Gender Differences in the patterns of Video-on-Demand Watching: An Experience Sampling Study

Bachelor Thesis

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Abstract

With the increasing expansion of online streaming platforms like Netflix, Amazon Prime or Sky, video-on-demand watching has become a common activity for many individuals. As this emergent media trend provides users with more options and control over their viewing schedule, individuals seem to watch more television than ever before, and especially in higher doses at a time. In order to get a clear insight of the actual extent and distribution of this media trend within the population, the gender differences in video-on-demand watching should be taken into account. Therefore, this study explored the differences in the patterns of watching behavior between gender, as well as between individuals within each gender group. Moreover, the motives, the content and the context of video-on-demand watching were analyzed in order to get deeper insight into the potential gender differences and provide possible explanations for the watching behaviors of each gender group.

Overcoming the limitations of previous studies that mainly used retrospective assessment methods, this study aimed to get a more representative insight into participants' watching behavior by using an Experience Sampling Method (ESM). For this, a smartphone application (TIIM) was used by 45 participants, aged 17-30 years, to answer daily questionnaires about their watching behavior on online streaming platforms over the course of 15 days. The data were analyzed in a program for statistical analyses (SPSS), where Mixed Model Analyses and simple univariate analyses were applied.

Results showed that males and females did not differ in the frequency of watching video streaming content, but females watched on average more episodes and for longer time periods than males. Within both gender groups, large individual differences between participants were found in all variables. Additional gender differences were found in the motives for watching, the content that was watched, and the context in which was watched. These findings might provide possible explanations for the significant gender difference found in the duration of watching. However, further research in video-on-demand streaming with bigger samples is needed, in order to confirm the findings of this study.

Introduction

"Audiences are consuming more television, at a faster pace, than ever before" (Campbell et al., 2012). As this quote underlines, the way in which individuals consume media has changed drastically, since viewers have moved from the traditional broadcast channels to online platforms. Instead of following the predefined schedule of television networks and watching one episode of a series each day or week, many individuals are now engaging in so called "binge-watching", which refers to watching multiple episodes of the same series in one session (Schweidel, & Moe, 2016). Although binge-watching was almost selected as Oxford's "Word of the Year" for 2013 (Pittman & Sheehan, 2015), there has been a lot of discussion about the definition of binge-watching, with some researchers defining it as watching at least two episodes of one program in one session, while others defining it as watching at least four episodes consecutively (Erickson, Dal Cin, & Byl, 2019). Moreover, various definitions do not take the duration of an episode into account, and consequently there seems to be no universal clear-cut agreement on the definition of binge-watching (Vaterlaus, Spruance, Frantz, & Kruger, 2018). Another aspect that has been criticized in regard to the term binge-watching is that the word "binge" is usually associated with something negative, as with binge-eating disorders or binge-drinking. For this reason, some scientists are suggesting a new term with a more positive association, for example "marathon-viewing" (Perks, 2014).

Despite the ambiguity of the official binge-watching definition, the new trend of video-on-demand watching is known and widely spread. Various video-on-demand streaming platforms like Netflix, Amazon Prime, or Sky make it possible to watch any type of show at any time of the day and therefore provide the viewer with more options and control over their viewing schedule. It has been argued that watching multiple episodes in succession is the natural consequence of the mechanical design of streaming platforms (Feeney, 2014). Netflix, as well as other platforms, upload whole seasons of a television series at once and thereby enable the viewer to watch multiple episodes consecutively. Moreover, after one episode is finished, a countdown in the post-play feature appears automatically that displays the seconds until the next episode will start (Feeney, 2014). Consequently, the viewer does not have to actively decide and press a button to watch the next episode as it will start automatically if the viewer does not intervene. In addition to that, narrative techniques are used that promote the consecutively watching of episodes even more, such as cliffhangers or sequential emotional narratives (Notte, 2014). Netflix even has a category called "series worth binge-watching",

which provides the viewer with a list of series consisting of multiple episodes and seasons that are often watches in succession by others.

The technological improvements have contributed to a large extent to the decrease in traditional television viewing like appointment viewing, which describes the event of an individual making time in order to watch a specific television show when it is live on program (Auverset, Billings, & Conlin, 2016). For many individuals, appointment viewing has become an unfavorable way of watching television because they might be busy and occupied with other tasks at the time their desired television show is live (Merrill & Rubenking, 2019). As a consequence, individuals engage in video-on-demand watching more than ever before, as it provides the possibility to watch television whenever one wants. As a matter of fact, individuals now appreciate their paid streaming services more than their cable services (Deloitte, 2016), and more individuals engage in video-on-demand watching than in appointment viewing (Hallinan & Striphas 2016).

Indeed, a study that analyzed the significance of the emergent media use trends found that Netflix is changing the expectations of viewers in regard to what, when, and how to watch television (Matrix, 2014). Consequently, it is not surprising that viewers are watching more television content, and especially in higher doses at a time. Since Netflix is on the way of becoming America's most influential TV service (Lehrer, 2014), it is important to understand why and how individuals are using it, and the potential consequences of the related watching behavior.

Netflix is with almost 30 million subscribers one of the major providers of streaming media, and seems to not only be aware of the increase in binge-watching behavior but even to be promoting or at least facilitating it (Pittman & Sheehan, 2015). There have been multiple times when Netflix released an entire season of a television show at once, and thereby caused a nationwide video-on-demand stampede where high percentages of viewers watched one episode after the other, or even an entire season within twenty-four hours (Matrix, 2014). Despite the fact that various shows are part of different genres, what they have in common is an immense popularity among adolescents, who make up the main group of Netflix subscribers (Matrix, 2014). This fact can be related to previous research which demonstrated that almost 90% of adolescents between 20-33 years engage in binge-watching (Statista, 2016), and that the most prevalent group practicing this type of watching behavior are those enrolled in college (Devasagayam, 2014).

The extent of video-on-demand watching was found to correlate with the amount of free time, and is of great significance when it comes to its effect on emotional well-being (de

Feijter, Khan, & van Gisbergen, 2016). Research found that depression and physical fatigue might arise as the consequence of watching too many episodes in succession. It is not clear if viewers themselves are able to identify the ideal watching duration and act on it in an appropriate way (de Feijter, Khan, & van Gisbergen, 2016). Additionally, individuals have reported experiencing a feeling of guilt after watching multiple episodes in succession, which was mainly caused by postponing or canceling other activities. This relates to the feeling of not being relaxed when finishing a watching session due to the accumulation of personal chores (de Feijter, Khan, & van Gisbergen, 2016).

In a different study, a strong correlation was found between the watching of multiple episodes in succession and attachment anxiety and depression (Wheeler, 2015). Here, college students completed multiple measurements in the form of questionnaires, and the results showed that attachment anxiety, as well as depression, was significantly positively associated with the frequency of watching multiple episode of the same television series consecutively. This means that the higher participants scored in attachment anxiety or depression, the more they reported watching multiple episodes in succession (Wheeler, 2015).

These findings demonstrate that watching multiple episodes consecutively might have influences on an individual's well-being and it underlines the enormous impact video-on-demand watching generally might have. Consequently, especially after considering the prevalence of video-on-demand watching and its possibly negative consequences, it is important to find out why individuals perform this kind of watching behavior by investigating predictors of watching multiple episodes in succession and the motives that lead individuals to video-on-demand streaming.

For instance, an investigation of the factors that promote binge-watching found the variable 'age' to be a general individual predictor in relation to this watching behavior (Devasagayam, 2014), since research showed that younger individuals more frequently watch multiple episodes in succession than older individuals do (Shannon-Missal 2013). This might be due to the fact that, in comparison to older individuals or adults who are committed to a full-time job, young individuals, specifically college students, have more free time in which they are able to watch video-on-demand content (Merrill & Rubenking, 2019).

Other reasons for watching multiple episodes in succession were related to the seeking of satisfaction or goals, for example engagement, relaxation, passing time, and hedonism (Pittman & Sheehan 2015). Also social and habit-driven motives were identified (Conlin et al. 2016), as well as the motive of escapism (Pena, 2015). In line with this were the findings of a different study, which was conducted by Shim and Kim (2018) in form of an online survey

with 785 video-on-demand-viewers, in order to identify the reasons for binge-watching television drama series. The results showed that individuals perceive the watching of multiple episodes in succession as a method to compensate their desire for enjoyment, efficiency, control, and fandom (Shim & Kim, 2018). Similar results were found by Steiner and Xu (2018), who conducted qualitative, semi-structured interviews and found that the main reasons for individuals to engage in this type of watching behavior were catching up, relaxation, sense of completion, cultural inclusion, and improved viewing experiences (Steiner & Xu, 2018).

Considering the high prevalence of video-on-demand watching and the various different motives for engaging in this type of media use, it is important to investigate how the pattern is distributed within the population, specifically among genders. If a gender difference in the pattern of video-on-demand watching can be found, including the motives for engaging in this kind of watching behavior, gender tailoring would be required when it comes to intervention programs, for example for problematic video-on-demand watching. This means that if a difference in the patterns and motives for video-on-demand watching between females and males can be found, every intervention that targets this watching behavior and its consequences may need to be tailored specifically to each gender group in order to be most effective.

There has been a lot of research on gender differences in other domains of screen-based media use, for example internet, video games and social networks. A study by Dany et al. (2016) investigated the screen-based media use of 950 French college students and found not only a high level but also a very diverse pattern of certain kinds of media use. Girls used social media more often, while boys played video games more often. As a conclusion, it was stated that the differences in the use of social networks and video games introduce the common issue of gender differences in society, which illustrates the need for gender-specific interventions when it comes to the prevention of problematic media use (Dany et al., 2016). Another study examined the media use of 328 adolescents, aged 14 to 16, in order to explore whether it differs by gender. The results showed that boys spent more time playing video games, while girls spent more time talking on the phone. Additionally, it was found that media use served as a protective factor for boys, which means that boys who spent more time watching television and playing video games had the lowest level of anxiety. However, the reverse pattern appeared for girls (Ohannessian, 2009).

As these studies show, there seem to be gender specific patterns of general media use, leading to the question whether such differences also emerge in regard to video-on-demand

watching specifically. A study by Merrill & Rubenking (2019) investigated predictors of watching multiple episodes in succession, by conducting a survey with 651 college students. Results showed that both the frequency as well as the duration of binge-watching were predicted by two groups of variables. Predictors for binge-watching frequency were low self-regulation and a higher tendency of using binge-watching as a reward or as a type of procrastination. On the other hand, binge-watching duration was correlated with being female and a stronger feeling of joy while engaging in this activity (Merrill & Rubenking, 2019) .

As this finding indicates, there may be an association between being female and watching video-on-demand content for longer periods of time. However, a different study, which was conducted by the research agency DVJ Insights and showed that 40% of the Dutch population engages in binge-watching, found that men engage in this kind of watching-behavior more often than women do (cited in de Feijter, Khan, & van Gisbergen, 2016). Consequently, there seem to be divergent findings in the research on gender differences in regard to binge-watching behavior.

Moreover, although some previous studies investigated the topic of video-on-demand watching, they mainly used a retrospective assessment form of the watching behavior. Therefore, in this study, an experience sampling method (ESM) was applied, which does not rely on retrospective memory and therefore reduces the probability of a recall bias (Trull & Ebner-Priemer, 2009). A recall bias is a systematic error where individuals are not capable of reporting accurately on past experiences or events at a later time, which might lead to under- or overestimation of specific behaviors and, as a consequence, might limit the research findings (Wonneberger & Irazoqui, 2017).

The ESM research procedure provides the possibility of investigating the behavior in a natural environment, in real-life and real-time. This is done through multiple self-reports, usually in form of questionnaires, repeatedly during the days of a normal week. Consequently, an advantage of this method is that it can be investigated how the behavior might vary during the course of the week, for example in regard to weekdays versus weekends. Therefore, ESM presents an increased ecological validity, as the data are more representative of the daily life of each participant (Csikszentmihalyi & Larson, 2014). Generally, it is a validated structured diary technique (Verhagen, Hasmi, Drukker, van Os, & Delespaul, 2016), which has been shown to provide high validity and reliability (Moskowitz & Young, 2006).

Considering the limitations of previous studies about video-on-demand watching, along with their limited and contrasting findings in regard to gender differences within this type of watching, the primary aim of this study was to explore the patterns of video-on-

demand watching for males and females. Regarding the patterns, specifically the frequency of watching, the number of episodes watched and the total watching time are of interest, along with the corresponding timepoint of watching (day of the week).

RQ1: Are there gender differences in the patterns of video-on-demand watching?

Additionally, it is important to compare the patterns of video-on-demand watching between individuals of each gender group in order to understand the variability of the watching behavior within males and females.

RQ2: How are the patterns of video-on-demand watching distributed within individuals of each gender group?

To get deeper insight into the gender differences within video-on-demand watching it was of interest to compare the motives and the content of video-on-demand watching for males and females.

RQ3: Do males and females have different motives to engage in video-on-demand watching?

RQ4: Do males and females watch different content?

Lastly, one question was added due to the lack of literature about gender differences in the (social) context of video-on-demand watching.

RQ5: Do males and females watch in different contexts?

Methods

Participants

The study involved 45 participants, aged between 17 and 30 years (M = 22.7; SD = 2.34). 29 of the participants indicated to be female (64.44%), and 16 participants male (35.56%). The participants had different nationalities, including German (91.11%), Dutch (2.22%) and Other (6.67%). Their occupation was either pupil (4.44%), student (82.22%), employed part-time (2.22%) or employed full-time (11.11%). The participants were either recruited using convenience sampling, where the study was shared by the researchers with friends and relatives, or via the SONA platform, where students of the University of Twente can assign themselves to the study. The participation was voluntarily, but facilitated by providing incentive in form of SONA-credits, which are mandatory to obtain for students studying Psychology or Communication studies throughout their Bachelor's program at the University of Twente. The study was approved by the ethics committee of the University of Twente, and every participant confirmed an online active consent (Appendix A) prior to the participation to fulfill the guidelines of this committee.

Materials

The present study was part of a joint research, which is the reason why participants have answered questions that might not contribute to the specifics of this study but are only of value for the other studies. The other three studies are also bachelor theses, which focus on video-on-demand watching in regard to well-being/psychological consequences, daily life obligations, and intentionality. After signing up for the study, every participant received an email where the study was explained, and instructions were given on how to download the TIIM (The incredible intervention machine) application (Appendix A). This application was created by researchers of the University of Twente and can be used to execute surveys among a group of participants, where questions are sent to the participants' mobile phone on predefined days and times (University of Twente, n.d.).

On day one, a baseline questionnaire was added, which assessed the demographics of the participants (Appendix B). Then, the participants were asked to fill in four short questionnaires each day concerning their behavior and mood. Three of the daily questionnaires assessed the participants momentary mood at different times of the day, while the other questionnaire was designed to assess the participants watching behavior

retrospectively in the last 24 hours (Appendix C). For this present study, only the baseline questionnaire and the behavioral assessment questionnaire were relevant, hence the mood questionnaire was not analyzed.

Baseline questionnaire

The baseline questionnaire included three questions that assessed the demographics of the participants. Here, they were asked to indicate their age, gender (male/female/other) and their nationality (German/Dutch/Other).

Behavioral assessment questionnaire

All questions were designed by the researchers, but were based on previous studies about binge-watching or media use in general. The questions about the watching behavior of the participants specifically asked about video streaming content and not traditional television viewing. For this, examples like Netflix, Youtube, AmazonPrime and Sky were given in order to remind the participants and ensure that only the watching behavior on video-on-demand platforms was reported. Additionally, all questions asked about the watching behavior on the previous day, of which they were also reminded at the beginning of each questionnaire.

The pattern of video-on-demand watching was analyzed with the first three questions of the questionnaire. Firstly, participants were asked if they watched video streaming content, where they could choose between the answers “Yes“ and “No“. If they selected “No“, they still had to complete the rest of the questionnaire, however, every following question provided the answer option “I did not watch”. Secondly, participants were asked to indicated the number of episodes they watched. Here, answer options were provided in intervals of one episode, starting with “less than one episode“ and ending with “more than 7 episodes“. Thirdly, the participants were asked to indicate the number of minutes they watched. Here, for the answer options a subdivision of 30-minute intervals was chosen, as this is considered a typical length of an episode (Rigby, Brumby, Gould, & Cox, 2018). Moreover, the subdivision of 30 minutes seemed to present a reasonable level of detail, as the participants could not be expected to know the very exact number of minutes they watched. The answer options ranged from “1-30 minutes” up to “more than 7 hours” since, due to previous studies, individuals who watch more than seven hours per day were expected to be outliners (Riddle et al., 2017; Rigby et al., 2018).

The next question asked about the content that was watched, where the answer options “Comedy”, “Drama”, “Action”, “Romance”, “Thriller”, “Tutorial” and “Other” were

provided. Here, participants could select multiple options, as many shows are a mixture of more than one genre. The answer options were based on the categories provided by online platforms like Netflix.

The motives for watching video streaming content were analyzed with the next question. Here, participants were asked to indicate their reason for watching, where they could choose between the answer options “Boredom/Nothing else to do“, “Relaxation/Taking a break“, “Entertainment“, “Interest/Curiosity“, “Distraction/Escape from reality“, “Procrastination/Avoidance of other tasks“, “Information seeking“ and “Other“. This question was developed with regard to previous studies about binge-watching, for example by Pittman & Sheehan (2015) and Pena (2015). Additionally, the answer options were further inspired by previous research of Greenberg (1974), who identified seven motivations for watching television, and Rubin (1983), who identified five gratifications that individuals look for in media use.

Finally, another question asked about the context in which video streaming content was watched, where the answer options “alone“, “with friends“, “with partner“, and “with family“ were provided. This question was based on the findings of de Feijter et al. (2016), who stated that it is essential to investigate the (social) context in which binge-watching takes place.

Procedure

A total of 45 participants was recruited for this study, since for research designs consisting of repeated reports of each participant a sample size of above 20 participants can be seen as sufficient (Kreft & de Leeuw, 1998; Conner & Lehmann, 2012). The study begun on the 29th of April and ended on the 14h of May, and therefore included 15 measurement days. This study duration was chosen because it was expected to give a representative insight of the daily lives of the participants in regard to their watching behavior, as it captures a reasonable amount of information from each participant. Moreover, the aim was to include at least two weekends in order to be able to make comparisons between weekday versus weekend and ultimately enough data to analyze the daily fluctuations of their watching behavior.

After the participants voluntarily assigned to the study, they received an informative email, including a description of the study and the use of the TIIM application. Hence, the participants of this study needed to download the application on their mobile phone in order to complete the questionnaires, and they received a step-by-step guide on how to do this. After

they successfully signed up on the application they received a confirmatory Email. Throughout the study the participants were given the opportunity to contact the researchers, in case any problems or questions arose. Moreover, the participants were able to withdraw from the study at any time, without giving a reason.

As already explained above, the study involved four daily questionnaires, of which three assessed the momentary mood and one assessed the behavior retrospectively of the last day. The mood questionnaires were available at 9 a.m., 3p.m., and 9 p.m. and disappeared after 5 hours, while the behavior questionnaires were published at 9 a.m. and disappeared 24 hours later. This was done in order to give the participants enough time to fill in the questionnaires, as it could not be expected that everyone is able to complete the questionnaire instantly at the time it was published. If the participants did not complete the questionnaire, they received a reminder one hour later to ensure that they fill in their answers.

Analysis

After the data collection process, the gathered information was analyzed through the statistical program for social sciences (SPSS, version 24). If needed, the variables were recoded, and qualitative answers (e.g. gender) were formed into numeric variables. One participant was deleted from the dataset before analysis, due to not completing the questionnaires on at least three measurement days. Descriptive statistics were applied to analyze the demographics of the participants, and a series of Linear Mixed Models analyses was executed to analyze the patterns of the watching behavior. The Linear Mixed Model analysis considers missing data, hence all values are estimated.

On one level, the associations between the patterns of video-on-demand watching and the subjects were determined. Firstly, in the Mixed Model Analysis, the frequency of watching video streaming content was set as a dependent variable, while gender was set as a fixed independent factor. Thereby it was analyzed whether the gender has an effect on the frequency of watching. Then, the frequency of watching was analyzed for each participant individually in order to get insight into the variability between participants. This was done through splitting the file by ID (identification number of the participants) and executing descriptive analyses. Here, the number of days on which video streaming content was watched was converted into percentages in relation to the total number of reported days of each participant.

Next, the number of episodes watched was set as a dependent variable, while gender was set as a fixed independent factor. Thereby it was analyzed whether the gender has an effect on the number of episodes watched. The model provides a mean for each person, which were compared in order to get insight into the variability between participants. The same procedure was executed with the number of minutes watched.

On another level, the associations between the patterns of video-on-demand watching and the timepoint (day of watching) were determined. Here, the timepoint was set as a fixed independent factor, and the average number of episodes watched was set as a dependent variable. Thereby it was analyzed whether the timepoint has an effect on the number of episodes watched. The same procedure was executed with the average number of minutes watched.

In addition, a Bivariate Pearson Correlation was executed in order to determine the correlation between the number of episodes and the number of minutes. In order to further explore the gender differences in more detail, the file was stratified by gender. The motives for watching, the content watched, and the context in which was watched were analyzed through descriptive statistics. Due to an unequal number of male and female participants, percentages were calculated. Additionally, chi-square tests were executed in order to find out if the potential gender differences suggested within the motives, the content and the context of watching were significant. With Excel, diagrams were created for every variable and gender group in order to visualize the comparison, and graphs were created to visualize the correlation between episodes and minutes, and between episodes/watching time and timepoint.

Results

Patterns of video-on-demand watching

Frequency of watching

Males watched on 70.6% of the 15 measurement days, while females watched on 73.4% of these days. Hence, no significant difference between gender in the frequency of watching video streaming content was found in the Linear Mixed Model ($F(1, 563) = .387$, $p = .534$).

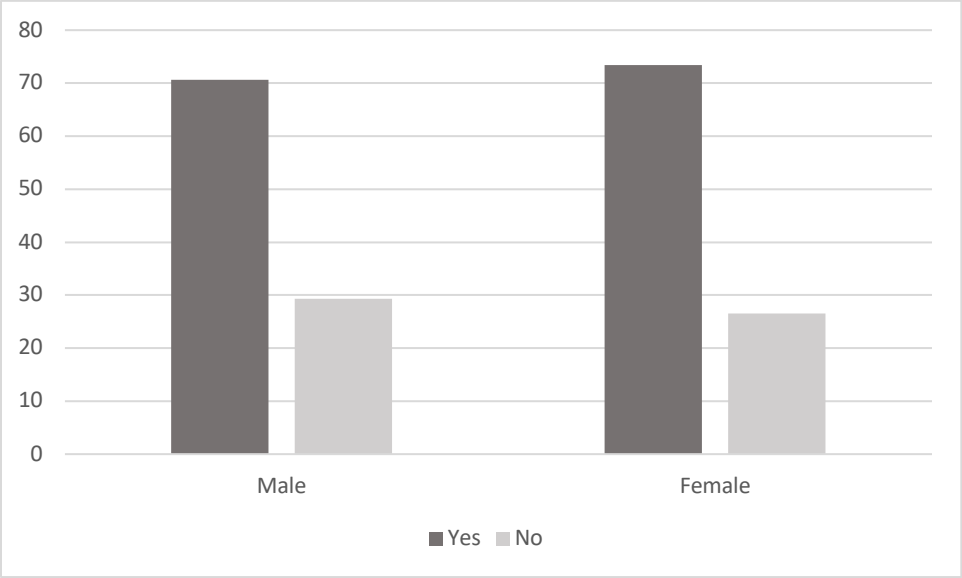

Figure 1: Overall percentage of days where participants did watch (in dark-grey) and did not watch (light-grey) video-streaming content.

On an individual level, large variability between participants in the frequency of watching video streaming content was found, both among males (Figure 2) as well as among females (Figure 3). Between males, the minimum percentage of days on which video-on-demand was watched was 21.4% (Participant 10), and the maximum was 100% (Participant 9). Between females, the minimum percentage of days on which video-on-demand was watched was 25% (Participants 8 and 15), and the maximum was 100% (Participants 2, 6, 21, 22,29).

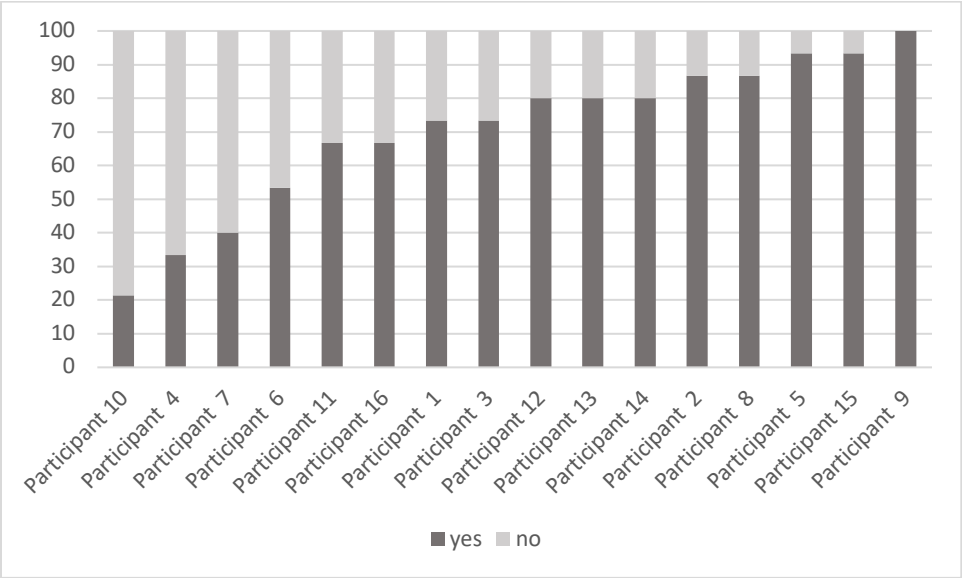

Figure 2: Males - Percentage of days on which video streaming content was watched (in dark-grey) and not watched (in light-grey) per participant.

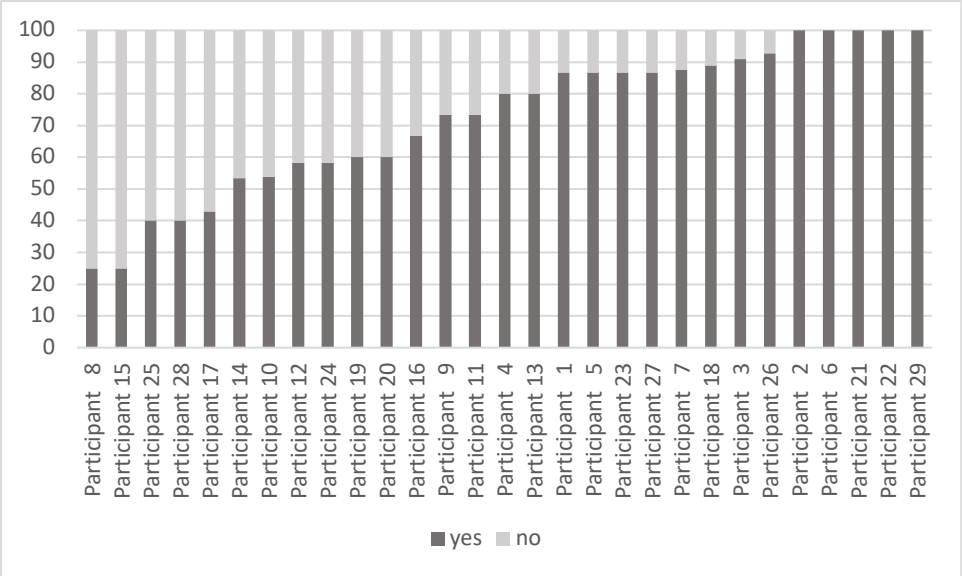

Figure 3: Females - Percentage of days on which video streaming content was watched (in dark-grey) and not watched (in light-grey) per participant.

Association between episodes and total watching time

A strong correlation between the average number of episodes watched and the average number of minutes watched was found ($r = .783$, $p < .01$), which indicates that both variables seem to provide a comparable measurement of the watching behavior.

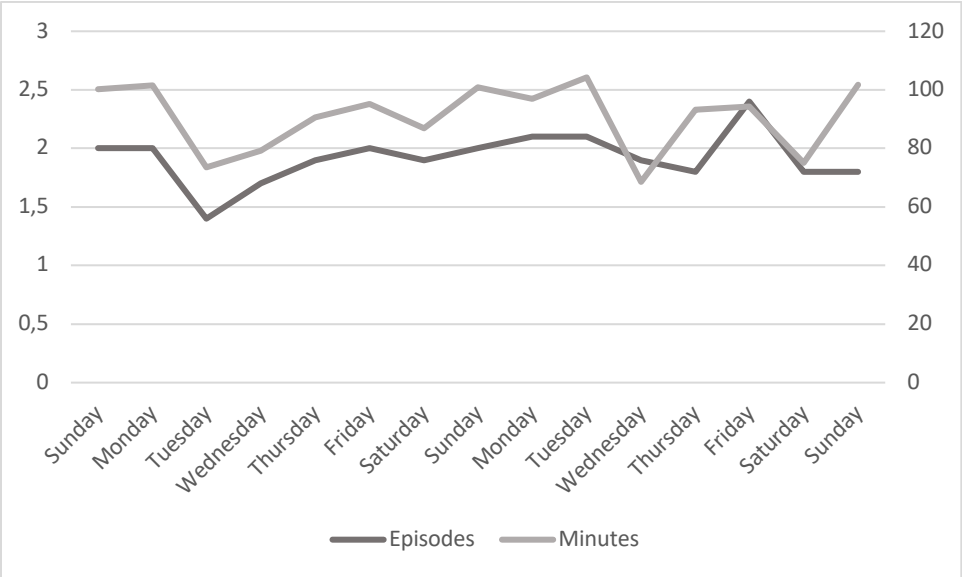

Figure 4: Average number of episodes watches (in dark-grey) and average number of minutes watched (in light-grey) over the 15 measurement days.

Episodes watched

On average, males watched 1.63 episodes per day ($SD = .13$), with a minimum of 1.37 episodes and a maximum of 1.89 episodes. Females watched on average 2.06 episodes per day ($SD = .10$), with a minimum of 1.86 episodes and a maximum of 2.26 episodes. Consequently, a significant difference between gender in the number of episodes watched was found ($F(1, 571) = 6.53$, $p = .011$). Females watched significantly more episodes than males (on average .43 episodes more per day).

On an individual level, there was a large variability between the participants in the average number of episodes watched per day, both among males (Figure 6) as well as among females (Figure 7). Between males, the lowest average number of episodes was 0.3 (Participants 4 and 10), and the highest average number was 5.1 (Participant 9). Between females, the lowest average number of episodes was 0.4 (Participant 25), and the highest average number was 6.6 (Participant 21).

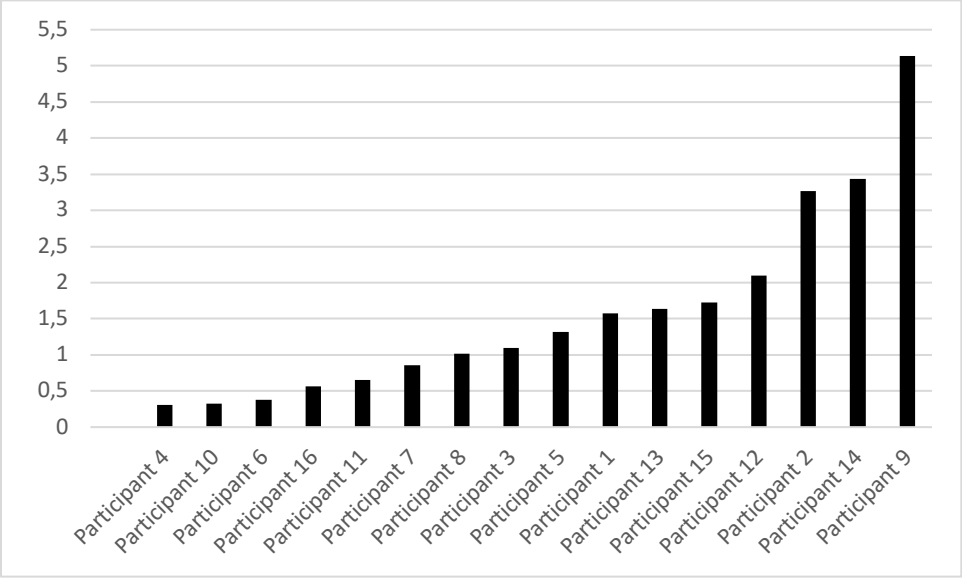

Figure 5: Average number of episodes watched per day for each male participant.

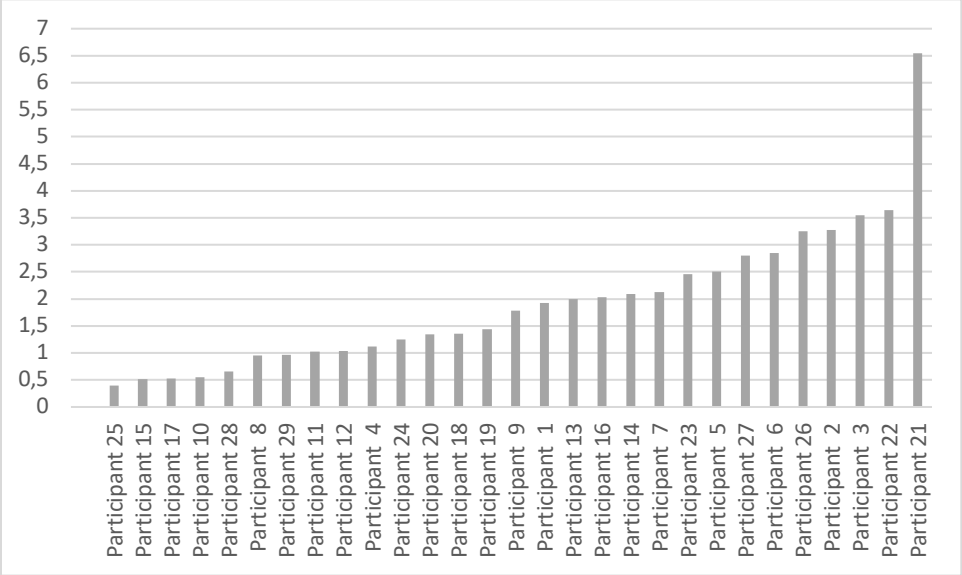

Figure 6: Average number of episodes watched per day for each female participant.

Association between timepoint and episodes watched

In general, no significant association between the average number of episodes watched and the time point (day of watching) was found ($F(14, 71) = .508$, $p = .921$). More specifically, no significant association between the number of episodes and the time point was found for males ($F(14, 27) = 1.781$, $p = .095$) nor for females ($F(14, 42) = .429$, $p = .956$), which indicates that the timepoint (weekday) does not have an effect on the number of episodes watched.

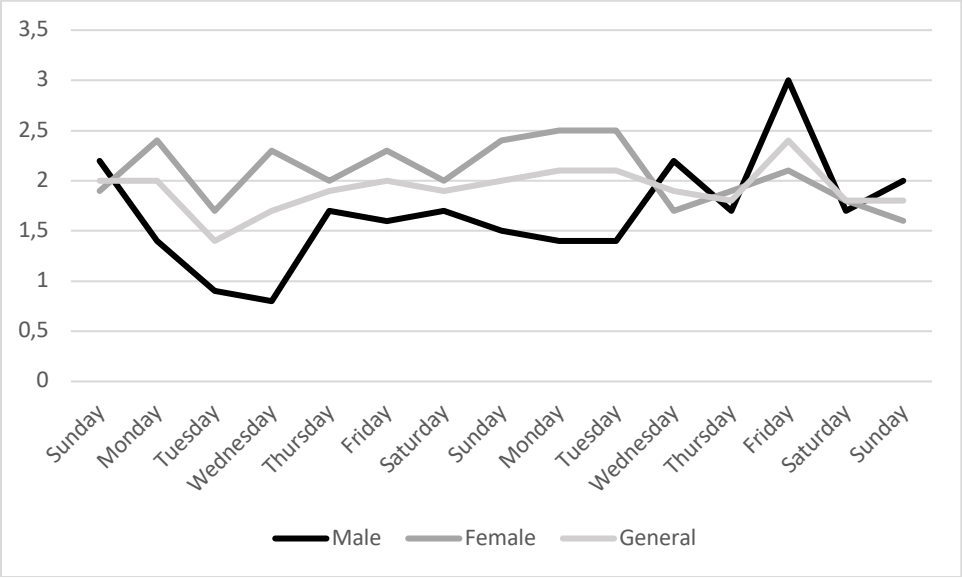

Figure 7: Average number of episodes watched on each weekday, for males (in black), females (in grey), and for the total sample (light-grey).

Association between timepoint and minutes watched

Like with the number of episodes watched, also no significant association between the number of minutes watched and the timepoint (day of watching) was found ($F(14, 65) = .760$, $p = .706$). More specifically, no significant association between the number of minutes watched and the timepoint was found for males ($F(14, 25) = 1.413$, $p = .217$) nor for females ($F(14, 41) = .872$, $p = .593$).

Minutes watched

On average, males watched 74.17 minutes per day (*SD* = 5.71), with a minimum of 62.95 minutes and a maximum of 85.38 minutes. Females watched on average 98.61 minutes per day (*SD* = 4.4), with a minimum of 89.98 minutes and a maximum of 107.25 minutes. Consequently, a significant difference between gender in the number of minutes watched was found ($F(1, 563) = 11.513$, $p = .001$). Females watched significantly longer than males (on average 24.44 minutes longer per day).

On an individual level, there was a large variability between the participants in the average number of minutes watched per day, both among males (Figure 10) as well as among females (Figure 11). Between males, the lowest average number of minutes watched was 8.3 (Participant 10), and the highest average number was 232.1 (Participant 9). Between females, the lowest average number of minutes watched was 19.4 (Participant 25), and the highest average number was 237.5 (Participant 21).

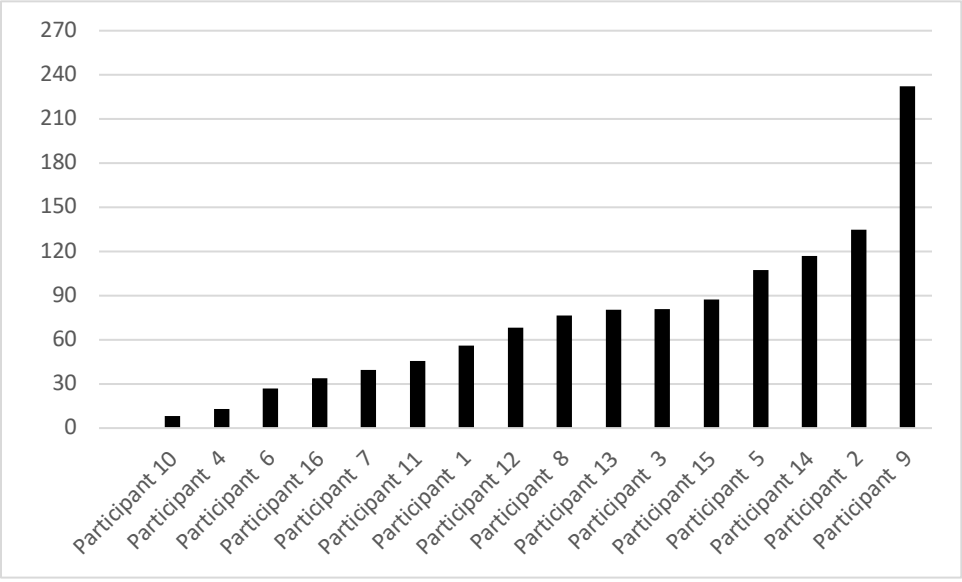

Figure 8: Average number of minutes watched per day for each male participant.

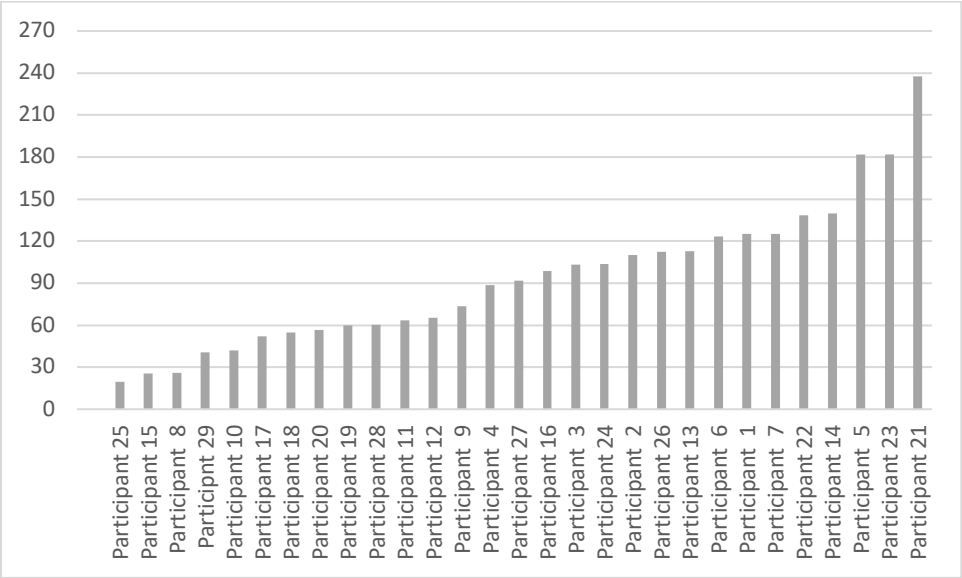

Figure 9: Average number of minutes watched per day for each female participant.

Motivations for video-on-demand watching

Two clear contrasts in the motives for video-on-demand watching were found. Firstly, males watched more often than females for the motive of Entertainment (45.7% vs. 38.2%), which was found significant in a chi-square test (X^2 (1) = 4.655, p = .031). Secondly, females watched more often than males for the motive of Boredom (13.3% vs. 4.5%), which was also found significant in a chi-square test (X^2 (1) = 16.562, p < .001). Within the other motives only small differences between gender appeared, which were not found significant. Here, males tended to watch slightly more often for the motive of Interest/Curiosity (7.3% vs. 5.3%), Peer Activity (11.4% vs. 7.7%), and Relaxation (24.9% vs. 23%), while females tended to watch slightly more often for the motive of Distraction/Escape from Reality (4.2% vs. 0.4%), and Procrastination/Avoidance of other Tasks (6.3% vs. 3.8%). Males and females tended to watch equally often for the motive of Information seeking (2%).

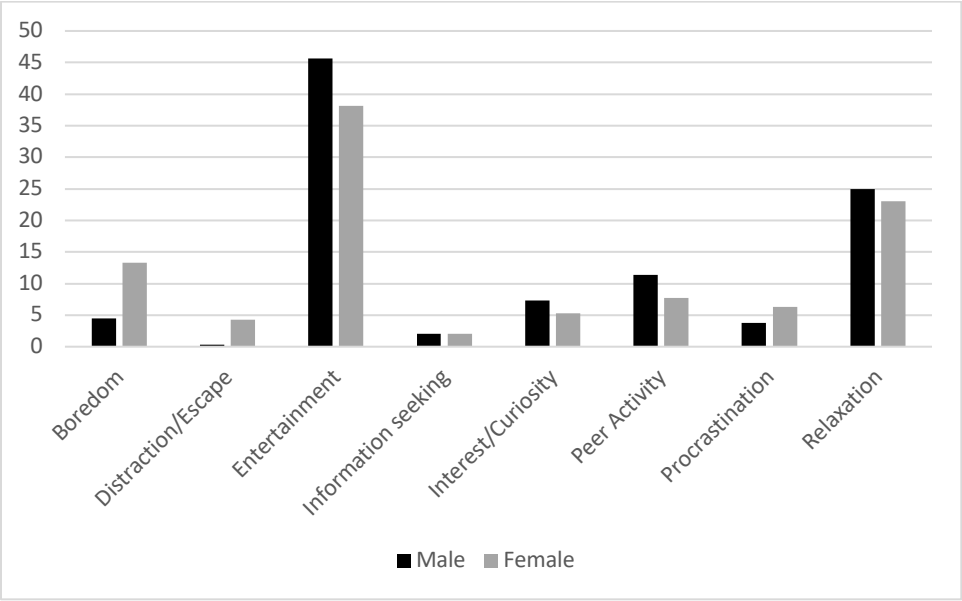

Figure 10: Overall percentage of motivations indicated for video-on-demand watching by males (in black) and females (in grey).

Content of video-on-demand watching

Two clear contrasts in the content of video-on-demand watching were found. Firstly, males watched more often than females Action (24.2% vs. 10.6%), which was found significant in a chi-square test (X^2 (1) = 27.991, $p < .001$). Secondly, females watched more often than males Drama (29.7% vs. 12.3%), which was also found significant in a chi-square test (X^2 (1) = 34.105, $p < .001$). Within the other contents only small differences between gender appeared, which were not found significant. Here, males tended to watch slightly more often Comedy (28.9% vs. 26.4%), Documentary (15.8% vs. 13.6%), Sports (1.9% vs. 0%), and Tutorial (7.7% vs. 1.8%), while females tended to watch slightly more often Romance (9.7% vs. 3.1%), and Thriller (8.3% vs. 6.2%).

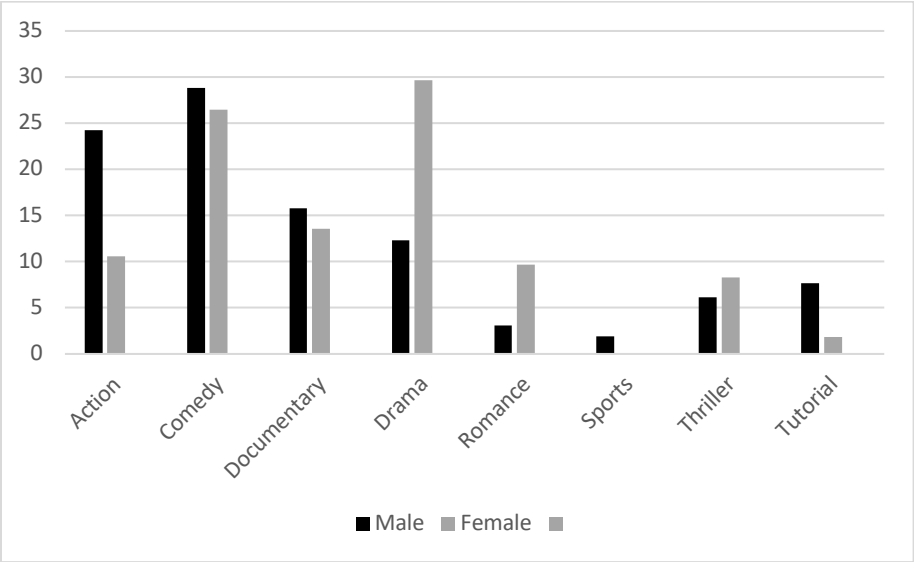

Figure 11: Overall percentage of the type of show watched by males (in black) and females (in grey).

Context of video-on-demand watching

One clear contrast in the context of video-on-demand watching was found, where males watched more often than females with friends (23.3% vs. 13.7%), which was found significant in a chi-square test (X^2 (1) = 6.8073, p = .009). Within the other contexts only small differences between gender appeared, which were not found significant. Here, males tended to watch slightly more often with a partner (14.7% vs. 13%), while females tended to watch more often alone (66.4% vs. 59.5%) or with family (6.9% vs. 2.5%). Taken together, males tended to watch on 40.5% in companionship with others, while females did so on 33.6%.

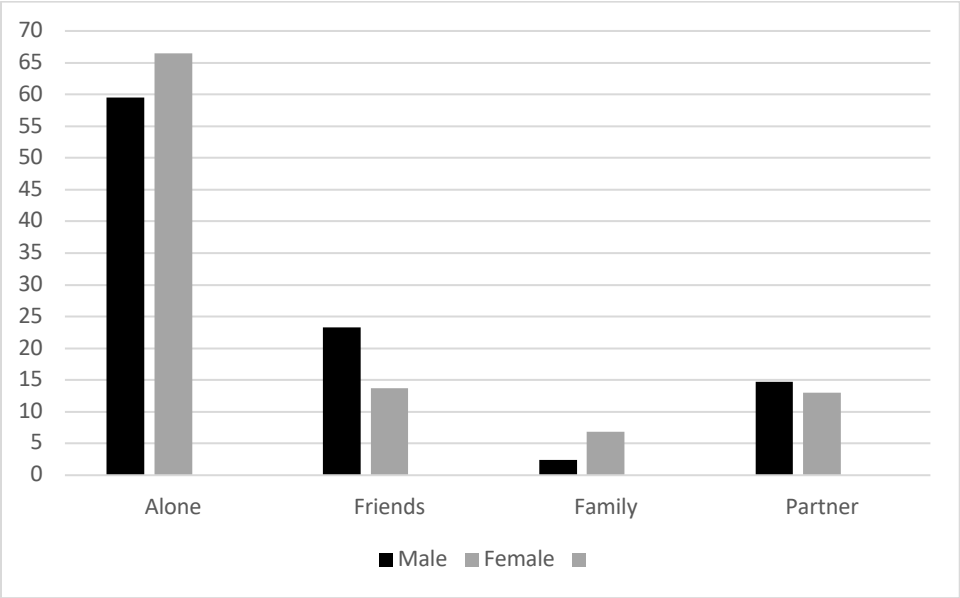

Figure 12: Overall percentage of the context in which video streaming content was watched by males (in black) and females (in grey).

Discussion

This study was one of the first to investigate gender differences within the topic of video-on-demand watching. For this, an experience sampling method (ESM) was used, which is a novel method and presents several advantages as opposed to previous studies which mainly used a cross-sectional approach and worked with retrospective measurements. ESM provides the possibility to identify fluctuations of the watching behavior over the week, and consequently new and more detailed information about the video-on-demand streaming of the target group was found. The sample included 45 participants who used a smartphone application to fill in daily questionnaires about their watching behavior over the course of 15 days.

Overall, the study showed that although males and females do not differ in the frequency of watching video streaming content, they do consistently differ in the extent of watching. In other words, males were as likely to watch video streaming content as females, but females watched on average more episodes and for longer time periods. Moreover, large individual differences between participants were found in the frequency of watching, as well as in both the average number of episodes watched and the average watching time. As opposed to one of the initial criticisms of the binge-watching definition, a strong correlation between the two measurements episodes watched and minutes watched was found. However, no correlation was found between the average number of episodes/minutes watched and the timepoint (day of watching), indicating that video-on-demand watching seems to be a habitual behavior which does not depend on the weekday. Gender differences were also found in the motivations for watching, the content that was watched, and the context in which was watched, which might provide possible explanations for the gender difference found in the extent of watching.

An interesting finding of this study was that both genders watched video-on-demand equally frequently, but that females had longer watching session, leading to a difference in the average daily watching time of around 25 minutes. This finding is in line with the results of Merrill & Rubenking (2019), who also found that binge-watching duration is correlated with being female and therefore supports the results of the present study. On the other hand, the study conducted by the research agency DVJ Insights (cited in de Feijter, Khan, & van Gisbergen, 2016), which found that males engage more often in binge-watching than females do, cannot be supported. This difference in findings could possibly be due to the different target groups, as the previous study included only Dutch participants while the present study

included different nationalities (but mostly German participants). However, further research is needed in order to clarify if video-on-demand watching is a nationality-dependent behavior.

Another explanation that supports the finding that females watched more episodes and for longer time periods than males did might be found in literature about psychological traits. For instance, the study by Shim and Kim (2018) found that "need for cognition" is a significant predictor for binge-watching, where individuals with a high need for cognition are more likely to watch multiple episodes in succession than individuals with a low need for cognition. Need for cognition describes the tendency of an individual to engage in elaborated thinking (Cacioppo, & Petty, 1982). Watching multiple episodes of the same program in succession, especially those that consist of complex, scientific or provocative topics, might require greater cognitive elaboration in order to take in the extensive amount of content that is delivered and process it accordingly (Shim & Kim, 2018). The finding that individuals with a high need for cognition are more likely to engage in binge-watching might be a possible explanation for why females watched on average more episodes and for longer time periods than males did. This hypothesis is supported by the results of a different study, which found that females have a higher need for cognition than males (Tanaka, Panter, & Winborne, 1988). Consequently, it can be proposed that females are more likely to watch multiple episodes in succession, which is in line with the findings of the present study. However, further research might be needed in order to clarify the relationship between being female, need for cognition and the watching behavior.

However, the finding that females have a higher need for cognition might also be reflected in the content they watched, which might provide another possible explanation for why they watched longer. The present study found that females watched significantly more often Drama series than males did. Many television shows, and especially drama series, display their serial nature in a plot pattern called a "cliffhanger" (Shim & Kim, 2018). The term "cliffhanger" means that the main characters of a series make an unpredictable discovery at the end of an episode, run into dangerous situations or encounter controversial dilemmas (Michlin, 2011). Consequently, cliffhangers might trigger greater cognitive elaboration on understanding the plot and the eventual outcome of the story (Shim & Kim, 2018). Episode-endings with cliffhangers provoke curiosity in the viewers, and thereby make sure that they come back to the following episode in order to find out how the problems are solved (Michlin, 2011). It is possible that repeated exposure to cliffhangers through binge-watching increases the curiosity level of the viewer (Shim & Kim, 2018). This is in line with the earlier mentioned findings of Notte (2014), who stated that narrative techniques like cliffhangers or

sequential emotional narratives are used to promote the watching of multiple episodes in succession. Accordingly, the content that tended to be watched more often by the male participants might have less binge-watching potential, since these types of shows typically do not involve cliffhangers at the end of each episode. Especially documentaries, sports and tutorials are mostly closed stories with a clear ending, and therefore might not provoke as much curiosity and desire to view another episode, as for example a drama. Concluding, the high binge-watching potential of drama series might provide a possible explanation for why females watched more episodes and longer time periods, but further research is needed to support this hypothesis.

In addition, large individual differences were discovered between participants in the frequency of watching, as well as in the average number of episodes watched and average watching time. Some participants rarely watched video-streaming content, while others reported a much higher use of on-demand platforms. A possible explanation for these large individual differences in watching behavior might be provided by differences in psychological traits which influence the pattern and intensity of media use (Wimmer & Dominick, 2013). Hence, the extent to which individuals possess specific psychological traits influences their binge-watching behavior (Shim & Kim, 2018). For instance, in previous research it was found that binge-watching behavior is predicted by the trait sensation seeking, with individuals high in sensation seeking being more likely to watch multiple episodes in succession than individuals low in sensation seeking (Shim & Kim, 2018). Sensation seeking is a trait that describes "a need for varied, novel, and complex sensations and experiences […]" (Zuckerman, 1979). Hence, individuals high in sensation seeking have a greater desire for compelling stimuli in order to attain their ideal arousal level, which is usually higher than that of individuals low in sensation seeking (Shim & Kim, 2018). Consequently, these individuals might be more likely to engage in excessive television watching, as it was suggested that binge-watching might act as an arousing stimulus (Shim & Kim, 2018).

In regard to the present study, these findings might provide a possible explanation for the large individual differences found between participants in their watching behavior, as some participants might be high sensation seekers while others might be low sensation seekers. However, this is only an hypothesis, as the present study did not measure the sensation seeking levels of the participants, and therefore no direct relationship can be ascertained, which is a point for further research. Concluding, the trait variables sensation seeking, as well as need for cognition, are known to influence the ways individuals use television (Henning, & Vorderer, 2001), and are therefore of great relevance in the context of

video-on-demand watching. They might not only provide possible explanations for specific watching behaviors found in the present study, but additionally they give ideas for further research.

A strong correlation between the average number of episodes and the average watching time was found, which does not support the initial criticism in regard to the definition of binge-watching, as it only takes the numbers of episodes into account and not the total watching time. It appears that both measurements are closely related and provide a comparable insight into the watching behavior of the participants. Nevertheless, the discrepancy about the number of episodes/minutes that need to be watched in order to be classified as "binge-watching" remains in force, which is the reason why no classification of "binge" or "non-binge" was performed in the present study.

No correlation was found between the average number of episodes watched/average watching time and the timepoint (day of watching), which suggests that watching video streaming content has become a habitual behavior and belongs to the everyday lives of the participants. This idea of a habitual behavior is in line with the fact that some participants of this study watched video streaming content on all reported days, while there was no participant who did not watch at all. This finding is supported by many scientific articles which state that video-on-demand watching is a common activity among adolescents (Statista, 2016). Moreover, these findings appear to be in line with the fact that "habit" is one of the seven motivations for watching television identified by Greenberg (1974), as well as one of the five gratifications that individuals look for in media use identified by Rubin (1983). Also Conlin et al. (2016) explained the watching of multiple episodes in succession with habit-driven motives. Additionally, previous research also stated that watching television seems to be habitual and frequent (Rubin, 1984), which further supports the findings of the present study.

Analyzing the motivations indicated by the participants for watching video streaming content found that females watched significantly more often for the motive of Boredom, and suggested that they generally watched more often for "negative" motives (Procrastination/ Avoidance of other tasks, and Distraction/Escape from reality). Males, on the other hand, watched significantly more often for the motive of Entertainment, and tended to generally watch more often for "positive" motives (Interest/Curiosity, Peer activity, and Relaxation). A possible explanation for these gender differences within the motives of watching video streaming content might be found in previous research that investigated psychological distress

and ways of dealing with particular emotions. Spending long time periods watching multiple episodes in succession might be seen as a restorative experience instead of mindless relaxation or enjoyment (Pittman & Sheehan, 2015). Restorative experiences describe ways in which individuals can mentally recharge themselves (Kaplan, 1995). In regard to the gender differences found in the present study, this finding might suggest that females possibly have a stronger need to mentally recharge themselves and for this reason watch more episodes in succession. This hypothesis is supported by the findings of other studies, which found gender differences in regard to psychological distress (as well as anxiety and depression), where females obtained significantly higher scores than males (Van Droogenbroeck, Spruyt, & Keppens, 2018). Hence, females may experience more mental stress than males and might therefore have the need to mentally recharge themselves, which they possibly do through watching multiple episodes in succession. Consequently, this might provide a possible explanation for the finding that females tended to watch more often for "negative" motives than males, specifically in regard to the motive of Distraction/Escape from reality.

Moreover, "to escape from the stresses of everyday life" is one of the five gratifications that individuals look for in the use of media (McQuail, 2010). However, the relationship between the gratifications that individuals seek out and the watching of multiple episodes of specific programs is still unclear (Shim & Kim, 2018), hence no scientific information is available about the gender differences within the motives of individuals' watching behavior. Consequently, further research is needed, specifically with larger and more diverse samples, in order to support the findings of the present study and to find explanations for the possibly different motives of males and females for watching video streaming content.

Regarding the context in which video streaming content was watched, it was found that males watched significantly more often with friends than females did, while females tended to watch more often alone, suggesting that males had more social contact while watching. This is in line with the finding that males watched more often for the motive of "Peer activity" than females did. Also, the fact that females more often reported having watched alone seems to match the finding that they also reported more often having watched for negative motives, specifically Boredom and Distraction/Escape from reality. However, the direct relationship remains unclear and needs to be further investigated.

A possible explanation for this gender difference within the context in which video streaming content was watched might be found in previous research where an association between increased social contacts and improved mental health and well-being was identified.

Interestingly, this association was found to be stronger for males than for females (Dadvand et al., 2019). This is in line with the findings of a different study, where also large gender differences were found in the effect of social contact on an individual's health. Here, social networks and social support were found to be protective in males (House, Landis, & Umberson, 1988), meaning that especially males' health profits from social contact, while for females the effect was less clear. Moreover, it was proposed that for females social relations might even be more stressful than protective (Orth-Gomér, 2009). This might provide a possible explanation for why females tended to watch more often alone than males did, and why males watched more often in companionship. However, further research is needed to confirm the finding of different contexts in which males and females appear to watch and to clarify why this might be the case. Especially the factor of watching alone versus in companionship appears to be an interesting idea for further research, for example to investigated if a high degree of watching alone is a risk factor (i.e. associated with watching for longer time periods), or if watching in companionship has different effects (e.g., not watching very concentrated, more relaxed).

After all, the possible explanations provided in this study are only hypotheses, since giving clear reasons and explanations for the gender differences is beyond the scope of this exploratory study. Moreover, it has to be noted that only a few potential gender differences within the motives, the content and the context of watching were found to be significant, while most differences were generally not very large and might therefore be seen more as an indication. This might be linked to one of the limitations of this study which concerns the rather small and unequal sample sizes of each gender group. Consequently, further research with larger samples is needed to support the findings of the present study and to find explanations for the possibly different watching behaviors of males and females.

Another limitation of this study is the high probability of a social desirability bias. Especially the fact that a convenience sampling method was used where almost all of the participants were friends or family members of the researchers leads to the assumption that they might have responded in a way that portrayed them in a more favorable light. Consequently, it is possible that the actual watching time of the participants was higher than the reported watching time.

Linked to this is the probability of another bias, namely the measurement reactivity. Due to the fact that the participants had to fill in multiple questionnaires each day, the monitoring of the participants' behavior was relatively high and might therefore have led to an increased awareness of their watching behavior. Consequently, it is possible that the

participants paid more attention to how much time they spent watching video streaming content and they might have been motivated to keep this watching time below a certain level, which means that they changed their (watching) behavior as a result of this study. This bias of measurement reactivity has also been identified by previous studies as a limitation of research methods like ESM (Hufford, Shields, Shiffman, Paty, & Balabanis, 2002).

However, the use of an ESM is also one major strength of this study as it provided new and more detailed information about the video-on-demand watching behavior of the target group. ESM leads to greater representativeness of the everyday lives of the participants as it provides the possibility to identify daily fluctuations in their watching behavior. Additionally, this method decreased the probability of a recall bias as the data was collected on a daily basis. Consequently, ESM appears to be very useful in regard to the research on everyday activities and leads to increased confidence in the results.

Another strength of this study has been demonstrated by the strong correlation found between the number of episodes watched and the watching time, which implies a high validity of the measurements. Moreover, this finding reduces the possibility that participants engaged in careless responding where the answers were randomly selected and not based on the item content. Instead, it suggests that the participants filled in the questionnaires conscientiously, which presents a major strength of this study.

In order to further increase the validity of this study, further research should include larger and more equal sample sizes of both gender groups, which should preferably be recruited through random sampling in order to decrease the probability of a desirability and selection bias. Moreover, encouraging the participants to fill in the questionnaires on every single measurement day would further increase the power of the findings, and extending the study period might provide an even deeper insight into the watching behavior of the participants. Additionally, qualitative research might be useful to further investigate the gender differences within the topic of video-on-demand watching, especially to find reasons and explanations for possible differences in the watching behavior of males and females.

Further research should control for nationality, in order to find out if the watching of video streaming content is a behavior that differs between nationalities. Here, it would be interesting to find out if gender differences do exist in all nationalities or if they only appear in specific ones. Another relationship that appears especially interesting for further research was suggested between psychological traits (like sensation seeking and need for cognition) and the watching of video streaming content. Specifically, gender differences should be analyzed within the relationship of these variables, as this might provide new and valuable

information in regard to the topic of video-on-demand watching. Additionally, gender differences in the effect of certain emotions (like psychological distress) on the watching behavior should be investigated, for example to find out if females indeed use watching video streaming content more often than males as a way of mentally recharging and dealing with negative emotions. Another interesting idea for further research is to investigate where video-on-demand watching takes place, in regard to the device used (e.g. television vs. smartphone), as this might provide deeper insight into the video-on-demand trend (e.g. at home or on the go).

All in all, the present study provided detailed insight into video-on-demand watching behavior and new information about the gender differences within this topic. It was found that males and females do not differ in the frequency of watching video streaming content, but that they do consistently differ in the extent of watching, as females watched on average more episodes and for longer time periods than males. Furthermore, gender differences were suggested in the motives, the content, and the context of the participants' watching behavior. However, providing clear explanations and reasons for these gender differences was beyond the scope of this study. Consequently, many questions remain unclear and therefore the topic of video-on-demand watching should be further researched. For this, it seems to be advisable to make use of the ESM again, as it was shown to be a useful research method in regard to the investigation of daily activities.

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Appendix A

INFORMED CONSENT

Florian Cordts, Laura Seifert, Josefine Sundermann, Hannah Troles
Contact: f.cordts@student.utwente.nl, h.troles@student.utwente.nl
1st supervisor: Dr. P. M. ten Klooster
2nd supervisor: Dr. M. E. Pieterse
Antecedents and consequences of binge-watching: an experience sampling study

PURPOSE OF STUDY
Before you decide to participate in this study, it is important that you understand why the research is being conducted and what it will include. Please read the following information carefully. Please ask the researchers if there is anything that is not clear or if you need more information. The purpose of this study is to find out more about online television watching using video on demand streaming services. Due to the increasing popularity of for example Netflix, Amazon and Youtube, watching online series and movies becomes more frequent, especially among university students. Within this study we want to learn more about binge-watching behaviour with focusing on whether it is more intentional, whether there exist any gender differences, whether it has an impact on your mood states and well-being and finally whether it interferes with your daily life activities.

STUDY PROCEDURES
If you participate in this study, you have to fill out one questionnaire concerning your demographics and four questionnaires including questions about your behaviour and mood related to your television watching behaviour, and questions concerning your mood and emotions in general.
For this, you will be asked to download the TIIM application on your mobile device. You will use this application for a period of two weeks to answer short daily questionnaires (approximately 3-5 minutes). For the purpose of this study, it is important that you answer the questionnaires in the given time frames. Make sure that you have switched on your notifications on your mobile device, as you will receive a notification on your mobile device about when to fill in the questions.

CONFIDENTIALITY
The information that we collect from this research project will be kept confidential. This means that only the researchers have insight into your answers. All personal data (such as e-mail, age, gender etc.) will be anonymized and will not be published and/or given to a third party.

CONTACT INFORMATION
If you have questions at any time about this study, you may contact the researchers.

VOLUNTARY PARTICIPATION
Your participation in this study is voluntary. You are free to withdraw from this study at any time and without giving a reason.

CONSENT
I have read and understood the information provided and had the opportunity to ask questions. I understand that my participation is voluntary and that I am able to withdraw at any time, without a reason or cost. I hereby voluntarily agree to take part in this study.

Welcome E-mail

Hey there!
Thank you very much for agreeing to participate in our study about the "Antecedents and Consequences of Binge-watching"!!! This project will be conducted from the **29th of April until the 13th of May** (2 weeks in total). In general, our goal is to explore the sparsely researched topic of binge-watching. Most importantly, **in order to participate in this study, it is necessary that you follow the steps in the "What You Need To Do" section**. We recommend you mark this Email as "important" in your inbox, so you can easily find it again.

What you need to do:

In the next 2 weeks, you need to answer **four different questionnaires a day** at:
- **09:00 a.m**. (2 questionnaires; max. 5 minutes)
- **03:00 p.m.** (max. 2 minutes)
- **09:00 p.m.** (max. 2 minutes)

Conveniently enough, this will be done via the **TIIM app**. In order to participate in this study, you need to click on the subscription-link down below and download the TIIM app in the respective app store:

1. Click on the following link to enrol and register with your full name and Email address, you can choose an own password, which you will use to login in the TIIM app
   → https://app.tech4people-apps.bms.utwente.nl/enrol/KZgBQ

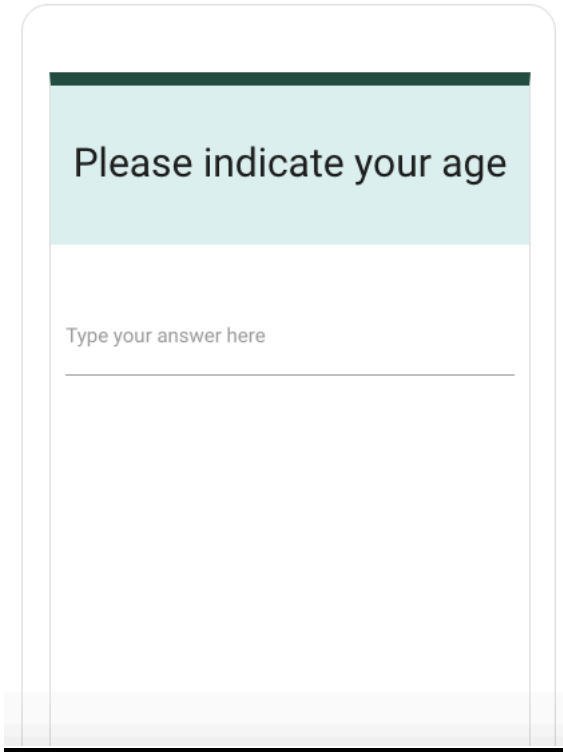
2.Download the TIIM app
   → Google Play Store:
   https://play.google.com/store/apps/details?id=nl.bmslab.utwente.tiimapp
   → iTunes App Store:
   https://itunes.apple.com/de/app/tiim/id1229896853?l=en&mt=8
3. Open the App
4. Log in with your Email address and your password
5.Make sure your notifications for this app are turned on

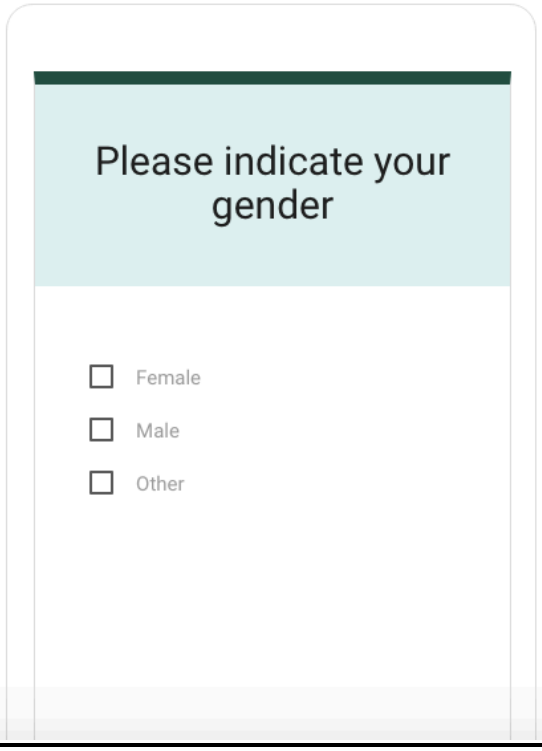
If you have not registered until the 29th of April at 08:00 in the morning, you won't be able to participate in the study. You should receive the first notification at 9:00 a.m. on the 29th of April. If you do not get any questionnaire around 9:00 a.m., please contact us instantly.
The questionnaires are going to take you max. 8 minutes in total each day.
Keep in mind that **we cannot reward you with any SONA credits if you fail to answer the questionnaires** regularly. We will send you notifications regularly to remind you of the questionnaires, but it is very important that you **check your phone around the times mentioned above**.

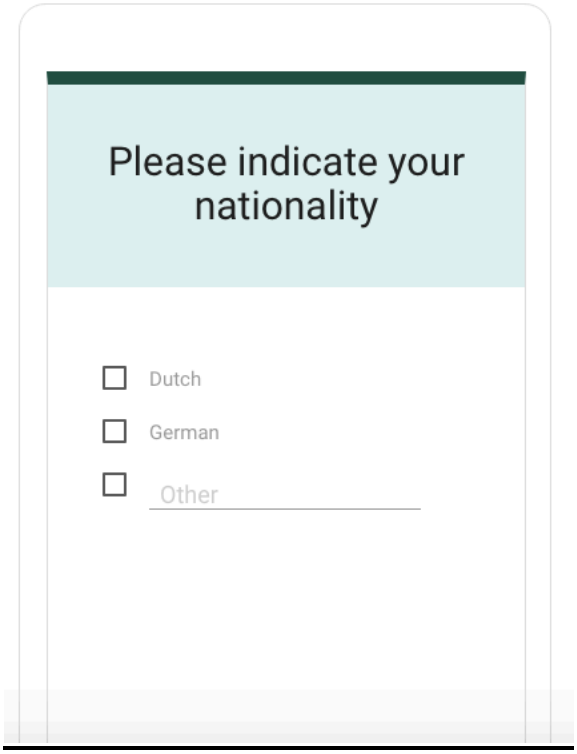
If you have any questions, comments, or doubts about the study feel free to contact us at *f.cordts@student.utwente.nl*. We will reply as soon as possible.

Best regards,
Hannah, Josefine, Laura, and Florian

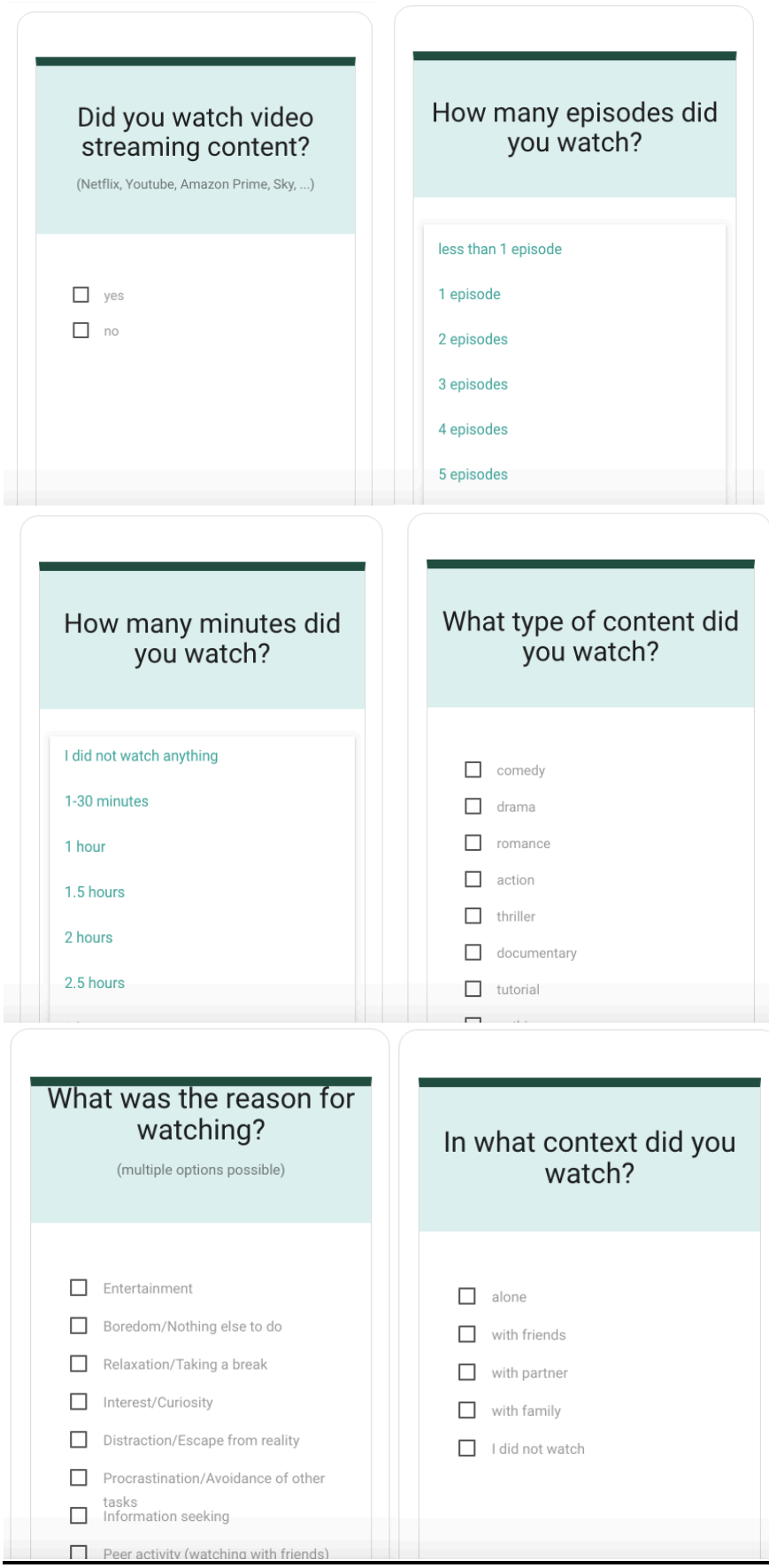
Appendix B


Please indicate your age
Type your answer here


Please indicate your gender
Female
Male
Other


Please indicate your nationality
Dutch
German
Other

Appendix C


Did you watch video streaming content?
(Netflix, Youtube, Amazon Prime, Sky, ...)
yes
no
How many episodes did you watch?
less than 1 episode
1 episode
2 episodes
3 episodes
4 episodes
5 episodes
How many minutes did you watch?
I did not watch anything
1-30 minutes
1 hour
1.5 hours
2 hours
2.5 hours
What type of content did you watch?
comedy
drama
romance
action
thriller
documentary
tutorial
What was the reason for watching?
(multiple options possible)
Entertainment
Boredom/Nothing else to do
Relaxation/Taking a break
Interest/Curiosity
Distraction/Escape from reality
Procrastination/Avoidance of other tasks
Information seeking
Peer activity (watching with friends)
In what context did you watch?
alone
with friends
with partner
with family
I did not watch