

UNIVERSITY OF TWENTE.

Video-on-Demand (VoD) Watching and Feelings of Guilt

An Experience Sampling Study

Anna Kühn (s1610554)

Department of Positive Clinical Psychology and Technology

Master Thesis

First supervisor: Dr. P. M. ten Klooster

Second supervisor: Dr. T. Dekkers

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Abstract

Background: Video-on-Demand (VoD) services are rising and becoming more popular than traditional linear television. This major change has affected consumers' watching behaviour and a new phenomenon called binge watching arose. According to several studies, binge watching or excessive VoD watching may be related to several health issues and reduced well-being, which can be caused by feelings of guilt. Yet there is only little known about possible predictors, moderators and actual consequences of VoD watching behaviour.

Aim of study: The aim of this study was to investigate the association between VoD watching and feelings of guilt over time. Additionally, motivations for watching and the social context of watching were considered as possible moderators of the association.

Method: Data from an experience sampling study was used for a post-hoc analysis, where a convenience sample of respondents (N= 38, M= 23.7 years, male= 55.3%, female= 44.7%) filled out daily questionnaires in the smartphone application *Ethica* about their VoD watching behaviour and their experienced feelings of guilt twice a day over a period of two weeks. A series of linear mixed model analyses were conducted to investigate the association between VoD watching and feelings of guilt over time and whether this association is moderated by the reasons for watching and the social context of watching.

Results: No statistically significant association was found between the amount of VoD watching and feelings of guilt the next morning or evening, neither between nor within persons. Additionally, there was no moderating effect of reasons for watching nor the social context of watching. The lack of association between the amount of VoD watching and feelings of guilt the next day was also confirmed by two individual case studies.

Discussion: The findings suggest that in the current sample VoD watching is not negatively associated with feelings of guilt over time in contrast to many previous cross-sectional studies who found significant associations. The lack of an appropriate definition of binge watching and the limited knowledge about possible predictors and moderators raise doubts about the justification of the pathological framing of binge watching. Given the lack of knowledge about the phenomenon of binge watching and VoD watching and the results of this study, it is recommended to conduct further research on actual consequences of binge watching and VoD watching to gain deeper insight in the uniqueness and specificity of that phenomenon in general.

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Introduction

Our world is changing fast and technology becomes more and more important. Digitalization offers us great opportunities and advantages and contributes to rapid technological development. That also applies to the television industry and the watching behaviour of many people with regard to media consumption. Nowadays, most information and a great number of films and series is available online and can be retrieved within seconds, which has made a major change over the recent years for the television broadcast model from linear to nonlinear viewing experiences (Barra & Scaglioni, 2020).

Video-on-Demand (VoD)

Where once “traditional” television like free-to-air, cable or satellite was dominating, markets nowadays display a strong growth in different types of Video-on-Demand (VoD) like nonlinear audio-visual media services. These include both paid-for VoD such as Amazon Prime or Netflix and advertised-financed VoD like YouTube (Budzinski & Lindstädt, 2018). The rise of VoD services such as Netflix and Amazon Prime Video has affected the consumers’ watching behaviour (Rajala & Korhonen, 2020). Netflix and Amazon already have more than 180 million combined subscribers worldwide (Wayne, 2018). These services provide the opportunity to instantly watch films or series on any device with an internet connection and make it therefore easily accessible for consumers (Governo, Teixeira & Brochado, 2020). VoD services offer a large selection of films and series in most genres, which cover many interests and can be viewed at any time without advertising (McDonald & Smith-Rowsey, 2016).

Young adults and college students seem to engage in VoD watching the most and form a risk group for binge watching (Vaterlaus, Spruance, Frantz & Kruger, 2019; Matrix, 2014; Panda & Pandey, 2017). A study from Solis (2014) found out that nine out of ten college students used Netflix on a regular basis and according to a survey from the Statista Research Department (2015) 87 percent of VoD users watched at least once a week and 60 percent even once a day. Therefore, young adults form a significant part of the target group for research.

Binge watching

With the emerging popularity of VoD services a relatively new phenomenon called “binge watching” has emerged. Originally, the term binge watching was coined by popular media and is actually pushed by VoD services like Netflix. Still, it is not conceptualized as the definitions for binge watching vary. Binge watching refers to watching multiple episodes of a

series in one sitting and generally to an excessive behaviour that deviates from the norm (Jenner, 2017; Flayelle, Maurage, Ridell Di Lorenzo, Vögele, Gainsbury & Billieux, 2020). When talking about binge-drinking or binge-eating, the term ‘binge’ has a negative connotation and is associated with self-harming behaviour. There is even an association with diseases like alcoholism and bulimia. A lack of control or shameful indulgence are also related to most binge-behaviours. Although the term ‘binge’ is clearly defined, it is difficult to give the phenomenon “binge watching” a uniform definition. “Binge watching” is not clearly conceptualized and the underlying motivations and potential consequences of binge watching are still largely unexplored what results in a lack of knowledge of VoD or binge watching’s effects on human well-being. Therefore, it is not known if binge watching is truly undesirable behaviour.

The wide variety of definitions is also reflected in research. Most researchers defined binge watching with regard to a specific number of episodes watched in one sitting, mostly between two and six episodes (Annalect, 2014; Pittman & Sheehan, 2015; Rubenking, Bracken, Sandoval & Rister, 2018; Flayelle, Canale, Vögele, Karila, Maurage & Billieux, 2019). Factors such as type of content, amount of time, frequency and engagement in binge watched programs or the day of the week are mostly not considered to determine different behavioural patterns and to define binge watching (Sung, Kang & Lee, 2018; Trouleau, Ashkan, Ding & Eriksson, 2016). Although most studies define binge watching in terms of the number of episodes watched, a definition with regard to the specific amount of time spent watching is yet to evolve (Panda & Pandey, 2017).

Consequences of VoD watching

VoD watching may have different consequences for different individuals. In a survey study of McCarriston (2017) most respondents reported to feel happy or fulfilled after watching. Flayelle and colleagues (2020) also identified a positive association between VoD watching and several indicators of well-being through perceived autonomy, usage satisfaction and harmonious passion. However, not everyone engaged in VoD watching reported enhanced well-being afterwards. Some studies that focused on outcomes of binge watching suggested that excessive VoD watching could be harmful and destructive to the overall well-being of an individual, as it is suggested to be addictive (Chaudhary, 2014; Panda & Pandey, 2017). According to Governo, Teixeira and Brochado (2020) some experts are worried that VoD services like Netflix and Amazon Prime will lead to a loss of social capital and social isolation. This means that an increasing number of VoD consumers could experience alienation or lack a

sense of belonging in case they could not find new ways to develop fulfilling social relationships with their peers.

VoD watching and feelings of guilt

VoD watching seems to be especially associated with guilt as many users report feelings of guilt after watching (Wagner, 2016). Guilt can reduce situational well-being during or shortly after media consumption. Goal conflicts, however, may also have long-term effects on life satisfaction when important life goals are constantly impeded by impaired self-control over media use like VoD watching. In this context, impaired self-control can be seen as self-regulation failure. Self-regulation is one of the self's major executive function that refers to its active, intentional aspects and may be thought of as that part of the self which is ultimately responsible for actions and behaviour of the individual (Baumeister, Schmeichel & Vohs, 2007). Next to self-regulation, choice is also another major executive functions of the self and is intertwined with self-regulation. A self can not only initiate behaviour or control it, but is also responsible for deliberating and making choices between all possible options. It does not regulate itself directly, rather it may control behaviour, feelings and thoughts that comprise it. In this sense, self-regulation refers to the regulation of processes by the self. Through self-regulation, people are able to resist their own impulses, adapt their behaviour to a range of standards and change their current behaviours in the service of attaining distal goals (De Ridder & De Wit, 2006). Self-regulation failure occurs, when there is a conflict between an individual's desire to act on one's impulses and the desire to achieve a long-term goal. If a person acts on his or her impulse for VoD watching despite important life duties or goals, he or she might get into a personal conflict that can lead to feelings of guilt. This conflict between two desires does not only lead to feelings of guilt, but might also result in experiencing dissatisfaction with life.

Prior research found that giving in to media desires at the cost of other distal goals or responsibilities often results in guilt (Granow, Reinecke & Ziegele, 2018). In this context, guilt can be defined as a negative self-evaluation triggered by conflicts between a behaviour, such as VoD watching, and personal standards or long-term goals and responsibilities of the individual (Panek, 2014). Furthermore, a perceived negative association with media use could reduce potential positive effects of media use, such as media-induced recovery, vitality and enjoyment (Reinecke, Hartmann, et al., 2014). When a person is constantly exposed to feelings of guilt after VoD watching, he or she might create a negative association with VoD watching and therefore only experiences negative consequences and miss the positives ones. In that case, feelings of guilt might be caused by a goal conflict between one's desire for VoD watching and

one's desire to achieve a personal goal such as studying for an exam. So even though the student engaged in a pleasant activity (VoD watching), he or she might experience negative feelings while doing so. It might also be the case, that even when the student has no exams to study for, he or she still experiences negative feelings while VoD watching, because it is linked to the procrastinating behaviour during exam periods. Consequently, the student is not able to enjoy this originally pleasant activity.

Moderators of VoD watching

Motivation

There are many potential moderators that can have an influence the association between VoD watching and feelings of guilt, one of which is the motivation for watching. College students have numerous motivations to engage in VoD watching, including catching up, relaxation, sense of completion, cultural inclusion and improved viewing experience (Steiner & Xu, 2018). A study from Starosta, Izydorczyk and Lizyńczyk (2019) identified seven factors that stimulate the motivation of an individual to watch TV, namely habit, relaxation, company, way of spending time, learning, pleasure and escape. Pitman and Sheehan (2015) stated that an individual's motivation for watching is based on the gratification of five needs. These are need for information or education, identification with characters, need for entertainment, strengthening social contacts and escape from stress of everyday life. The most prevalent motivations for college students to engage in VoD watching seem to be escape from reality and easy accessibility to TV or VoD services as they can be practically viewed from any device connected to the internet (Panda & Pandey, 2017). Another study showed an association between motivations such as enjoyment, efficiency and fandom with VoD watching (Shim & Kim, 2018). Individuals who engage in VoD watching have mostly the intention to satisfy intrinsic desires or pursue extrinsic utility like information seeking for example (Atkin, 1985). Similarly, Sherry (2004) found out that media use provides an intrinsically rewarding experience that leads individuals into a more enjoyable and engaging state of flow. Therefore, VoD watching as a leisure activity can lead to improvements of feelings and well-being as result of satisfying the need for entertainment (Flayelle et al., 2019).

Research suggested that users of VoD platforms sought for a balance between positive and negative emotional states and to maintain equilibrium by seeking sensation and novelty (Bryant & Miron, 2002). Nevertheless, research has also shown that individuals who engaged in binge watching or excessive VoD watching had similar symptoms as individuals with

substance dependence problems and experienced negative consequences (Shim & Kim, 2018). A study from Reinecke, Hartmann and Eden (2014) also found out that individuals that engaged in VoD watching as a stress reducing activity tend to feel more often guilty afterwards, as they experienced media usage as a form of procrastination rather than attempted relaxation. Media effects are often complex and might differ a lot from person to person. Therefore, it is important to identify the different motivations of VoD watching to help further comprehend how the norms and means for this new trend are shaped and transformed according to an individual's motivation (Shim & Kim, 2018).

Social context

Another potential moderator of VoD watching is the social context of watching. VoD watching and health concerns have been studied before, but the social context in which VoD watching takes place and what consequences it might have is still unexplored (De Feijter et al., 2016). Throughout the 1960s, people mostly came together to watch films or programs, because of the fixed programs and times. Networks had routine schedules for their TV programmes and television was experienced as a social event in the daily routine of families (Lull, 1990). Also, there was little variety in TV shows. Therefore, the popularity of the shows was higher and it was easier for people to share their thoughts and opinions about them (Lotz, 2007). Nowadays, people are no longer dependent on the current television programmes. Streaming services allow the viewers to watch whatever and whenever they want. That gives people the opportunity to watch alone and not necessarily in a social context. Individuals are allowed to take control over their own watching behaviour (Lotz, 2007). The increasing improvement of the new viewing technologies and the rising selection of series, films and shows tend to turn the earlier social television experiences into a solitary activity. In a study, Sung, Kang and Lee (2015) identified watching alone as an isolating activity that could lead to feelings of loneliness and depression and might therefore increase feelings of guilt after watching.

In the course of time, however, it turned out that VoD watching is not necessarily a solitary experience as it was initially suspected. The Netflix Harris Interactive study (2013) found out that 51 percent of television streamers acknowledged that they would rather watch series with at least one other person, while 39 percent of streamers saved films and series for later to watch them with someone else (Netflix, 2013). When watching with someone else, VoD watching can be seen as a social activity, where watching partners keep themselves updated on new series and content and therefore facilitate social contact (Shim & Kim, 2018; Panda & Pandey, 2017). Streaming films, series and shows gave individuals the opportunity to discuss

those in an online environment or even face to face immediately after watching. Social networks could be built to share opinions, critical findings, interests and to exchange ideas, make recommendations and get inspired by others. Therefore, people might be motivated to engage in VoD watching as it serves as a social activity.

Experience Sampling Method (ESM)

Although there is research that addresses VoD watching and its consequences, most studies are based on qualitative or cross-sectional surveys which are often limited due to retrospective bias. They do not provide any information about potential long-term effects or the direction of tested effects (Granow et al., 2018). Further, no statements about causal inferences can be made. To get more insight into VoD watching behaviour of individuals over time, more exploratory and longitudinal approaches are required.

This study is based on data collected using the experience sampling method (ESM) study. In contrast to other traditional methods, ESM does not rely on recollection and reconstruction of participants but collects immediate reports of ongoing conditions in research subjects' lives. ESM consists of an intensive collection of systematic self-reports from individuals at random occasions during the waking hours of a normal week with regard to people's behaviour, feelings and thinking (Larson & Csikszentmihalyi, 2019). Therefore, ESM has the advantage to gain deeper insight in individuals, by performing multiple measurements within persons over longer periods of time. It is a useful method to describe variations in self-reports of behaviour and mental processes. Next to that, ESM is less vulnerable to recall bias since participants respond directly (Myin-Germeys, Oorschot, Collip, Lataster, Delespaul & Van Os, 2009). Another benefit of ESM is that it becomes possible to investigate complex questions about contingencies of behaviours and to explore associations between variables. Importantly, ESM also allows researchers to conduct within-person and between-person analyses. Within-person associations can have important theoretical and practical implications not revealed by between-person effects and make it possible to examine relevant processes that co-occur for a given person (Fazeli, Turan, Budhwani, Smith, Raper, Mugavero & Turan, 2017). Within-person effects represent the variability of a particular value for individuals in a sample over time. Between-persons effect, in contrast, examine differences between individuals. This can be between groups of cases when the independent variable is categorical or between individuals when the independent variable is continuous. Another important benefit of ESM is its sensitivity to differences within individuals in terms of the variability or intensity of behaviour and feelings (Scollon, Prieto & Diener, 2009). The ESM enables the study to gain a detailed insight in the

behaviour and experienced feelings of the participants as it is measured on a daily basis and do not rely on retrospective measures.

Aim of the study

The aim of this study is to further explore the association between VoD watching behaviour and feelings of guilt of individuals over time in young adults. Specifically, the study will answer the following research question:

1. How is VoD watching associated with feelings of guilt among young adults over time?

This question aims to investigate whether VoD watching is related to feeling guilty the day after watching and if there are any differences between individuals and changes within individuals in experiencing feelings of guilt over time.

Previous research showed that there are different motivations for VoD watching. Also, the social context in which VoD watching behaviour takes place can vary and may have an impact on the consequences. In this study it will be explored if the different reasons for watching and the social context in which that watching behaviour occurs moderate the association of VoD watching and feelings of guilt. Hence, the second and third research questions are:

2. Is the association of VoD watching and feelings of guilt among young adults moderated by the reasons for watching?
3. Is the association of VoD watching and feelings of guilt among young adults moderated by the social context of watching?

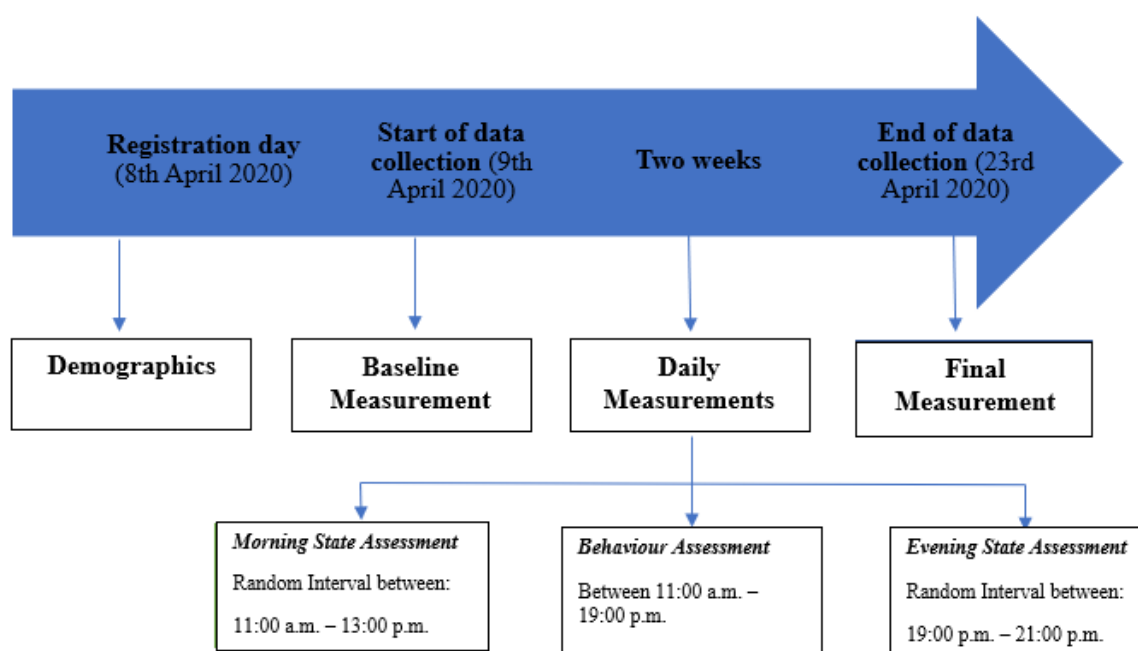
Methods

Design

The present study concerns a post-hoc analysis of data collected by bachelor students of the University of Twente (Lehmkühler, 2020). This study employed an experience sampling design to investigate potential predictors and consequences of VoD watching behaviour. The ESM was applied to measure daily VoD watching behaviour of the participants and potentially related moods, feelings and consequences over time. The data was collected in April 2020 over a duration of 14 days, from the 9th until the 23rd of April 2020 (see Figure 1).

Figure 1

Visual Representation of Study Design



During the study, questionnaires were presented to the participants repeatedly within predetermined time slots in the morning and in the evening. Each questionnaire asked the participants for a momentary report of their feelings and about their VoD watching behaviour the previous day. The mobile application *Ethica Data* was used for all assessments. The respondents enrolled for the study and completed the questionnaires via this application. *Ethica Data* is a platform specifically designed to perform experience sampling studies and provides the researchers the possibility to easily monitor the progress of the study (Ethica Data, 2020). The participants made use of their own smartphones and were not dependent on any other devices provided by the researchers. This had the advantage that the participants could make use of their smartphones in their comfortable usual handling and did not have to operate an unknown device.

The assessments were prompted both at fixed times as well as at variable times through a time-based protocol. By making use of variable times schedule, also called signal-contingent sampling, assessments were issued in response to a phone notification that was delivered at unpredictable times within a set time interval (Connor & Lehman, 2012). The fixed times schedule, also called interval-contingent sampling, sent assessment at set times during the day, such as the morning and evening assessment and asked for a momentary report (Connor & Lehman, 2012). As can be seen in figure 1, two random state assessments, in the morning and

in the evening, were issued each day during the study. When having received the random notification, the participants had 2.5 hours to complete this assessment. The behaviour assessment was issued at a fixed time interval each day. The demographics questionnaire was available for the participants from the 8th until 23rd of April and was not bound by a timeframe.

Participants

The participants were recruited by convenience sampling from the researchers' social environment. In total, 41 participants were recruited for the study. Three participants had to be excluded from the dataset due to missed or incomplete answering of the surveys. According to Connor and Lehman (2012) participants in ESM studies should have at least completed 50 percent of the assessments to be meaningful. Based on this guideline, the final sample consisted of 38 participants between 18 and 51 years (see Table 1). Most of them were students and had a German nationality. The mean age of the participants was 23.7 years. In the sample 21 participants were male and 17 were female. 32 participants stated to use Netflix as their VoD streaming service. These demographics fit the purpose of the current study, as the current study's target group was young adults between 18 and 30 years, because they seem to engage in VoD watching the most (Ahmed, 2017; Vaterlaus, Spruance, Frantz & Kruger, 2019; Matrix, 2014; Panda & Pandey, 2017). The participation was voluntary and the participants confirmed the participation with an online consent form. The study was approved by the ethics committee of the faculty of behavioural, management and social sciences of the University of Twente (200366).

Table 1*Demographics of the participants (n=38)*

Category	Subcategory	Frequency
Gender, n (%)	Male	21 (55.3%)
	Female	17 (44.7%)
Age, M (<i>SD</i>)		23.7 (5.3)
Nationality, n (%)	German	35 (92.1%)
	Dutch	1 (2.6%)
	Other, European	2 (5.3%)
Occupation, n (%)	Apprentice	3 (7.9%)
	Employed full-time	9 (23.7%)
	Employed part-time	1 (2.6%)
	Pupil	1 (2.6%)
	Student	22 (57.9%)
	Other	2 (5.3%)

Note. M= Mean; *SD*= Standard Deviation

Materials

For the participation the free mobile application *Ethica Data* (Version 157) with an account was needed on the smartphone of the participants. Via the application, three types of questionnaires were used in the study. The first concerned a general one-time demographics questionnaire at baseline. The second was a once-daily behaviour assessment and the third questionnaire assessed momentary state feelings twice a day. In the present study, only the variables that are relevant for the post-hoc analysis were explained below.

Demographics questionnaire

With the self-developed demographics questionnaire, gender, age, nationality and occupation of the respondents were collected. Further, the questionnaire investigated some basic information about the VoD watching behaviour of the respondents with two questions, which included which VoD streaming services are usually used (Netflix, Amazon Prime Video, Hulu, Disney Plus, Maxdome, Sky Home, YouTube or Other) and whether these services were used at least once a week (Yes or No).

Daily Behavioural Assessment

The daily behavioural assessment contained questions about the respondents' VoD watching behaviour the day before. The questionnaire began with the question: "Did you watch a series on a video-on-demand platform such as Netflix or Amazon Prime Video yesterday?". In case of answering "No" the questionnaire ended. By answering "Yes" the questionnaire continued with further questions about the time of watching (morning 6 a.m. – 12 p.m., afternoon 12 p.m. – 6 p.m., evening 6 p.m. – 11 p.m. or at night 11 p.m. – 5 a.m.) where multiple answers were possible. Next to that, the duration of watching was asked and the number of episodes watched. Further, the participants were asked to indicate the type of content watched (e.g., comedy, documentary, action, thriller, fantasy, etc.), the reason for watching (entertainment, boredom/nothing else to do, stress, interest/curiosity, escape from reality/distraction, procrastination/avoidance of other responsibilities, information seeking, peer activity or relaxation/taking a break) and the kind of context in which VoD watching took place (alone, with friends, family or partner). In this study, only the variables reasons for watching and the social context of watching were used for analysis.

Morning and Evening State assessment

The state questionnaires were assessed in the morning between 11 a.m. and 1p.m. and in the evening between 7 p.m. and 9 p.m. With these questionnaires the momentary moods and feelings of the participants were investigated. Their intention was to assess rather specific than general symptoms of well-being, stress, guilt, depression and anxiety to gain more detailed information about the singular problems. In the morning state, the respondents indicated on a 5-point Likert scale with the options "not at all", "slightly", "moderately", "strongly" and "extremely" to what extent they currently experienced the symptoms "low/sad mood", "low energy/fatigue", "feelings of guilt", "problems with concentration" and "sleeping problems in the last night" in the previous night. In this study, only the guilt questions were used for analysis.

Procedure

Before the start of the study, the participants received an e-mail invitation with a registration code and a guideline to take part in the study. The participants downloaded the *Ethica Data* app and registered with the provided code. After accepting the online informed consent and filling out the demographic questionnaire, the study began and participants were asked to fill out daily appearing questionnaires over two weeks, namely the "behaviour assessment", "morning state assessment", "evening state assessment" and "baseline

measurement” surveys. The participants received daily notifications and reminders to fill out the respective assessment forms.

ESM study design

The ESM study design made the available dataset particularly suitable for this post-hoc analysis, because it offers deeper insight into the prevalence of VoD watching behaviour and associations between several variables over time than other sampling methods (Larson & Csikszentmihalyi, 2019). Next to that, recall bias is reduced in ESM studies due to the fact that the data collection occurs immediately in or after the moment of the behaviour of interest (Myin-Germeys et al., 2009). Another important factor for the choice of this ESM study is that the sample group is similar to the target group of this study as it is known that mainly young adults engage in VoD watching behaviour (Vaterlaus, Spruance, Frantz & Kruger, 2019; Matrix, 2014; Panda & Pandey, 2017). Typical for ESM studies is also the fact that it includes multiple daily measurements across multiple days or over a few weeks within a relatively small group of respondents (Connor & Lehman, 2012; Van Berkel, Ferreira & Kostakos, 2017). Therefore, this ESM dataset was considered suitable for this post-hoc-analysis.

Analysis

For analysing the collected data, the statistical program for social sciences (SPSS) was used. After demographical information and patterns of VoD watching behaviour were obtained through descriptive statistics, a series of Linear Mixed Models (LMMs) with first-order autoregressive (AR1) covariance matrices with homogeneous variances were used to explore associations between VoD watching and feelings of guilt. According to Scollon, Prieto and Diener (2009) LMM is well suited for handling ESM data, because it is likely that respondents miss out some questionnaire due to the intensive nature of the ESM study. The LMM takes missing data into account with a maximum likelihood estimation through calculating the most likely behaviour or answer of a respondent based on their previous reported values.

To first investigate VoD watching behaviour over time and across participants, the number of hours watched was set as dependent variable, and the participants ID and time point were entered successively as fixed factor to estimate marginal means across participants and time points. The same was done to explore the feelings of guilt by making the variable guilt the dependent variable. This was done for morning and evening guilt separately.

To analyse the overall association of VoD watching and feelings of guilt the variables morning guilt and evening guilt were set separately as dependent variable and the continuous variable “number of hours watched” was set as covariate and added as fixed effect. Next to that, two LMMs were conducted to investigate differences for between-persons and within-persons associations. The research design and the repeated sampling strategy of data in a longitudinal study creates the opportunity to examine within-person association over multiple time points (Hoffman & Stawski, 2009). Specifically, the impact of constant between-person sources of variation can be differentiated from the impact of time-specific within-person sources of variation. Between-person and within-person effects can be efficiently and unambiguously disaggregated within the multilevel modelling with the strategy of person mean centering of the time-varying covariate (Curran & Bauer, 2011). For this, the mean score across all time points was calculated for each person. This resulted in the person mean (PM) score, which illustrates the between-person association. To get the person mean centered (PMC) score, which indicates within-person changes and associations, the person mean was subtracted from each individual’s time-specific total score. After that, the variables for guilt were set as dependent variable and PM and PMC were added simultaneously as fixed effects covariates. Additionally, two individual cases were presented to illustrate personal differences in the association of VoD watching and feelings of guilt. Participants with a different average number of watching hours were chosen. For all analyses the time point of the assessment was the repeated measure and the respondent’s number was the subject. Both variables, number of hours watched and feelings of guilt, were illustrated in line graphs for each participant.

To analyse the moderating effects of the reasons for watching and the social context on the association of VoD watching and feelings of guilt, two dichotomous variables were computed. Therefore, the variable “reasons for watching” was dummy coded into 0= positive reasons (entertainment, relaxation, peer activity, seeking for information and interest) and 1= negative reasons (stress, escape from reality/distraction, procrastination/avoidance of other responsibilities and boredom/nothing else to do) to investigate possible differences in the nature of the reasons of watching. Because the participants had several choice options, it was decided that if no single negative reason was mentioned it was coded 0 and if at least one option was a negative reason it became 1. The same was done with the variable “social context of watching”. The variable was split up in 0= watching alone and 1= watching with someone, which included watching with friends, family or partner. To analyse the moderated association of VoD watching and feelings of guilt, the guilt variables were set as dependent variable. The continuous variable “number of hours watched” was set as Covariate and the reasons and social

context were separately set as factor. Then, “number of hours watched” and “reasons” or “social context” were added to fixed effects and also the interaction of both variables (number of hours watched and reasons for watching; number of hours watched and social context of watching).

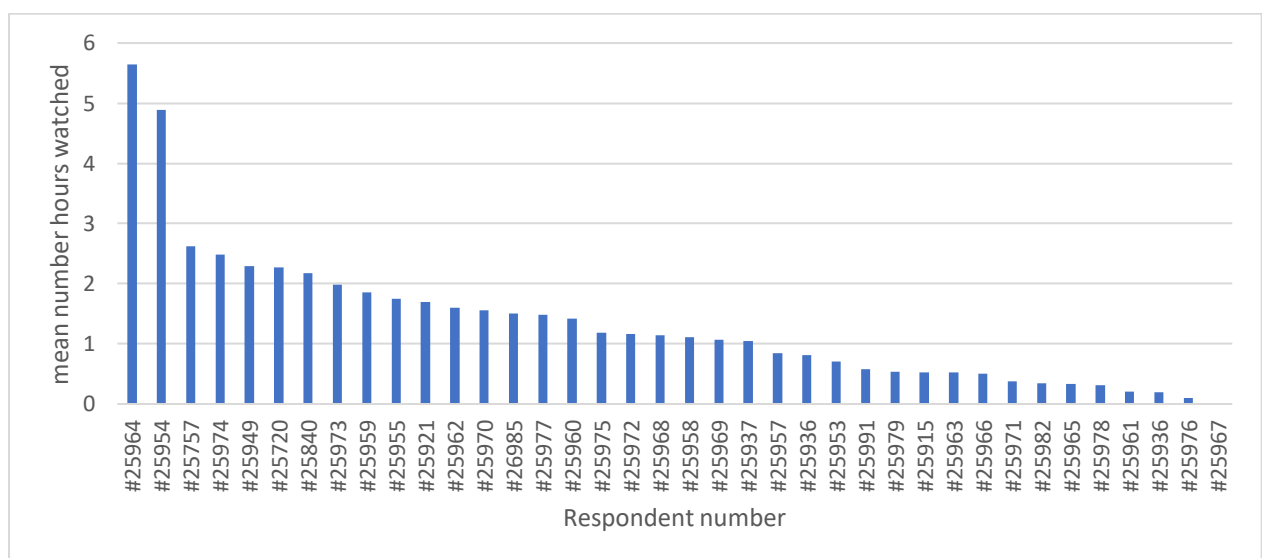
Results

VoD watching behaviour

During the measurement period of the study, the participants watched on average 1.34 (SD= 1.17) hours daily, with a minimum of 0 hours and a maximum of 5.64 hours. Figure 2 displays the large variability of the estimated average hours watched and the significant difference between persons ($F [37, 91.93] = 4.27, p < .0001$).

Figure 2

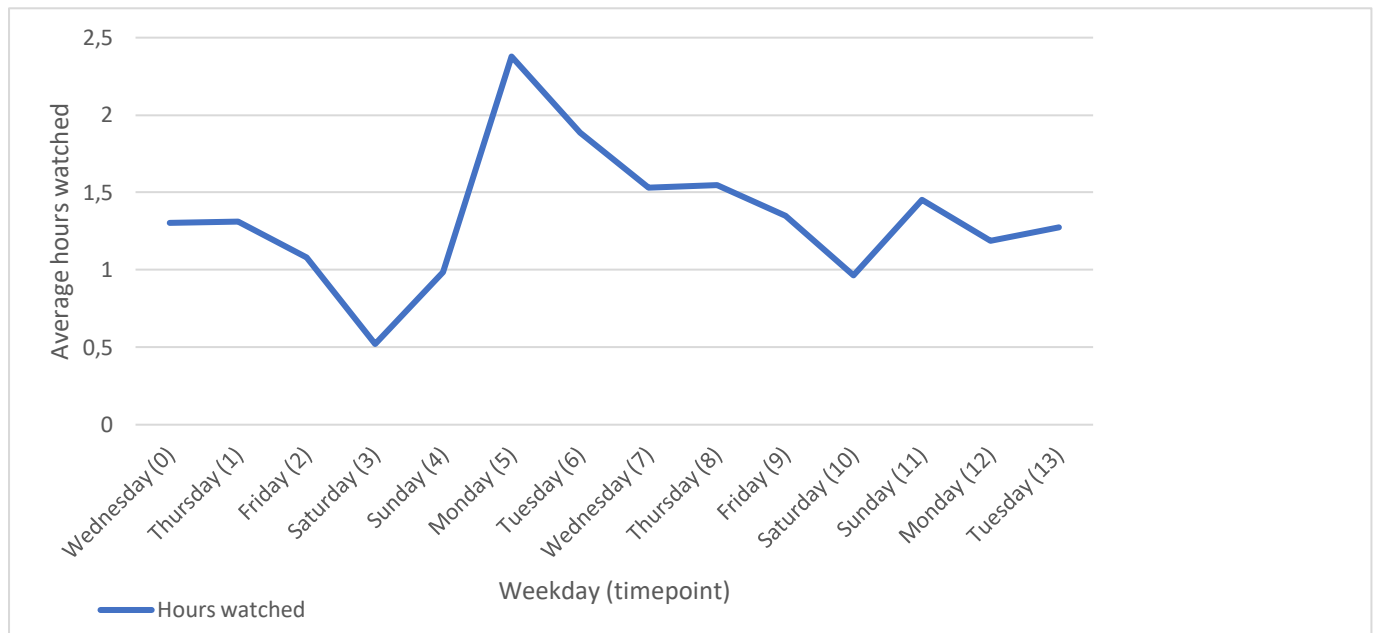
Average number of hours watched per respondent per day during the study in descending order



Regarding the VoD watching behaviour of the participants over time, it was notable that the lowest scores, and thus the least VoD watching, took place on Saturdays and the highest during the first days of the week, especially on Monday (timepoint 5; see figure 3). This illustrates a strong variation of VoD watching behaviour over the course of the week ($F [13, 312.90] = 2.503, p = 0.003$).

Figure 3

Average number of hours respondents engaged in VoD watching per time point

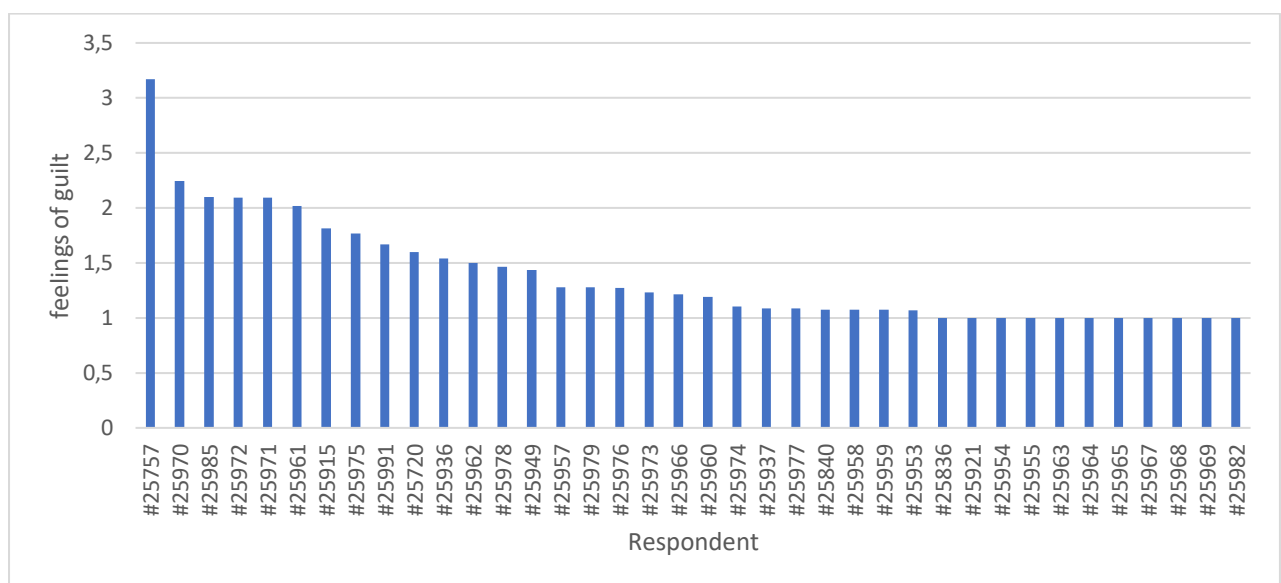


Feelings of guilt

The variability of the feelings of guilt in the morning after having watched was statistically significant different between respondents ($F [37, 87.07] = 5.615, p < 0.001$). Figure 4 illustrates the average feelings of guilt per respondent per day in descending order.

Figure 4

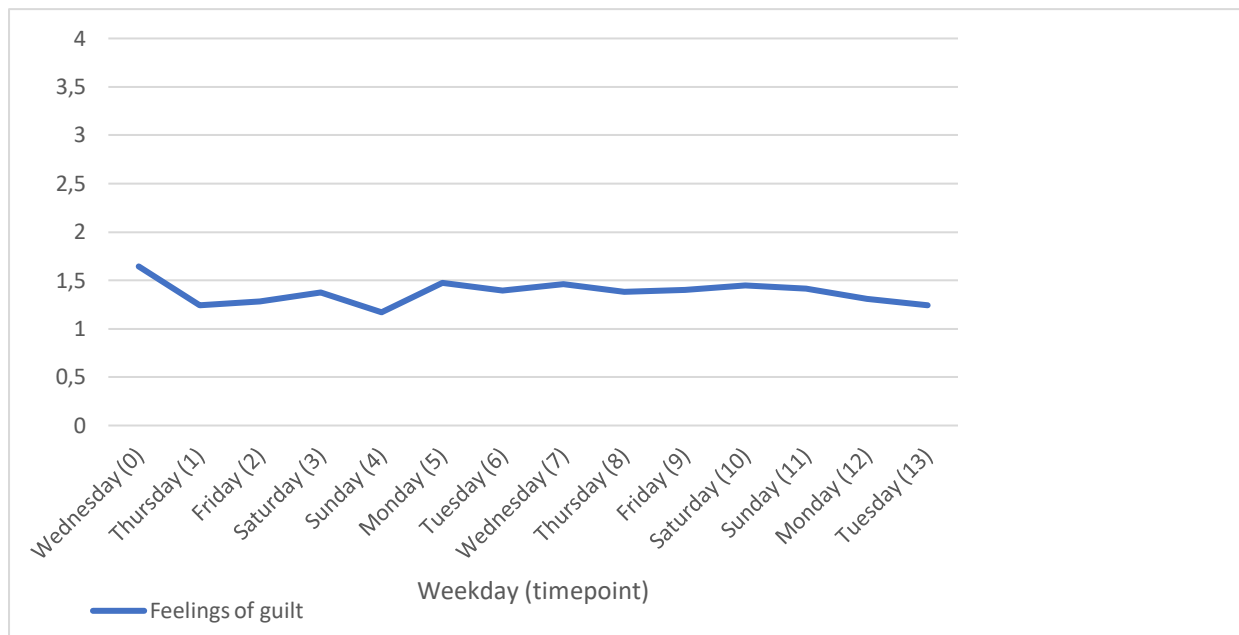
Average score of feelings of guilt per respondent per day during the study in descending order



Unlike the strong variation of VoD watching behaviour over the course of the week, the average feelings of guilt in the morning show on average a fairly stable and low variability over time during the study ($p=0.193$). This is also shown in figure 5.

Figure 5

Average feelings of guilt of the respondents per timepoint



Association between VoD watching and feelings of guilt

To investigate the effect of VoD watching on the feelings of guilt the day after watching, three LMMs were conducted. Overall, there was no statistically significant association found between VoD watching and the feelings of guilt next day, neither in the morning nor in the evening (see table 2). Figure 6 illustrates the average number of hours spent VoD watching and the average score of feelings of guilt in the morning afterwards per respondent. It is noticeable that the number of hours watched did not show an association with the feelings of guilt reported by the respondents.

Table 2

Results of the Linear Mixed Models with VoD watching (number of hours watching) as the fixed factor and its effect on the feelings of guilt the next day (morning and evening)

Dependent Variable	B-Estimate (Standard Error)	t-value	p-value	95% CI
Feelings of guilt: morning	0.025 (0.019)	1.334	0.183	[-0.012, 0.062]
Feelings of guilt: evening	-0.003 (0.019)	-0.171	0.865	[-0.041, 0.0359]

Figure 6

Proportion of the average hours watched and the average score of feelings of guilt in the morning after watching per respondent

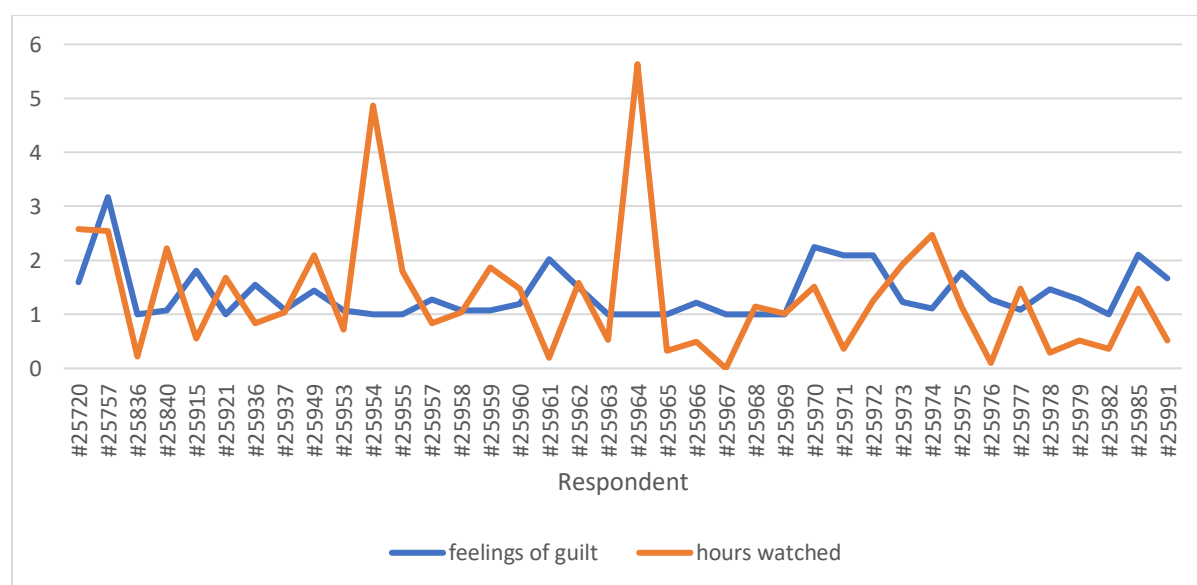
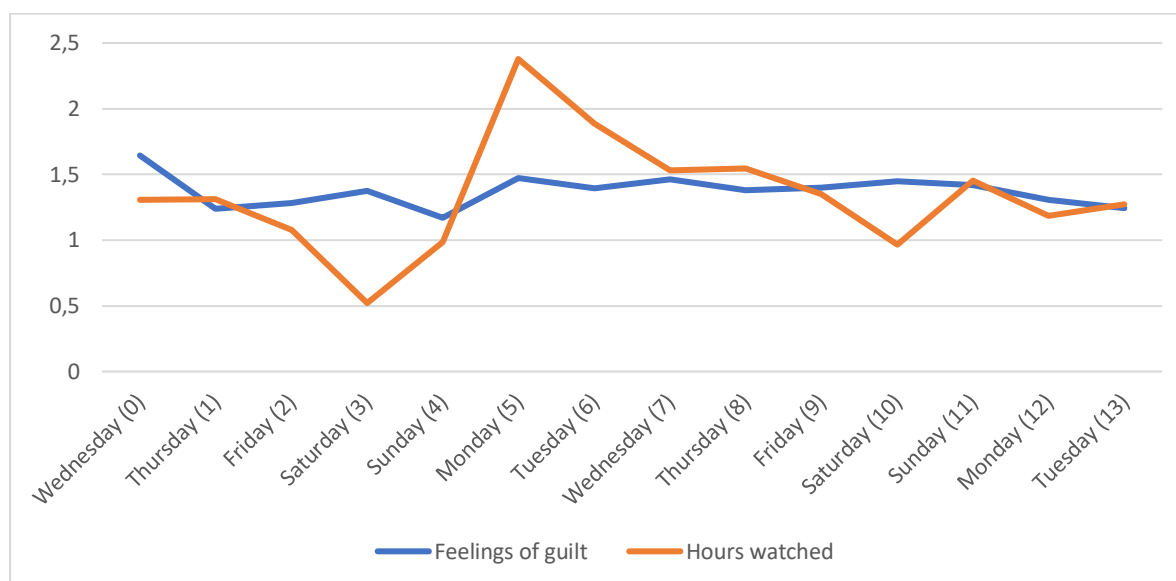


Figure 7 also illustrates that there was no clear association between the average hours watched and the average score of feelings of guilt per timepoint.

Figure 7

Average hours watched and the average score of feelings of guilt per timepoint in the study



Next to investigating the overall association between VoD watching and feelings of guilt the next day, two further LMMs were conducted to explore the association between VoD watching and the feelings of guilt between and within persons. There were no statistically significant associations found (see Table 3) at either the between-person or within-person level.

Table 3

Results of the Linear Mixed Models with VoD watching (person mean and person mean-centered hours watching) as the fixed factors and its effect on the feelings of guilt the next day (morning and evening)

Estimates of Fixed Effects	Dependent Variable	B-Estimate (Standard Error)	t-value	p-value	95% CI
PM	Feelings of guilt: morning	-0.017 (0.045)	-0.387	0.699	[-0.107, 0.072]
	Feelings of guilt: evening	-0.036 (0.043)	-0.873	0.385	[-0.119, 0.045]
PMC	Feelings of guilt: morning	0.033 (0.020)	1.636	0.103	[-0.007, 0.073]
	Feelings of guilt: evening	0.006 (0.022)	0.277	0.782	[-0.037, 0.049]

Note. PM= Person Mean, PMC= Person Mean Centered

Individual cases

To further illustrate the association between VoD watching behaviour and feelings of guilt on an individual level, two individual cases were drawn. These figures illustrate the number of hours watched per weekday and the experienced feelings of guilt that day for an individual example. Figure 8 shows the results of respondent #25949, who had one of the highest average watching amount, namely 2.29 hours daily and figure 9 show the results of respondent #25979, who watched in contrast only 0.54 hours daily on average and is one of the respondents with the lowest average watching score.

Figure 8

Proportion of the number of hours watched and the feelings of guilt per timepoint for respondent #25949

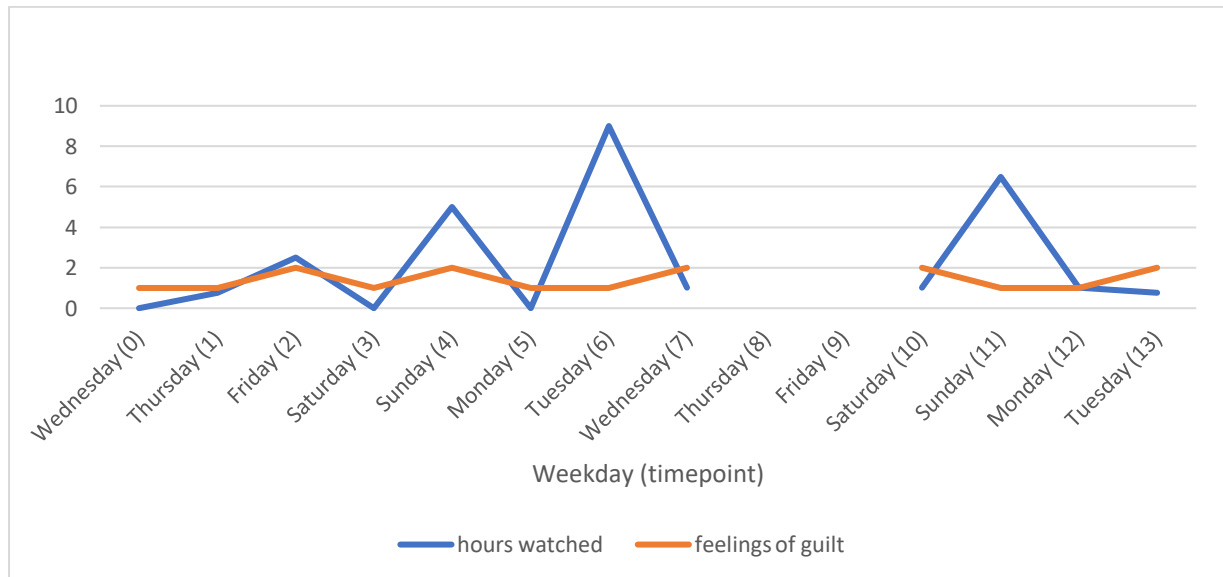
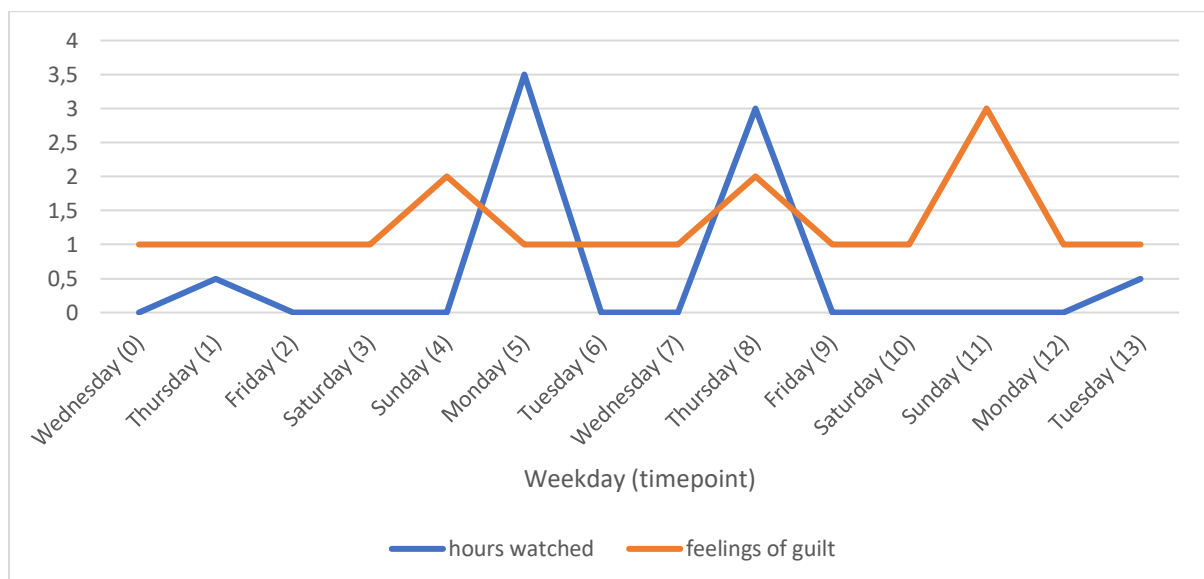


Figure 9

Proportion of the number of hours watched and the feelings of guilt per timepoint for respondent #25979



From the figures it can be seen, that the association of number of hours watched and experienced feelings of guilt are different on an individual's level and are not necessarily related to the number of hours watched that day.

VoD watching and feelings of guilt moderated by reasons for watching

No statistically significant moderating effect of reasons for watching was found for the association between VoD watching and feelings of guilt. In 79.2 percent of all instances respondents mentioned to watch for only positive reasons including entertainment, relaxation, as a peer activity, for information seeking and interest. Entertainment and relaxation were the most often given answers. The estimated average number of hours respondents spent VoD watching for positive reasons was 2.631 ($SE= 0.19$). Only 20.8 percent mentioned at least one negative reasons for watching like stress, escape from reality/distraction, procrastination/avoidance of other responsibilities or boredom and the estimated average number of hours watching for a negative reason was 0.945 ($SE= 0.136$). When not counting boredom as a negative reason, even 94.8 percent of the respondents watched only for positive reasons and only 5.2 percent for at least one negative reason. The reasons for watching did not significantly moderate the association between VoD watching and feelings of guilt the next morning and evening (see Table 4).

Table 4

Results of the Linear Mixed Models with number of hours watched and the reasons for watching as the fixed factors and its effect on the feelings of guilt the next day (morning and evening)

Estimates of Fixed Effects	Estimate (Standard Error)	t-value	p-value	95% CI
Morning				
Hours watched	0.018 (0.035)	0.513	0.608	[-0.051, 0.087]
Negative reasons for watching	-0.077 (0.128)	-0.607	0.544	[-0.328, 0.173]
Interaction hours and negative reasons for watching	0.000 (0.401)	-0.001	0.999	[-0.079, 0.079]
Evening				
Hours watched	-0.013 (0.034)	-0.373	0.710	[-0.080, 0.054]
Negative reasons for watching	-0.132 (0.127)	-1.044	0.297	[-0.381, 0.117]
Interaction hours and negative reasons for watching	-0.003 (0.040)	-.0.85	0.932	[-0.083, 0.076]

Note. The categories “positive reasons for watching” and “Interaction hours and positive reasons for watching” were used as reference categories for “Reasons for watching” and “Interaction hours and reasons for watching”.

VoD watching and feelings of guilt moderated by social context of watching

The association of VoD watching and feelings of guilt was also not significantly moderated by the social context of watching (see table 5). The estimated average number of hours respondents spent watching alone was 0.976 (SE= 0.136) and 2.49 (SE= 0.82) for watching with someone else. Watching alone or with someone else, did not have an effect on the association of VoD watching and feelings of guilt.

Table 5

Results of the Linear Mixed Models with number of hours watched and the social context of watching as the fixed factors and its effect on the feelings of guilt the next day (morning and evening)

Estimates of Fixed Effects	B-Estimate (Standard Error)	t-value	p-value	95% CI
Morning				
Hours watched	0.016 (0.034)	0.470	0.639	[-0.051, 0.083]
Social context of watching	-0.084 (0.110)	-0.766	0.444	[-0.301, 0.132]
Interaction hours and social context of watching	0.000 (0.041)	0.009	0.993	[-0.080, 0.810]
Evening				
Hours watched	0.045 (0.039)	-1.154	0.294	[-0.121, 0.031]
Social context of watching	-0.161 (0.120)	-1.344	0.180	[-0.397, 0.075]
Interaction hours and social context of watching	0.048 (0.044)	1.097	0.273	[-0.038, 0.135]

Note. The categories “Watching alone” and “Interaction hours and watching alone” were used as reference categories for “Social context of watching” and “Interaction hours and social context of watching”.

Discussion

This study examined the association between VoD watching behaviour and feelings of guilt over time. Furthermore, it was examined whether reasons for watching and the social context of watching had a moderating effect on the association between VoD watching behaviour and feelings of guilt. The findings of the study do not show any statistically significant results regarding the association between VoD watching and feelings of guilt. The association was also not moderated by reasons for watching or the social context in which the VoD watching behaviour occurred.

The findings of this study are in contrast to previous studies on binge watching and VoD watching which mainly showed significant negative associations between VoD watching behaviour and indicators of mental well-being, including feelings of guilt. Research in the field of media entertainment demonstrated that giving in to media desires like VoD watching at the cost of other important life goals or responsibilities often results in feeling of guilt. This could in turn result in reduced situational well-being in or after watching (Granow, Reinecke & Ziegele, 2018, Panek, 2014). Other studies also demonstrated that VoD watching was negatively associated with mental well-being and increased feelings of guilt after watching (Wagner, 2016; Vaterlaus et al. 2019). The discrepancies between this study and previous conducted studies might be due to the different nature of the methodological research design. Most of the previous studies were survey or cross-sectional studies, which are more prone to recall bias (Granow et al., 2018).

This study was based on the ESM, which is less vulnerable to recall bias because of the direct response of the participants (Myin-Germeys, Oorschot, Collip, Lataster, Delespaul & Van Os, 2009). Therefore, this study may have provided different results than previous studies. The difference in the nature of data collection might cause discrepancies between remembered feelings like in most cross-sectional studies and actually experienced feelings in ESM studies. According to a study of Zajchowski Schwab and Dustin (2017), experienced feelings can differ significantly from our memory of it. The feelings individuals remember seem to be dominant over the feelings that were actually experienced because humans have a predilection for creating coherent stories about themselves that gave meaning and purpose to their lives. In this context, social desirability could be an important factor. The tendency to give answers with respect to current social norms and standards may affect several psychological variables, such as feelings of guilt in relation to VoD watching, especially when they are measured through retrospective surveys and contain sensitive topics (Perinelli & Gremigni, 2016). Such surveys, which are often used in cross-sectional studies, facilitate the respondents to manipulate their answers. When respondents think back of their feelings of guilt after watching, they might think of the negative connotation of binge watching and the representation of unhealthy behaviour that should “normally” result in feelings of guilt when engaging in watching for a longer period of time. Therefore, they are more likely to give socially desirable answers and report higher feelings of guilt than they might have actually experienced while or shortly after watching. Data collected with the ESM might prevent such under- or overestimation of past experienced behaviours or feelings by making use of direct self-report measures.

Another advantage of the ESM study is that it allows the researcher to study the respondents' behaviours and feelings in their familiar environment. Thereby the measurement and data collection remain unobtrusive and easy to execute. Respondents could use their own smartphones for answering the questionnaires whenever they wanted and integrated it in their normal daily life. They got notifications and reminders when questionnaires were available and had to be filled in. Through the different measurements a detailed and comprehensive representation of the participants' watching behaviour and their experienced feelings of guilt was gained, what is an important strength of the longitudinal measurement in the ESM.

Most available studies focused on the potential harmfulness of binge watching by applying criteria that are used for other addictive disorders, mostly drug addiction, without exploring the specificity and uniqueness of the phenomenon binge watching (Flayelle, Maurage & Billieux, 2017; Flayelle et al., 2020). Based on the existing studies, it was expected to find a positive association between VoD watching and feelings of guilt the next day. However, the possible predictors, moderators and consequences of VoD or binge watching behaviour are still largely unexplored and it remains questionable, whether the existing approaches to binge watching are reliable regarding the criteria used and the unexplored field of psychological factors. Since no indication of an association was found between VoD watching and feelings of guilt over time in the current study, neither between nor within persons, it remains doubtful whether binge watching really should be seen and defined in terms of pathology. Flayelle, Maurage and Billieux (2017) also criticized approaches where binge watching was seen as an addictive behaviour and conducted a qualitative study exploring the phenomenon binge watching regardless of the criteria for addiction. They found out that VoD watching in general is mostly seen as a hobby or leisure activity by the participants and serves to primarily satisfy the need for entertainment, which was also one of the most given answers in this study. In light of these results, it is recommended to conduct further research and to critically explore the phenomenon of binge watching and VoD watching in general in order to investigate whether VoD watching behaviour is truly harmful and addictive behaviour as many previous studies reported. Also gathering more information about the underlying psychological factors such as predictors, moderators and consequences that relate to binge watching and VoD behaviour would add value to the already existing studies and expand the knowledge.

As individual differences in motivations for watching seem to play a major role in understanding the different consequences of VoD watching behaviour, it was expected that negative reasons for watching would result in higher feelings of guilt after watching. Due to the

fact that mainly students formed the sample group of this study, it could have been expected to find stress, escape from reality or procrastination as the reasons for watching that are associated with higher feelings of guilt afterwards as consequence of neglecting academic requirements or avoiding obligations. Students are exposed to a considerable amount of stress during their college and university years (Pariat, Rynjah, Joplin & Kharjana, 2014). According to Thawabieh and Qaisy (2012) stress is one of the main aspects of our modern life created by rapid changes in human life. Students suffer from academic stress resulted from testing, home works and other requirements which can result in exceeding abilities. However, no moderating effect of stress or other reasons for watching was found.

A reason why no moderating effect on the association of VoD watching and feelings of guilt was found might be due to the fact that students form a highly educated group that mostly shows high levels of self-control. In a study that focused on college students' levels of self-control interacted with leisure media, it was determined that students with lower self-control tended to spend more time engaging in leisure media such as VoD watching. Consequently, they felt guilty for that decision after experiencing the consequences of choosing media over the long-term benefits of studying (Panek, 2014). The homogenous sample of this study can be seen as a limitation, because the sample consisted of mainly highly educated students and were individuals probably less likely to engage in problematic behaviour. High self-control may play an important role in this context. Impaired self-control is seen as self-regulation failure and might lead to long-term effects on life satisfaction and mental well-being when having goal conflicts of obligations or important life goals with entertainment consumption like VoD watching (Baumeister, Schmeichel & Vohs, 2007). Low self-control is thus a significant risk factor for experiencing higher feelings of guilt after one has failed to adjust one's behaviour in a controlled manner towards one's goals and duties (Tangney, Baumeister & Boone, 2004). It might be the case that the participants of this study had high self-regulation abilities and were able to control their watching behaviour so that no goal conflicts and feelings of guilt could arise. That theory would also support the finding that students reported not feeling guilty at all for most of the study. The case studies on two individuals also showed that guilt was independent from the number of hours watched. So, an individual's feeling of guilt might remain constantly the same while spending a high amount of time VoD watching or not watching at all. A practical consideration for future studies would be to conduct research on the association of VoD watching and feelings of guilt with a more diverse sample group, with probably lower levels of self-control. Individuals with lower self-control might be more likely to engage in problematic behaviour. With a detailed questionnaire assessing self-control it could

be discovered if self-control is a predicting moderator for the association of VoD watching and feelings of guilt or if the results of this study can also be confirmed for other sample groups by stating that there is simply no association.

Unlike the large variability in the average number of hours watched, the average score of feelings of guilt seemed to be at a general level of “not feeling guilty at all”. According to research guilt is a negative self-conscious emotion as it is described as an intrapersonal and moral emotion that refers to how individuals evaluate themselves and their actions (Reinecke & Meier, 2020). Negative self-conscious emotions like guilt are elicited by actions or events that are incongruent with the individual’s personal standards or identity goals. Guilt is elicited from internal attributions to uncontrollable and specific aspects of the self and is the result of the negative evaluation of a specific behaviour (Reinecke & Meier, 2020). In the context of VoD watching behaviour, feelings of guilt might be triggered in reaction to behaviour that is not congruent with the individual’s standards or identity. Previous studies already found out that when individuals perceive their media usage as an irrational delay of intended tasks, such as procrastination, they experience greater guilt (Reinecke, Hartmann & Eden, 2014; Reinecke & Meier, 2020). Considering these findings, it could be argued that students experienced low levels of feelings of guilt because their personal standards and identity goals were just in line with their watching behaviour. The little variability of the average levels of guilt underlines the results that there is simply no relationship between VoD watching and feelings of guilt.

A practical consideration for future research could be to also investigate personal standards and identity goals of participants with questionnaires or interviews. As guilt is a self-conscious emotion that is elicited from individual attributions, it would be interesting to explore how feelings of guilt are triggered in individuals in reaction to specific factors of VoD watching, such as contents that conflict with social norms or indicating that the activity of VoD watching is perceived as conflicting with personal goals regarding various life domains and situations (Reinecke & Meier, 2020). Therefore, personal standards could be investigated as predicting factor between the association of VoD watching and feelings of guilt.

Another important factor that could have influenced the results of this study was that the study was executed during the COVID-19 pandemic and the first lockdown. Due to this fact, the participants had to spend most of their time at home and might have perceived less obligations and stress, which might be the reason why participants stated to mainly engage in VoD watching for reasons like entertainment or relaxation. Therefore, the participants had presumably less goal-conflicts and did not experience feelings of guilt as a consequence of self-

regulation failure. Because of more free-time, participants had more time to engage in VoD watching. Since the COVID-19 pandemic began in March 2020 in the western world, more and more people had to organize their work and leisure time at home. With that, the media consumption increased and the importance of streaming providers and online media is still on the rise (Mikos, 2020). Streaming services like Netflix and Amazon Prime Video benefitted greatly from the pandemic situation. Netflix increased their number of worldwide subscribers from 25 million to 192.95 million (Mikos, 2020). In a survey, 27 percent of people stated that they streamed more during the pandemic. Especially in the 14 to 49-year-old age group the use of streaming services increased by 9.8 percent from January to March (Mikos, 2020). Without these circumstances it could be expected that the number of hours watching would be lower and feelings of guilt might be higher due to more daily obligations and a solid day structure.

The social context of watching was also likely to be influenced by the pandemic situation. Due to the pandemic measures, it was not always possible to meet family or friends and watch together as the participants probably usually would have done. In the results it is also found that in 77.3 percent of all incidents participants stated that they had watched alone. According to Sung, Kang and Lee (2015) watching alone can be an isolating activity that might result in spending more time being isolated from others and distracting the viewer from essential things. This can lead to higher feelings of guilt. The finding that watching alone did not influence the association between VoD watching and feelings of guilt might be explained by the fact that the participants felt lonely during the pandemic situation since the personal social contacts had to be severely restricted to a bare minimum. As a result of the social distancing, loneliness is likely to increase (Hoffart, Johnson & Ebrahimi, 2020). Especially young adults aged 18 to 30 years, people with low household income, adults living alone and students are already at a higher risk of feeling lonely and experienced on top of that a heightened risk during the COVID-19 pandemic (Bu, Steptoe & Fancourt, 2020). Loneliness is also seen as one of the factors enabling binge watching among students (Dandamudi & Sathiyaseelan, 2018). Due to the transition of college or university life and adjusting to an unfamiliar environment, students often experience interpersonal difficulties and loneliness and engage in VoD watching to satisfy social interaction needs. As a result, students gain a sense of belonging through the identification with the characters and actors in the series or films they are watching (Dandamudi & Sathiyaseelan, 2018). In this study it might be that the participants felt more lonely than usual due to the COVID-19 pandemic and engaged in VoD watching alone to substitute real life social contacts with characters from the series they were watching. Research supports the hypothesis that parasocial relationships in favoured shows or series provide students with a sense of

belonging (Derrick, Gabriel & Hugenberg, 2009). Derrick and colleagues (2009) found out that students turn to their favoured programs when they feel lonely and report a reduction in such feelings while viewing. Therefore, they might experience VoD watching simply as a sort of social pleasant activity that they enjoy.

As mentioned before, this study was conducted during the COVID-19 pandemic and it remains unclear whether the findings are influenced by that situation. Therefore, it is advised to conduct further research on that topic under normal circumstances. It is advised to make use of the ESM as it has many advantages over other methods that were mostly used in this research field. Since this study focused on data gathered in a time period over two weeks, it would also be interesting and valuable to conduct research on the long-term association of VoD watching and feelings of guilt over time and to investigate other possible moderating factors. It is also recommended to further explore the phenomenon binge watching to clarify whether the term “binge” is over pathologizing in the context of VoD watching.

Conclusion

The current study aimed to examine in detail the association between VoD watching and feelings of guilt over time using the ESM. Reasons for watching and the social context in which VoD watching behaviour took place were also investigated as possible moderators of that association. It was found that there was no statistically significant association between VoD watching and feelings of guilt the day after watching and that this association was also not moderated by the reasons for watching or the social context. Based on the findings in this study, further research is required to investigate also possible long-term effects of VoD watching and feelings of guilt over time and to analyse what kind of psychological factors underlie VoD watching in general. Follow-up studies could investigate what kind of consequences VoD watching really have on the mental health of individuals and whether VoD or binge watching is as harmful as it is described in most studies.

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