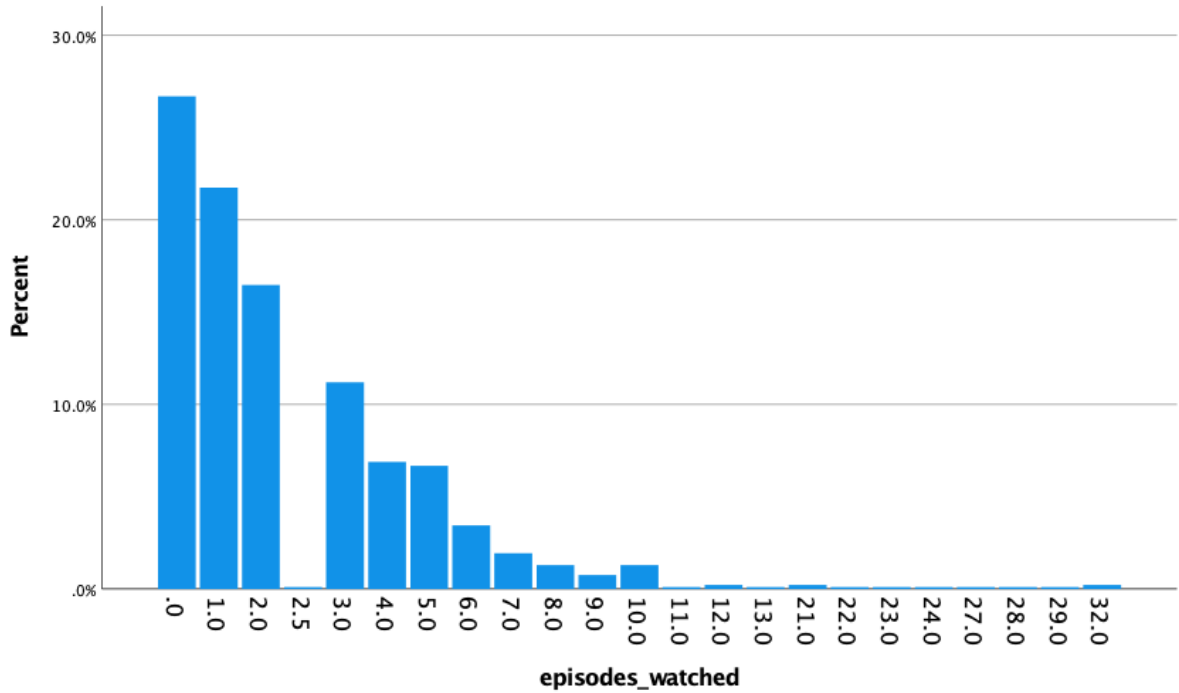
Figure 2. Percentages of number of episodes watched on average.

Over the study period, 25.7% of the participants did not watch the VoD streaming services on at least one day of the study. 11.8% spent watching half an hour per day watching VoD services and 13.3% spent an hour per day on VoD streaming services. 22.7% of the participants spent at least one day watching two hours on the streaming platforms and 39.8% spent more than two hours watching VoD streaming services (Figure 3).
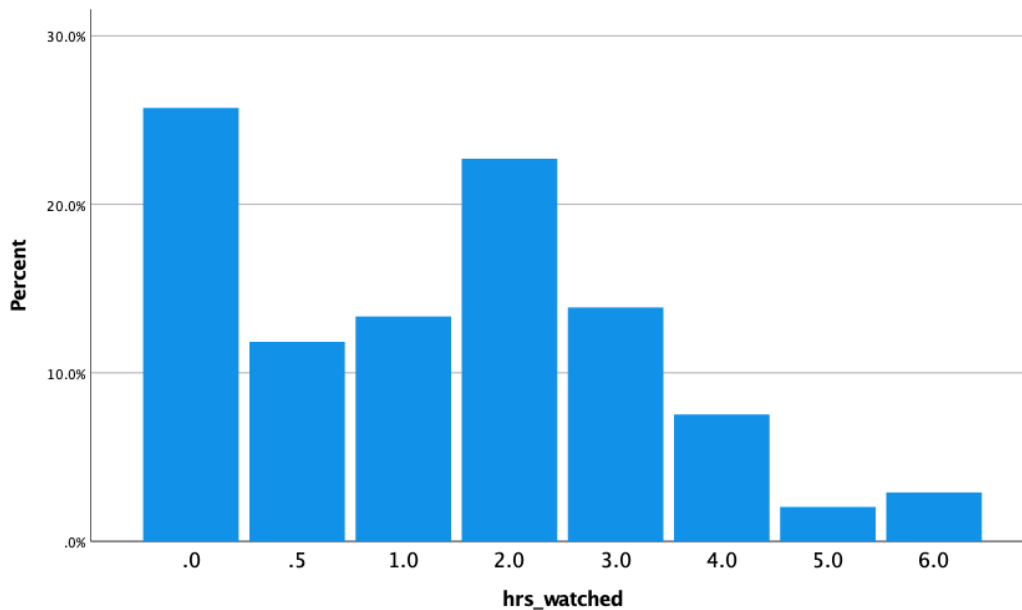

Figure 3. Percentages of hours watched on average.

For both stress the day after and on the same day of the VoD watching, the fluctuations were similar for the mean of all participants for each day of the study (Figure 4). While the overall stress level of the participants was higher during the morning measurements compared to the evening measurements, both measurements show a peak on day 10. The average stress level in the morning was calculated to be at 3.4 on the 10-points scale of the single stress item. In comparison, the average stress level in the evening was slightly lower with 3 on the 10-points single-item scale.
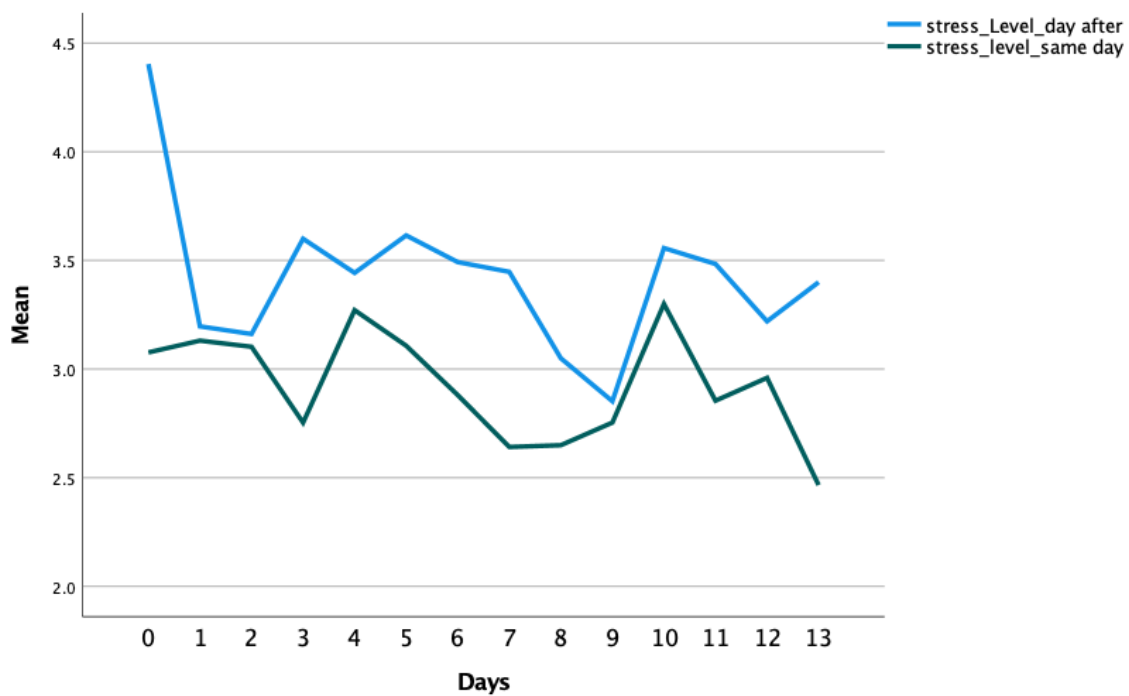

Figure 4. Same day and the day after mean stress level measures over the study period.

Linear Mixed Model Analysis

The linear mixed model analysis was used to explore the association between the psychological factors of Fear of Missing Out and the perceived stress level and video-on-demand watching over time.

Association between VoD watching and trait FoMO.

The first LLM analysis with the hours spent watching VoD streaming services as dependent variable and the trait level FoMO as fixed covariate showed no significant effect of the Fear of Missing Out on the hours spend watching VoD services with having a slight positive correlation ($p=.2$, $B=.01$, $SE=.95$).

When looking at the association between the trait of FoMO of the participants and how many hours the participants spent each day on using VoD services, it shows that there is no clear indication for FoMO to have an association with the hours spent watching VoD services (Figure 5).
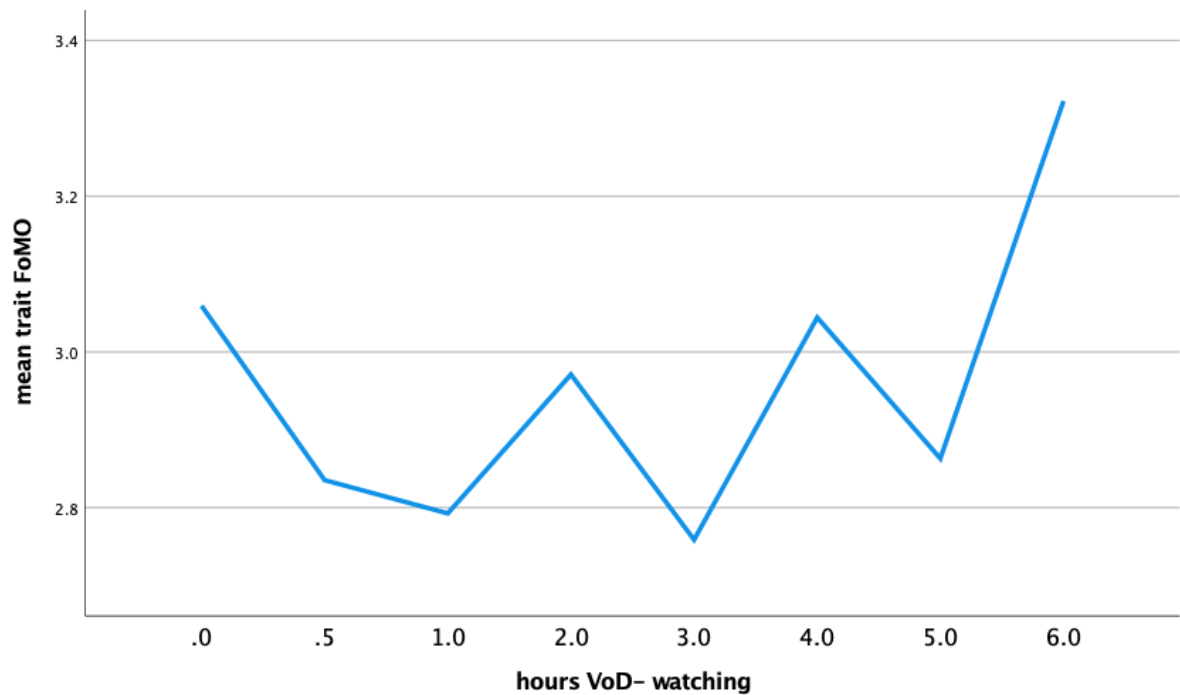

Figure 5. Mean value for the trait of FoMO for each hour spent watching VoD.

Association between VoD watching and trait stress.

The second analysis was conducted to test for the association between the watching behavior and the trait level of stress of the individual. When plotting both variables against each other it can be seen that there attended to be a slight increase in the average trait stress level and the hours spending VoD (Figure 6). However, the results of the LMM showed that the association between the trait level of stress and the hours spent watching was not significant (*p= .29, B= .04, SE=.14*).
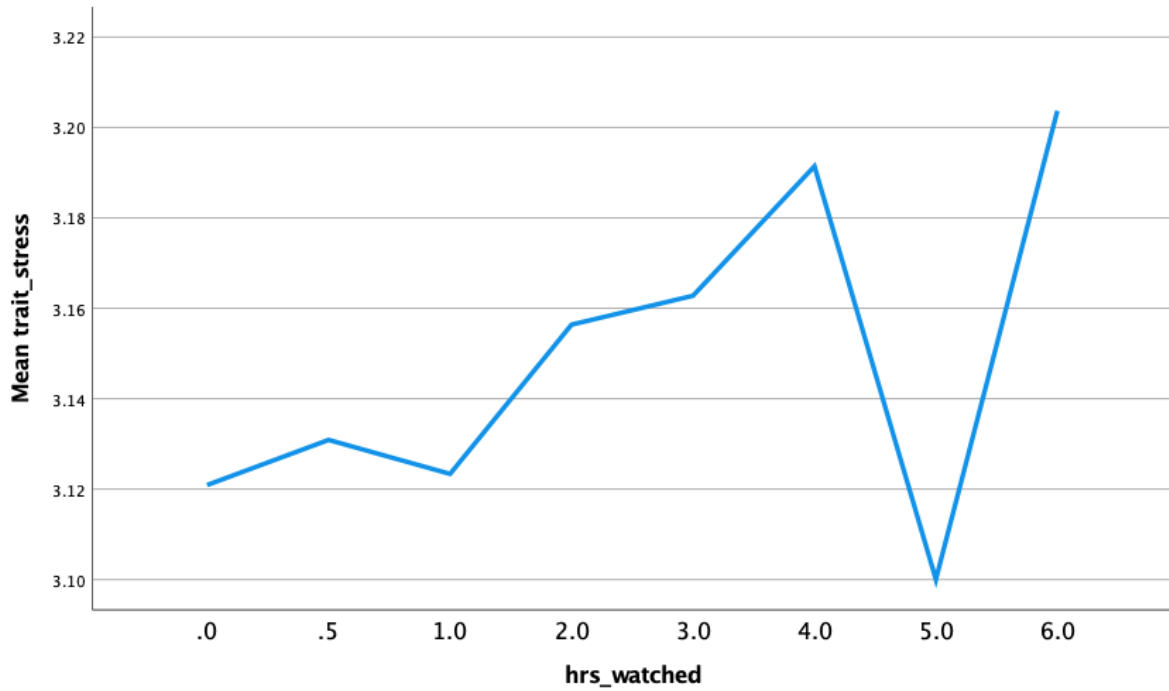
Figure 6. Mean value for the trait of stress for each hour spent watching VoD.

Association between VoD watching and state FoMO.

For the third analysis, the variables of VoD watching and the momentary level of FoMO on the same day were plotted against each other. In Figure 7, it can be seen that the level of momentary FoMO only slightly fluctuated over the hours the individuals spent on average watching. The LLM analysis with the hours spent watching as the dependent variable and the momentary level of FoMO as fixed covariate showed that the association between the two variables was not significant (*p=.94, B=-.001, SE=0.04*).
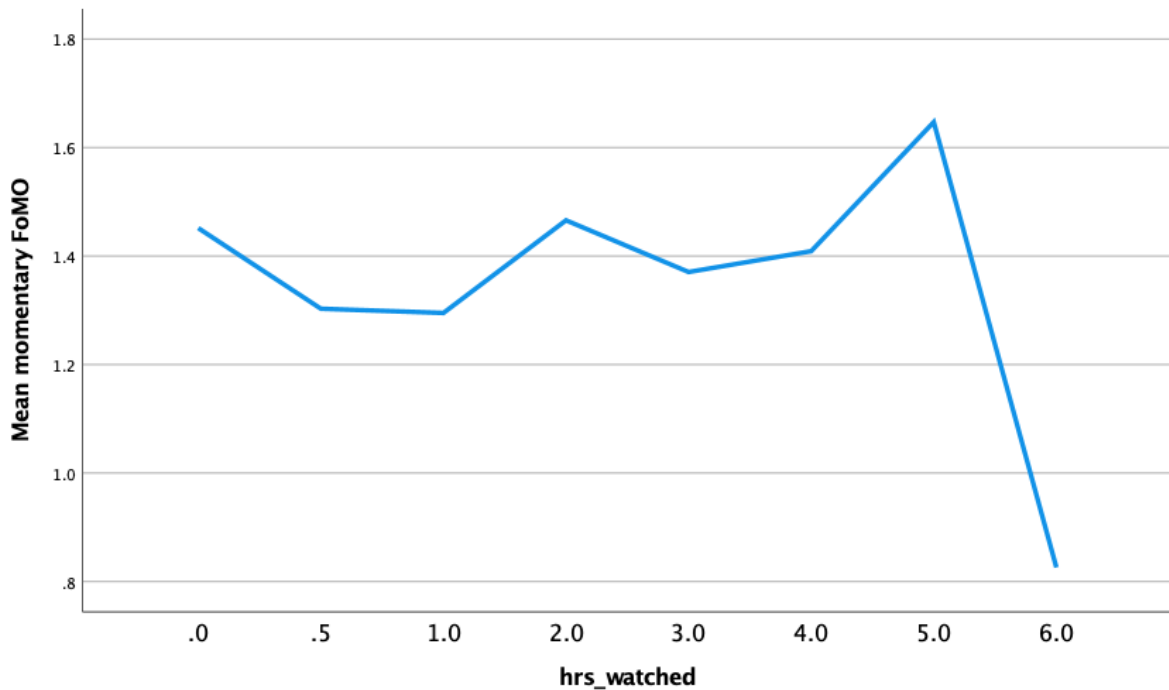
Figure 7. Mean momentary level of Fear of Missing Out over each day.

Association between VoD watching and state stress.

The fourth linear mixed model analysis was focused on the stress level of the participants in the evening and what the association of the stress level was to the hours spend watching VoD services. The analysis showed that there was no significant effect between the stress level which experienced the same day as the watching behavior and the hours spend watching ($p=.8$, $B=-.01$, $SE=.02$).

The last LMM analysis was focused on the stress level experienced by the individuals, the day after the watching behavior. The analysis of this association shows that there was also no significant association between the stress level experienced measured the day after and the hours spent watching VoD streaming services *($p= .14$, $B=-.3$, $SE=.02$)*. This last analysis was conducted as an extra analysis to check whether the hours spent watching VoD streaming services had a predictive value for the level of stress experienced the day after watching VoD streaming services.

The first three linear mixed model analyses indicate that the Fear of Missing Out and stress, did not significantly predict how many hours an individual will spend watching VoD services based on their stress level or their Fear of Missing Out.

Discussion

The overall aim of this study was to determine the association between the VoD watching behavior of individuals and two psychological factors namely the FoMO out and the level of stress experienced by individuals. The results of this study showed that there is no significant predictive association between the VoD watching behavior and the level of stress. Even though a slight positive association could be visually observed between the trait level of stress and the hours spent watching VoD streaming services, this effect was not statistically significant at the group level.

The first conclusion that can be drawn from the results of this study is that the trait level of FoMO was not associated with the watching behavior of the participants over time. The results that higher trait levels of FoMO were not predictive of more hours spent watching VoD streaming services is surprising since other research that has been conducted on the topic of FoMO on a trait level stated that the level of FoMO is an indicator for individuals to engage in VoD watching behavior (Conlin et al., 2016; Flayelle et al., 2020;). However, the study by Conlin et al. (2016) was more focused on general social media consumption of students, for example, the number of social media posts that individuals with a higher level of FoMO post to be in contact with their social group. The concept of FoMO regarding the VoD watching behavior is still relatively new in the research community. As a result, the concept of FoMO in connection to the watching behavior still needs to be further investigated by also including other factors that might have a moderating effect on the watching behavior of the individuals. For example, one factor that could be a moderator in the relationship between VoD-watching and the level of FoMO is the individual's social group. If the social group is not discussing TV shows that are available in the VoD streaming services, the individual does not feel the need to conform to the social norms of the group in regard to the watching behavior. Another factor that might function as a moderator for the relationship between FoMO and the VoD watching behavior is that the watching behavior of individuals might be motivated by other factors, like boredom or feeling more relaxed.

The second conclusion that can be drawn from this study is that the association between the trait level of stress and the hours an individual spent watching VoD streaming services not significant. One possible explanation for why the association at the group level was not significant might be that other variables interfere with the association for which the current study did not account for, and which might strengthen or weaken the association between stress and VoD watching. For example, the study conducted by Panda and Pandey (2017) included

six psychological factors in their study to examine how individuals are motivated to engage more in VoD watching. These other psychological factors could function as moderators for the association between stress and VoD-watching behaviors. Therefore, it is possible that the association between VoD watching, and stress is not straightforward as first assumed by this study. A study by Wang (2019) indicated that the level of stress does not increase the relaxation experienced by the individual after a VoD watching session, rather the individuals feel more guilty for watching binge-watching and consequently feel more stressed. This statement by Wang (2019) could not be supported by the current study since the results were not significant.

Based on the first two conclusions, the first research question "To what extent does the trait level of FoMO and the trait level of stress predict the frequency of VoD watching of the general public?" can be answered by stating that the results of this study do not show an indication that the higher trait levels of FoMO or stress are predictive of a higher amount of VoD watching over time.

A third conclusion that can be drawn from this study is that momentary levels of stress and the momentary level of FoMO were not significantly associated with amount of VoD watching. Firstly, the results of the current study were surprising since previous research on the topic of the level of stress on the watching behavior showed that there is a significant association between the two factors (Flayelle et al., 2020). One explanation for the different results in other studies could be that the focus is mostly on the instant gratification experienced by the individual after finishing an episode and that the individual's feelings of being stressed stem from an underlying feeling of being guilty of spending a longer time watching VoD streaming services instead of doing something more productive (Flayelle et al., 2020). As a result, the participants in this study might not have been feeling stressed at the moment of answering the questionnaire but rather were feeling guilty for engaging in an extended VoD watching session.

Secondly, the momentary variable of the FoMO showed no significant predictive value to the watching behavior either. This result is controversial to previous research that has been conducted on the association between FoMO and the VoD watching behavior. For example, a study by Conlin et al. (2016) stated that there is an association between the FoMO and the watching behavior. Conlin et al. (2016) concludes that for at least some TV genres the FoMO is a predictive factor. On the other hand, a study by Anghelcev et al. (2020) indicates that there is an association between the FoMO and the individual's watching behavior though the FoMO might not have a predictive factor for the watching behavior. The findings of this study support

the conclusion made by Anghelcev et al. that there is the FoMO is not a predictor for the VoD-watching behavior.

Concluding for the second research question "To what extent does the watching behavior of an individual vary based on their momentary level of stress and their momentary level of FoMO", the study shows that neither variable has a direct association with the VoD watching behavior on the same and the following day.

Strengths, Limitations, and future research

One strength of the current study is that the study has been focused on the predicting association of the Fear of Missing Out on the VoD-watching behavior of the participants. This predicting association has not been studied by many studies in the past. Most of the previous research on this topic is focused on other factors and establishes the level of FoMO as a moderator (Anghelcev et al., 2020, Conlin et al., 2016). With the focus on the predictive association of FoMO on the VoD-watching behavior of the individual the current study has been able to establish that in this study the Fear of Missing Out is not a predictor for VoD-watching.

Another strength of this study is that the response rate of the participants was high so that the collected data from the participants could be analyzed without having exclude many data points. As a result, the collected data represented the sample well and the analyzed data was very detailed for the participants.

On the other hand, a limitation that is important to emphasize within this research the recruitment method. The participants for this study were recruited through convenience sampling. This method causes the sample to be biased since the sample was based on the researchers' social environment. The result of this possibly biased sample is that the levels for the trait of FoMO and the trait level of stress might have been lower than it would have been when the sample is more varied across different population groups. For further research, it is important that the sample included in the data collection is more varied so that the population is better represented.

Another limitation which is important to emphasize in this study is that the measurement occasions for this study were fixed at two points during the day. The participants were asked to fill out a questionnaire in the morning and in the evening, but the participants might not have been using the VoD streaming services shortly before filling out the questionnaires. One result of the delay between the watching behavior and answering the

questionnaires might have been that the participants suffered from the recollection bias. Therefore, the collected data would be not representative of the behavior but rather represent the recollection of the behavior by the participants.

Future research should aim to administer the questionnaires closer to the occurrence of the VoD-watching behavior of the participants to be able to measure the predicting factors and not just the recollection of the factors associated with the watching behavior. Another aspect that should be included in future studies on this topic is to examine in more depth what other variables play a moderating role in the association between VoD watching behavior and the Fear of Missing Out of the individuals. Overall, future research on the topic of VoD watching behavior and psychological factors, like stress and FoMO, should be examining the association of those variables in more depth by also including other factors that might play a role in the association, for example, the instant gratification individuals experience from VoD watching.

In conclusion, the current research provided a deeper understanding into the predictive association between two psychological factors, stress and Fear of Missing Out, and the VoD-watching behavior. The current study was able to show that the level of Fear of Missing Out does not predict the amount of VoD-watching an individual participates in. Contributing to that result, the level of stress does not predict the VoD-watching behavior either.

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Appendices

Appendix A: Invitation E-Mail

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,

Christina, Naomi, Lara, Annika, Celine, and Jeremy

Appendix B: Demographics items

Which streaming services are you using? (multiple answers possible)

A ID: 12	Netflix	⊕ ⊖
A ID: 2	Amazon Prime	⊕ ⊖
A ID: 3	Disney+	⊕ ⊖
A ID: 4	TVNow	⊕ ⊖
A ID: 5	Joyn	⊕ ⊖
A ID: 6	Youtube	⊕ ⊖
A ID: 7	Sky	⊕ ⊖
A ID: 8	Hulu	⊕ ⊖
A ID: 10	Maxdome	⊕ ⊖
A ID: 11	Dazn	⊕ ⊖
A ID: 9	Other	⊕ ⊖
A ID: 13	I do not use streaming services	⊕ ⊖

What is your age?

Q ID: 4   ⊙ Single Answer

What is your gender?

	A ID: 1	Female	⊕ ⊖
	A ID: 2	Male	⊕ ⊖
	A ID: 3	Diverse	⊕ ⊖
	A ID: 4	Wish not to disclose	⊕ ⊖

Q ID: 3   ⊙ Single Answer   📋 Duplicate   ✛ Move   🗑 Delete   ✏ Edit

What is you nationality?

	A ID: 1	German	⊕ ⊖
	A ID: 2	Dutch	⊕ ⊖
	A ID: 3	Other European	⊕ ⊖
	A ID: 4	Non-European	⊕ ⊖

Q ID: 5   ⊙ Single Answer   📋 Duplicate   ✛ Move   🗑 Delete   ✏ Edit

What is your occupation?

	A ID: 2	Pupil	⊕ ⊖
	A ID: 1	Student	⊕ ⊖
	A ID: 3	Apprentice	⊕ ⊖
	A ID: 4	Part-time employee	⊕ ⊖
	A ID: 5	Full-time employee	⊕ ⊖
	A ID: 6	Unemployed	⊕ ⊖
	A ID: 7	Self-employed	⊕ ⊖
	A ID: 8	Other	⊕ ⊖

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Appendix C: Perceived stress scale

1. In the last month, how often have you been upset because of something that happened unexpectedly?
2. In the last month, how often have you felt that you were unable to control the important things in your life?
3. In the last month, how often have you felt nervous and "stressed"?
4. In the last month, how often have you felt confident about your ability to handle your personal problems?
5. In the last month, how often have you felt that things were going your way?
6. In the last month, how often have you found that you could not cope with all the things that you had to do?
7. In the last month, how often have you been able to control irritations in your life?
8. In the last month, how often have you felt that you were on top of things?
9. In the last month, how often have you been angered because of things that were outside of your control?
10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

Appendix D: Fear of Missing Out scale

1.I fear others have more rewarding experiences than me.

2.I fear my friends have more rewarding experiences than me.

3.I get worried when I find out my friends are having fun without me.

4.I get anxious when I don't know what my friends are up to.

5.It is important that I understand my friends "in jokes."

6.Sometimes, I wonder if I spend too much time keeping up with what is going on.

7.It bothers me when I miss an opportunity to meet up with friends.

8.When I have a good time, it is important for me to share the details online (e.g., updating status).

9.When I miss out on a planned get-together it bothers me.

10.When I go on vacation, I continue to keep tabs on what my friends are doing.

Appendix E: Items VoD watching

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)

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)

A ID: 1	I did not watch	⊕ ⊖
A ID: 2	Less than 1 hour	⊕ ⊖
A ID: 3	1 hour	⊕ ⊖
A ID: 4	2 hours	⊕ ⊖
A ID: 5	3 hours	⊕ ⊖
A ID: 6	4 hours	⊕ ⊖
A ID: 7	5 hours	⊕ ⊖
A ID: 8	More than 5 hours	⊕ ⊖