'Switching off': A Diary Study Investigating the Effect of the Netflix Auto-Play Feature on Binge-Watching and Mindful Attention Awareness

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Declaration

This thesis is entirely my own work, and has not been previously submitted to this or any other third level institution.

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Abstract

Binge-watching is pervasive in modern society and although it can be a positive experience for many, it is a sedentary activity and may have negative health consequences. Previous research has focused on the psychological antecedents and motives that contribute to the behaviour. In addition, research has shown that technology may be employed to encourage binge-watching and demonstrated a link between recommender systems and binge-watching. The current research used a quasi-experimental design to examine the effect of the auto-play feature on binge-watching and mindful attention awareness. One hundred and one participants were recruited using a combination of purposive and convenience sampling. The results show that while switching the Netflix auto-play feature off significantly decreases binge-watching, neither this nor binge-watching affects mindful attention awareness. This study contributes to the literature on binge-watching by examining the role of the auto-play function on the behaviour. In an era where an increased awareness of digital well-being exists, these findings may have important implications for the design of video streaming services.

Introduction and Literature Review

Binge-watching is a recent societal phenomenon, and describes the behaviour of watching multiple episodes of a television show consecutively, usually from the same series (Schweidel & Moe, 2016). Binge-watching has entered our lexicon, and was named Collins dictionary word of the year in 2015 ("'Binge-watch'," 2015). It is now a normalised, socially acceptable method of consuming video (Flayelle, Maurage, Vögele, Karila, & Billieux, 2018) and is pervasive. Seventy-two percent of adults report having engaged in the behaviour, with 34% binge-watching weekly (McCarriston, 2017). This figure is higher among millennials, with 86% having binge-watched, 42% weekly (Westcott, Loucks, Downs, & Watson, 2018). Binge-watching may be contributing to an escalation in video consumption levels. An integral part of modern life, individuals spend nearly 6 hours a day consuming video ("Time Flies," 2018). While binge-watching may be a positive experience for many, it is a sedentary activity (Tremblay et al., 2017) and its escalation may have important implications for our population's health. A recent study concluded that, adjusting for known risk factors, obesity and lack of exercise, excessive television viewing was found to independently predict an increased risk of colorectal cancers in 25-42 year olds (Nguyen et al., 2019). In addition, Fancourt and Steptoe (2018) suggest a link between watching more than 3.5 hours of television a day and cognitive decline in adults aged 50 or over.

Binge-watching

Binge-watching is not a new behaviour, facilitated historically through the use of video recording and DVD box sets (Jenner, 2016). The migration from linear broadcast schedules where viewing is by appointment, to online viewing platforms, where viewing is autonomous, eliminates scheduling conflicts and missed episodes (Merikivi, Salovaara, Mäntymäki, & Zhang, 2018). In combination with advances in mobile technology, and the release of all episodes in a season, this has fuelled an increase in binge-watching. Subscription Video on Demand (SVOD) services offer unlimited instant access to personalised content for a monthly fee with no contract, and subscriptions to these services are predicted to grow from 250 million in 2018 to

450 million in 2022, with many subscribing to more than one service ("Number of SVOD households," 2018). Netflix is a SVOD service and has 148 million subscribers worldwide ("Number of Netflix subscribers," 2019) with binging the standard way of viewing ("2017 on Netflix," 2017). It accounts for 15% of the world's internet traffic ("Sandvine Internet Phenomena Report," 2018), streaming 97,222 hours of content every minute of each day ("Data Never Sleeps 6," 2018).

There has been inconclusive debate surrounding an operational definition of binge-watching. Jenner (2017) proposes that the definition is highly subjective and that the viewer's experience determines whether the behaviour may be defined as binge-watching. Moral panic can lead to overpathologising excessive everyday behaviours (Kardefelt-Winther et al., 2017) and repeated excessive binge-watching should be distinguished from behavioural addiction as defined by Diagnostic and Statistical Manual of Mental Disorders (5th ed.) (American Psychiatric Association, 2013). Most attempts to define it use episodes, and not time as a measure (Pierce-Grove, 2016). Netflix defines it as watching 2-6 episodes of the same program in one viewing session ("Netflix Declares," 2013) while Nielsen suggests it is 3 or more episodes ("“Binging" is," 2013). However, Vaterlaus, Spruance, Frantz, and Kruger (2018) identified time spent as a measure for binge-watching, while Panda and Pandey (2017) include time spent and episodes in their definition. Sung, Kang, and Lee (2018) posit that the behaviour is more complex and the definition should include the number of episodes, the amount of time, frequency, and binge-watching engagement. In recent academic studies, it has been defined as watching more than two episodes in one sitting (Walton-Pattison, Dombrowski, & Presseau, 2018) (Pittman & Steiner, 2019), and this is the definition that will be used for the purpose of this study.

Health Implications

Excessive video consumption has been associated with chronic health conditions including cardiovascular disease (Wijndaele et al., 2011), diabetes (Grøntved & Hu, 2011), obesity (Boulos, Vikre, Oppenheimer, Chang, & Kanarek, 2012), and cancer (Schmid & Leitzmann, 2014). Binge-watching may also have

adverse psychological health outcomes (Vaterlaus et al., 2018). Recent studies have found correlations between binge-watching and depression, loneliness, and fatigue (Sung, Kang, & Lee, 2015), although Tukachinsky and Eyal (2018) could find no link to loneliness and suggest that individuals that are depressed may have lower levels of self-control, and are therefore more likely to engage in the behaviour. This view is supported by Starosta, Izydorczyk, and Lizińczyk (2019) who suggest individuals are motivated to binge-watch for escape and to cope with loneliness. Excessive video consumption may have an effect on cognition and early exposure has been associated with subsequent attentional difficulties (Christakis, Zimmerman, DiGiuseppe, & McCarty, 2004). However, Foster and Watkins (2010) were unable to replicate these findings. A meta-analysis of studies exploring the link between excessive television viewing and children's cognition and behaviour found that this relationship is complex. Although studies suggest a link between the amount of time spent viewing and attentional difficulties, much of this research has omitted the importance of other factors, including content and social context (Kostyrka-Allchorne, Cooper, & Simpson, 2017). Educational content has been found to enhance learning (Mares & Pan, 2013) and social context has been found to mitigate attentional difficulties (Ferguson, 2011). In a review of the literature examining the impact of technology on children's brains, cognition and well-being, Gottschalk (2019) concluded that while a large volume of research exists on the impact of television, the quality is not always adequate and the results should be interpreted with caution.

Individual Differences

Despite media commentary concerning its excessive use, few studies have been published on online video streaming, with most of the current literature on excessive use of internet applications focused on gaming and social networking sites (Hasan, Jha, & Liu, 2018). New technologies do not exist in a vacuum and may exploit psychological characteristics that drive new behaviours, such as binge-watching (Tukachinsky & Eyal, 2018). This has been the basis of recent research which has focused on exploring the individual differences and motivations that may influence

the behaviour. Personality antecedents may predict excessive use of internet applications including online video streaming (Kardefelt-Winther, 2014) and binge-watching has been found to be negatively associated with agreeableness, openness and conscientiousness while positively associated with neuroticism (Pittman & Steiner, 2019). Merrill and Rubenking (2019) found evidence to suggest positive associations between binge-watching frequency, and low self-regulation, procrastination and using the behaviour as a reward, and also posit that binge-watching duration may be predicted by enjoyment and being female. Sensation seeking and need for cognition have also been found to be positively associated with binge-watching (Shim & Kim, 2018), while Shim, Lim, Jung, and Shin (2018) found that binge-watching is attitude discrepant, the more negatively an individual's attitude is towards binge-watching, the more likely they are to engage in the behaviour.

Motivation

Uses and gratification (U&G) theory has been used to explore the relationship between media and its audience. It proposes that audience members are active, goal-oriented consumers of media and focuses on how individuals choose media to gratify their social and psychological needs (Katz, Blumler, & Gurevitch, 1973). Steiner and Xu (2018) employed the U&G framework as a theoretical lens to examine binge-watching. Findings suggest that users are ambivalent about the behaviour and that motivations that lead to binge-watching include relaxation and cultural inclusion, while the ability to watch more than one episode in a viewing session gratifies the user's need for a sense of completion and catching up on content. They propose that as the methods for consuming video evolve, our motivations also change and U&G theory should be updated to reflect this new way of consuming media. Panda and Pandey (2017) support this idea and suggest that viewing habits have changed with the advent of SVOD services. They report that binge-watching gratifies user's need for social engagement and escapism, and that negative gratification also motivates binge-watching as individuals attempt to avoid feelings of regret on completion of an episode. Research has also highlighted that

individuals binge-watch for entertainment (Sung et al., 2018), to experience immersion and facilitate social inclusion (Flayelle, Maurage, & Billieux, 2017). Erickson, Dal Cin, and Byl (2019) propose that binge-watching increases narrative transportation and the intensity of parasocial relationships, creating an enhanced viewing experience. Tukachinsky and Eyal (2018) offer partial support for these findings and drawing on media involvement theories, suggest that binge-watching increases the intensity of parasocial relationships but not narrative transportation. They report that binge-watchers are in control cognitively and emotionally and are motivated by enjoyment.

One of the criticisms of U&G theory and media involvement theories is that they focus on the positive applications of media use and do not attempt to address any negative aspects including mindless consumption. They assume that audience members are in control of their media choices, and make little allowance for any variability between active and passive viewing (Ruggiero, 2000). Although much of the recent research has explored the initial decision to binge-watch, theoretical explanations lack the ability to explain why viewers sometimes continue to passively consume content that they had not intended to. While the initial intention to view may be based on a focused, goal driven and reflective decision-making process, it is possible that the viewing of subsequent episodes may be unintentional. Riddle, Peebles, Davis, Xu, and Schroeder (2017) found evidence to suggest a link between impulsivity and unintentional binge-watching. This view is supported by Walton-Pattison et al. (2018) who using social cognitive theory (Bandura, 1997) as a framework to examine motivations for binge-watching, suggest the behaviour is determined not only by outcome expectations, self-efficacy and proximal goals but also by automaticity, goal conflict and anticipated regret. They conclude that future research should explore the use of technical artefacts, to establish if there is a link with binge-watching. This suggestion supports the view of Harris (2016) who proposed that technical artefacts are used to manipulate viewers' attention and influence their viewing behaviour.

Technical Artefacts and Recommender Systems

Recent research has made an initial attempt to explore whether excessive use of online video streaming services is facilitated by technical artefacts and suggests a link between the use of recommender systems and binge-watching (Hasan et al., 2018). The purpose of a recommender system is to ensure every individual finds something of interest to watch in the 60-90 seconds that users spend on average, looking for content before they leave the application (Gomez-Uribe & Hunt, 2016). The Netflix recommender system populates every individual's homepage with content that algorithms have determined they are most likely to watch, based on all of their past behaviour.

Technical Artefacts and Auto-Play

A large percentage of online traffic is generated when users allow the platform they are using continuously generate more content (Harris, 2016). In an experiment carried out to demonstrate that without any visual cue to signal a finite end, individuals tend to overconsume, Wansink, Painter, and North (2005) used a bottomless bowl that automatically refilled with soup as it was emptied. They found that participants consumed 73% more soup than they would have if they had used a normal bowl. Although this research failed to account for all confounding variables such as taste preferences, this theoretical explanation may be used to understand how online experiences manipulate individuals to consume content they may not have been hungry for. They take finite events and turn them into bottomless feeds, as users are deprived of any visual cues that signal them to stop (Harris, 2016). Netflix does this by drawing on nudge theory, a concept in behavioural economics, which proposes that the presentation of available choices may be used to influence decision-making and encourage a desired behaviour (Thaler & Sunstein, 2009). Netflix choice architecture is designed so that when a user finishes watching an episode, the default option is that the next episode is automatically cued, and a timer counts down until it starts playing. This preserves choice while at the same time nudging the user to the desired behaviour, that is to keep watching Netflix. The level of difficulty required to continue to the next episode is zero, while users who

do not want to watch the next episode must devote cognitive resources to stop the content from playing. Netflix auto-play feature creates implicit participation (Rigby, Brumby, Gould, & Cox, 2018) and this unrestricted availability may drive overconsumption (Trouleau, Ashkan, Ding, & Eriksson, 2016). Tan (2008) proposes a dual system to appraise any entertainment experience, and this could provide a theoretical explanation to explain why the auto-play feature may influence binge-watching. Attention is divided between the entertainment space which drives emotional responses to entertainment, and the executive space which is the link to reality. The auto-play feature may negate the requirement for attention to transfer from the entertainment space to the executive space at the end of an episode, which may encourage users to engage in binge-watching as cognitive resources remain focused on the entertainment space.

The Present Study

As Netflix infiltrates our lives, it is fundamentally altering how viewers consume content (Flayelle el al., 2018). It is important to understand this behavioural change as recent research has suggested it may have implications for our physical and psychological health. It is clear from the studies reviewed that there is a lack of research investigating the link between the behaviour and the technological artefacts that may contribute to it. The current study will extend the research examining the correlation between recommender systems and binge-watching (Hasan et al., 2018) and will explore the relationship between binge-watching and the Netflix auto-play feature. Current literature suggests there has been no investigation into the relationship between binge-watching and attention. In addition to this, Gunter (2017) identified the possible effect of binge-watching on cognition and attention, as an area for future research. Given these limitations in previous theory and research, the current study will explore the relationship between binge-watching and mindful attention awareness. Mindfulness can be defined as the 'state of being attentive to and aware of what is taking place in the present' (Brown & Ryan, 2003, p.3). It has a positive impact on psychological and physical well-being and is measured by the mindful attention awareness scale

(MAAS) (Brown & Ryan, 2003). The aim of this study is to investigate if there is a relationship between Netflix auto-play feature, mindful attention awareness and binge-watching, contributing to the growing body of research on understanding and exploring binge-watching.

Research Questions

RQ1: Does switching the Netflix auto-play feature off effect mindful attention awareness?

RQ2: Does switching the Netflix auto-play feature off effect binge-watching?

Hypotheses

H1: There will be a difference in MAAS scores between the binge-watching groups (low frequency | medium frequency) before switching the Netflix auto-play feature off.

H2: There will be a difference in MAAS scores after switching the Netflix auto-play feature off.

H3: There will be a difference in the number of binge-watching sessions after switching the Netflix auto-play feature off.

H4: There will be a difference in the number of episodes watched after switching the Netflix auto-play feature off.

Methodology

Design

A lack of clear operationalisation of binge-watching would have made a true experimental design vulnerable to confounding. As such, the current study was a quasi-experimental factorial within groups design. To investigate the effect of switching the Netflix auto-play feature off for one week on binge-watching and mindful attention awareness, an online cross-sectional diary survey which included the MAAS (Brown & Ryan, 2003) was distributed twice to participants via Google Forms – before, and one week after they turned the Netflix auto-play feature off. It captured participants' demographic details such as age and also captured data relating to participant's Netflix viewing behaviour during the past week, such as the number of times they binge-watched and whether they tend to watch Netflix alone or in the company of others.

There were two independent variables, binge-watching (hypothesis 1) and time of testing (hypotheses 2, 3 and 4). Binge-watching refers to the number of times participants binge-watched during the past week, where binge-watching is defined as watching more than two episodes consecutively in one sitting (Walton-Pattison et al., 2018). It is an ordinal independent groups design variable with two levels, low (0 or 1 time) and medium (2 or more times). Time of testing, is a nominal within subjects design variable with two levels, before and after switching Netflix auto-play feature off. There were three dependent variables, MAAS score (hypotheses 1 and 2), the number of times participants binge-watched during the past week (hypothesis 3), and the number of episodes watched during the longest binge-watching session (hypothesis 4).

Time use research has successfully employed solicited diaries for the collection of data, and the health sector has effectively used fixed response diary studies to collect longitudinal quantitative data (Ciere, Jaarsma, Visser, Sanderman, Snippe, & Fleer, 2015). Walton-Pattison et al. (2018) recommended that future research should take an ecological momentary assessment to measure levels of binge watching. The current research addressed this suggestion by conducting a quantitative diary study which required participants to record their Netflix viewing

behaviour for one week, a time period which was appropriate for the timescale of the study. This approach permitted the collection of data relating to whether switching the Netflix auto-play feature off for one week affected binge-watching and mindful attention awareness. Data was captured twice, before and after switching the Netflix auto-play feature off for one week.

Participants

One hundred and one participants were recruited using a combination of purposive and convenience sampling. In order to be eligible to be included in the study, participants had to be over 18 years of age, have a Netflix subscription, and have watched more than two episodes of a television series consecutively during the past month. The sample of eligible participants (*n* = 85) was comprised of 24 males (28%) and 61 females (72%) aged from 18 to 64 years (18 to 24 – 68%; 25 to 44 – 11%; 45 to 64 – 21%). The sample of participants that completed the post-test survey (*n* = 51) was comprised of 13 males (25%) and 38 females (75%) aged from 18 to 64 years (18 to 24 – 57%; 25 to 44 – 10%; 45 to 64 – 33%). Participants received no incentive for their participation.

Materials

A pre-test questionnaire (see Appendix C) was used to collect participants' demographic data and data relating to their Netflix viewing behaviour during the past week. The MAAS was used to determine participant's mindful attention awareness (see Appendix D). The MAAS is a 15 item 6 point Likert scale (1 = almost always to 6 = almost never), which is used to measure openness or receptive awareness of, and attention to, what is taking place in the present mindfulness (Brown & Ryan, 2003). Items include "I find it difficult to stay focused on what's happening in the present" and "I forget a person's name almost as soon as I've been told it for the first time". Previous research has reported a high Cronbach's alpha, α = .81 (Brown & Ryan, 2003) and α = .89 (MacKillop & Anderson, 2007). The Netflix viewing behaviour questions in the survey were based on an adapted version of the questionnaire used by Walton-Pattison et al. (2018) in their study of binge-watching

(α = .72). The post-test questionnaire was a repetition of the Netflix viewing behaviour questions and the MAAS.

Procedure

A pilot study was completed with a convenience sample of 10 participants (3 male, 7 female) to assess whether the participants were able to follow instructions, the clarity of questions, and assess the length of time needed to complete the surveys. Revisions were made to improve the clarity and validity of the survey.

Participants who expressed an interest in taking part in the study were sent a link to a pre-test questionnaire on Google Forms. An information sheet was used to outline the aim of the study, what participation entailed, and ethical principles (see Appendix A). Participants were then prompted to indicate their informed consent prior to participating in the study (see Appendix B). Participants used this to indicate that they were over 18 years of age, had a Netflix subscription, and had watched more than two episodes of a television show consecutively during the last month. Once informed consent was obtained, eligible participants completed a pre-test survey consisting of demographic questions and Netflix viewing behaviour questions (see Appendix C) and the MAAS (see Appendix D). The pre-test survey was available to complete from February 27th 2019 to March 9th 2019. Participants were asked to switch off the Netflix auto-play feature for the following week. Instructions outlining the procedure to turn off the Netflix auto-play feature were sent to participants (see Appendix F). One week later, all participants were asked to complete a post-test survey which was a repetition of the Netflix viewing behaviour questions and the MAAS. The post-test survey was available to complete from March 6th 2019 to March 19th 2019. Instructions outlining the procedure to turn the Netflix auto-play feature back on were sent to participants (see Appendix G). Finally, participants were debriefed and thanked for participating in the study (see Appendix E).

Ethical Considerations

All participants were treated with dignity and respect according to the code of ethics of PSI ("PSI Code of Professional Ethics," 2010), BPS ("Code of Ethics,”

2018), AOIR (Markham & Buchanan, 2012). Ethical approval was obtained from the Department of Technology and Psychology Ethics Committee before participant recruitment and the research commenced (see Appendix H). All information collected during the course of the research is strictly confidential. The researcher is responsible for all data collected, and it may only be accessed by the researcher, her supervisor and a statistics lecturer. Participants are not identifiable as the data is pseudo-anonymised using participant generated codes. Any data collected in the online questionnaire is stored on Google Forms, which is secured with a username and password. The data will be retained by the researcher for a period of one year, after which time it will be securely destroyed.

Results

Overview

The independent variables were binge-watching and time of testing. The dependent variables were MAAS score, the number of times participants binge-watched during the past week and the number of episodes watched during the longest binge-watching session. Preliminary analyses revealed that the data for hypotheses 1 and 2 were normally distributed. Preliminary analyses revealed that the data for hypotheses 3 and 4 were not normally distributed. All statistical analyses were conducted using SPSSS Version 24.

Descriptive statistics

The majority of participants used a television to binge-watch (see Table 1). Participants binge-watched throughout the week (see Table 2), mainly during the evening (see Table 3) and the preponderance of participants binge-watched on their own (see Table 4). Participants binge-watched 70 different shows. The most popular shows were “The Disappearance of Madeline McCann” and “Dirty John” (see Tables 5 and 6). Participants that expressed an intention to watch a specific number of episodes actually watched 71 % more episodes than they had intended to before switching the Netflix auto-play feature off and 49 % more episodes than they had intended to after switching the Netflix auto-play feature off.

Table 1

Devices Used to Binge-Watch

Device used	Netflix auto-play on	Netflix auto-play off
Television	42.4%	41.2%
Laptop	28.2%	23.5%
Smartphone	16.5%	19.6%
Tablet/iPad	10.6%	13.7%
Missing	0%	2%
Other	2.4%	0%

Table 2

Time of Week Binge-Watching Occurred

Time of week	Netflix auto-play on	Netflix auto-play off
Weekday	37.6%	35.3%
Weekend	23.5%	27.5%
Both	38.8%	37.3%

Table 3

Time of Day Binge-Watching Occurred

Time of week	Netflix auto-play on	Netflix auto-play off
Morning	1.2%	11.8%
Afternoon	17.6%	
Evening	45.9%	52.9%
Night	35.3%	35.3%

Table 4

Who Participants Binge-Watched With

With who	Netflix auto-play on	Netflix auto-play off
Alone	71.8%	64.7%
With one other person	28.2%	35.3%

Table 5

Five Most Watched Shows When Netflix Auto-Play Feature On

Show	Netflix auto-play on
Dirty John	9.4%
Brooklyn Nine-Nine	7.1%
The Umbrella Academy	7.1%
Friends	5.9%
Sex Education	4.7%

Table 6

Five Most Watched Shows When Netflix Auto-Play Feature Off

Show	Netflix auto-play off
The Disappearance of Madeline McCann	13.7%
Brooklyn Nine-Nine	5.9%
The Umbrella Academy	5.9%
Afterlife	5.9%
You	5.9%

Inferential statistics

On examination of the trends in the data, it was noted that there was no significant difference in the MAAS scores before and after switching the Netflix auto-play feature off. Therefore, the first hypothesis was tested using MAAS scores before switching the Netflix auto-play feature off. An independent samples t-test found that the first hypothesis, that there will be a difference in MAAS scores between the binge-watching groups (low frequency | medium frequency) before switching the Netflix auto-play feature off, was not supported (t = 1.586, df = 83, p = .117). However, MAAS scores were higher before switching (M = 3.92; SD = .82), rather than after switching the Netflix auto-play feature off (M = 3.60; SD = .82).

A paired t-test found that the second hypothesis, that there will be a difference in MAAS scores after switching the Netflix auto-play feature off, was not

supported (t = 1.485, df = 50, p = .144). However, MAAS scores were higher before switching (M = 3.70; SD = .83), rather than after switching the Netflix auto-play feature off (M = 3.58; SD = .85).

A Wilcoxon signed-rank test found that the third hypothesis, that there will be a difference in the number of binge-watching sessions after switching the Netflix auto-play feature off, was supported (Z = -2.258, p = .024). There was a statistically significant change in the number of binge-watching sessions before switching (M = 2.24; SD = 1.39) (Mdn = 2) and after switching the Netflix auto-play feature off (M = 1.80; SD = 2.16) (Mdn = 1).

A Wilcoxon signed-rank test found that the fourth hypothesis, that there will be a difference in the number of episodes watched after switching the Netflix auto-play feature off, was supported (Z = -2.292, p = .022). Results indicated a statistically significant change in the number of binge-watching episodes before switching (M = 3.20; SD = 1.66) (Mdn = 3) and after switching the Netflix auto-play feature off (M = 2.53; SD = 1.46) (Mdn = 3).

Discussion

Overview

This study sought to gain a greater understanding of the binge-watching phenomenon, more specifically, whether the Netflix auto-play feature affects the behaviour. It also sought to examine if the Netflix auto-play feature or binge-watching has an impact on mindful attention awareness. The aim of this study was to investigate whether switching the Netflix auto-play feature off affects binge-watching and mindful attention awareness. Overall the findings suggest that while switching the Netflix auto-play feature off significantly decreases binge-watching, neither this nor binge-watching affects mindful attention awareness.

Netflix Auto-Play Binge-Watching and Mindful Attention Awareness

The first question this research posed was whether switching the Netflix auto-play feature off affects mindful attention awareness. It was hypothesised that binge-watching frequency, the number of times participants engaged in the behaviour during the week, and switching the Netflix auto-play feature off, would affect mindful attention awareness. This study did not detect any evidence to support these hypotheses. Contrary to expectations, these results suggest that binge-watching has no effect on mindful attention awareness, and are consistent with the findings of Foster and Watkins (2010) who were unable to replicate the results of previous research that suggests a link between excessive video consumption and attentional problems (Christakis et al., 2004).

However, another possible explanation may exist. No significant difference in mindful attention awareness may be as a result of participants experiencing survey fatigue. Research has found that participants can experience cognitive depletion as they progress through a survey, and may employ strategies to minimise cognitive effort. As a result data quality, in particular for measures towards the end of a survey, may be negatively affected (Meade & Craig, 2012). The current study positioned the questions to measure mindful attention awareness at the end of both surveys, and this may have impacted negatively on the reliability of the data.

Binge-Watching and Auto-Play

Extending the research by Hasan et al. (2018) which found evidence to suggest recommender systems contribute to excessive video consumption, the second question in this study sought to determine if switching the Netflix auto-play feature off affected binge-watching. It was hypothesised that there would be a difference in the number of binge-watching sessions, and the number of episodes watched in the longest binge-watching session, after switching the Netflix auto-play feature off. Findings indicate a statistically significant difference between switching on and off the Netflix auto-play feature with evidence suggesting a decline in both the number of binge-watching sessions and the number of episodes consumed in the longest binge-watching session. The findings of the current study are consistent with those of Wansink et al. (2005) which suggest that a lack of visual cues signalling stop, may lead to bottomless feeds and over-consumption. The Netflix auto-play feature eliminates the display of program credits, the traditional visual cue that signals the end of an episode, and automatically refills content, the next episode, creating a bottomless feed. This study's findings corroborate the work of Harris (2016) which asserts that online platforms continuously deliver more content and this unrestricted availability may drive overconsumption (Trouleau et al., 2016). As mentioned in the literature review, U&G and media involvement theories have been used as frameworks to explain the initial decision to binge-watch. However, they lack the ability to elucidate why a user continues to passively consume content they had not intended to view. A possible theoretical explanation for this behaviour may be provided by Tan's (2008) dual awareness model which suggests a user's attention shifts between the entertainment space and the executive space. Netflix auto-play feature may negate the requirement for attention to transfer from the entertainment space to the executive space at the end of an episode, allowing the user to remain engaged with content and facilitating binge-watching. However, more research on this topic needs to be undertaken to determine if Tan's (2008) model may be applied to explain binge-watching.

Although Netflix's brand identity is centred on the concept of user choice, its use of the auto-play feature acts to reduce user indecision and may actually negate choice. Rigby et al. (2018) found that auto-play creates implicit participation,

removing the choice not to watch the next episode from viewers. They suggest the inclusion of design changes to combat automatic behaviours and create a more positive viewing experience. The use of auto-play coupled with datafication (Cukier & Mayer-Schoenberger, 2013), may create a situation where humans are becoming artefacts shaped by decisions made by technology. In an era where an increased awareness of digital well-being exists, YouTube has introduced tools to help users manage their viewing habits. These include the ability to set reminders to take a break after viewing content for a time period determined by the user and to alert users to the amount of time spent viewing content ("Our commitment to Digital Wellbeing," 2018). Time is needed to ascertain whether users find these tools beneficial and if demand exists for Netflix to provide similar functionality.

It is important to note that when the Netflix auto-play feature was switched off, the next episode was not automatically cued, counted down and played. However, it was cued, and the option to play was displayed. Although the decision to watch was still required, the action required to press play is not difficult and demands minimal effort. It seems possible that when the Netflix auto-play feature is switched on, the appearance of the countdown timer to the next episode has become a prompt for users to press play and bypass the countdown. If this is the case, then participants may already be in the habit of pressing play when the next episode is cued. If turning the Netflix auto-play feature off caused the user to be transferred back to the home screen, it is possible that an even greater decline in binge-watching may have been observed.

Implications

From a theoretical perspective, this study extends the knowledge of the binge-watching phenomenon, and specifically how technology may be employed to drive this behaviour. It provides some support for previous findings that overconsumption of online content may be created by a lack of visual cues or bottomless feeds. However, this study did not find evidence that switching the Netflix auto-play feature off or binge-watching affected mindful attention awareness, which does not support previous assertions that excessive video

consumption may be associated with attentional difficulties. From a practical standpoint, it is clear that excessive sedentary behaviour has serious consequences for our physical health. While binge-watching may be used for positive outcomes such as relaxation and entertainment, it may be problematic and also could have adverse implications for our mental health. Auto-play is recognised as an effective method to persuade individuals to consume more content. However, its implementation, in particular with regard to influencing children's behaviour is becoming unacceptable. The Information Commissioner in the UK is in the process of drawing up legislation, targeting strategies employed by organisations to manipulate children to stay online, and this includes auto-play (Hymas, 2018). A new bill is also being proposed in the US, with the aim of protecting children on the internet. It plans to end the auto-play feature for children as it influences them to spend more time on screens (Atkinson, 2019).

Strengths and Limitations

A strength of the study was the validity of the instrument used to measure mindful attention awareness, MAAS (Brown & Ryan, 2003). MacKillop and Anderson (2007) have demonstrated that this measurement is robust and demonstrates strong psychometric properties for the assessment of mindfulness, the awareness of and attention to what is taking place in the present. A further strength was the validity of the study, the degree to which it answered the research questions it intended to measure. In addition, the online distribution of surveys for data collection using Google Forms, made the study accessible for participants.

There are a number of limitations that must be acknowledged. This was a quasi-experimental design and so lacks the control of a true experimental design. It was a repeated measures cross-sectional study and as such only captures a snapshot of the behaviour. Binge-watching may fluctuate depending on personal or work commitments, and so a longitudinal approach may yield more insight into the behaviour. The survey method was self-report and participants may have experienced the Hawthorne effect (Coleman, 2015) and exchanged accuracy for image management or they may have lacked the introspective ability to provide an

accurate response to some of the MAAS questions. This may have impacted on the reliability of the results. A more accurate measurement of actual binge-watching behaviour could be achieved through access to participant's Netflix viewing logs. Participant attrition between completing the first and second survey was 41% which was disappointing. There may be a number of reasons for this. Participants may not have followed the instructions to switch the Netflix auto-play feature off and been unable to complete the second questionnaire, or they may not have been motivated to complete it. The generalisability of these results is limited as the sample is not representative, 75% of the participants are female and the sample size is small. A larger and more diverse sample would be valuable in the exploration of the behaviour.

Future Research

It is recommended that future research should employ a longitudinal design and recruit a larger representative sample, in order to develop theoretical explanations for the interaction between the technical artefacts of Netflix, cognition and binge-watching behaviour. A natural progression of this study would be to examine whether when the Netflix auto-play feature is switched on if users allow the countdown timer to finish and let the next episode play, or when the play prompt is displayed, do they press play and bypass the countdown timer? This would further help understand the effectiveness of this feature and establish if the countdown timer to the next episode has become a prompt for users to press play and bypass the countdown. In addition, it would be interesting to distinguish between foreground binge-watching and binge-watching as a background activity, specifically how engaged binge-watchers are when viewing content and how much attention is being paid to the shows that are being watched? Future research could explore whether binge-watchers are directly engaged with content being viewed in the foreground, or is binge-watching sometimes merely background exposure to content, and does the genre or length of the show influence levels of engagement? This may have implications for the operational definition of the behaviour. The definition used in this study was viewing more than two episodes in one sitting

(Walton-Pattison et al., 2018) (Pittman & Steiner, 2019) however, this may be too simplistic. Sung et al. (2018) suggest the factors associated with binge-watching include number of episodes, the amount of time, frequency, and binge-watching engagement and this may be more appropriate. However, it is difficult to identify an operational definition that isolates binge-watching as a variable while controlling for confounding variables and more research is needed to define the behaviour. Finally, another area of future research is to understand the reasons why individuals cease binge-watching. Are any of the recently developed digital well-being applications designed to inform users about their digital habits and time spent interacting with applications, associated with an awareness of, or decreased levels, of binge-watching? A greater understanding of the interventions that limit binge-watching could be applied to manage the behaviour and any health implications.

Conclusion

Overall, this study contributed to the knowledge of the binge-watching phenomenon. The study examined the effect of a ubiquitous technical artefact auto-play on binge-watching, which previous research had not studied. The findings succeeded in demonstrating that the Netflix auto-play feature has a positive effect on binge-watching. However, no link between the Netflix auto-play feature or binge-watching, and mindful attention awareness was found. Taken together, these results provide important insights into the behaviour and may have important implications for the design of video streaming services. Netflix measures its success in terms of valuable hours, the amount of time spent by its users consuming content that is important to them (Ivanov, 2019) and employs technical artefacts to maximise the amount of time participants spend consuming content. However, video consumption is a sedentary activity (Tremblay et al., 2017) and recent research has linked its excessive use with physical and psychological health issues, including colorectal cancer (Nguyen et al., 2019) and cognitive decline in adults aged 50 or over (Fancourt & Steptoe, 2019). Possible future Netflix design changes that introduce interruptions to encourage users to make a conscious decision to binge-watch, may reflect a growing demand for a more ethical system in an online world. More

research, extending the scope and employing different measurement methods, is required to expand knowledge in this area.

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Appendix A

Information Sheet

'Switching off': a diary study investigating the effect of Netflix auto-play feature on binge-watching and mindful attention awareness

Information Sheet

Study Title

'Switching off': a diary study investigating the effect of Netflix auto-play feature on binge-watching and mindful attention awareness

Purpose of the Research

Binge-watching is a recent societal phenomenon, and describes the behaviour of watching more than 2 episodes of a television show consecutively, usually from the same series. In the past decade, there has been a rapid rise in the levels and popularity of binge-watching. Netflix competes with all other leisure activities for users' attention, and employs strategies to keep you on their website. One such strategy is automatically cueing and playing the next episode in a series, as soon as you have finished watching the current episode. This put the onus on the viewer to choose to stop viewing the next episode, rather than choosing to watch it. This aim of this study is to investigate if there is a relationship between the Netflix auto-play function and binge-watching. It will also investigate if there is a relationship between the viewers level of mindful attention awareness, and binge-watching.

Invitation

You are being invited to consider taking part in this research study. This project is being undertaken by Paula Hanly as part of the Masters in Cyberpsychology program at the Institute of Art Design and Technology. Before you decide whether or not you wish to take part, it is important for you to understand why this research is being done and what it will involve. Please take time to read this information carefully and discuss it with others if you wish. If anything is unclear, you have any questions, or if you would like more information please contact Paula Hanly at N00174008@STUDENT.IADT.IE. This study has been approved by the Department of Technology and Psychology Ethics Committee at the Institute of Arts Design and Technology.

Do I have to take part?

You are free to decide whether you wish to take part or not. If you do decide to take part you will be asked to indicate your consent through completion of a short form. You will create a personalised ID to anonymise your data. You are free to withdraw from this study at any time and without giving reasons, but if you wish to have your data removed, you must request this by 19th March 2019 and all your information will be securely destroyed.

Do I qualify as a participant?

If you wish to participate in this research study you must be:
- At least 18 years old.
- Have a subscription to Netflix.
- Have binge-watched - watched more than 2 episodes of a television series consecutively, during the past month.

If I take part, what do I have to do?

This study will necessitate your commitment for a period of one week. Initially you will be asked to read a consent form and indicate your agreement to participate. You will then be required to complete a pre-test survey. This will take approximately ten minutes.

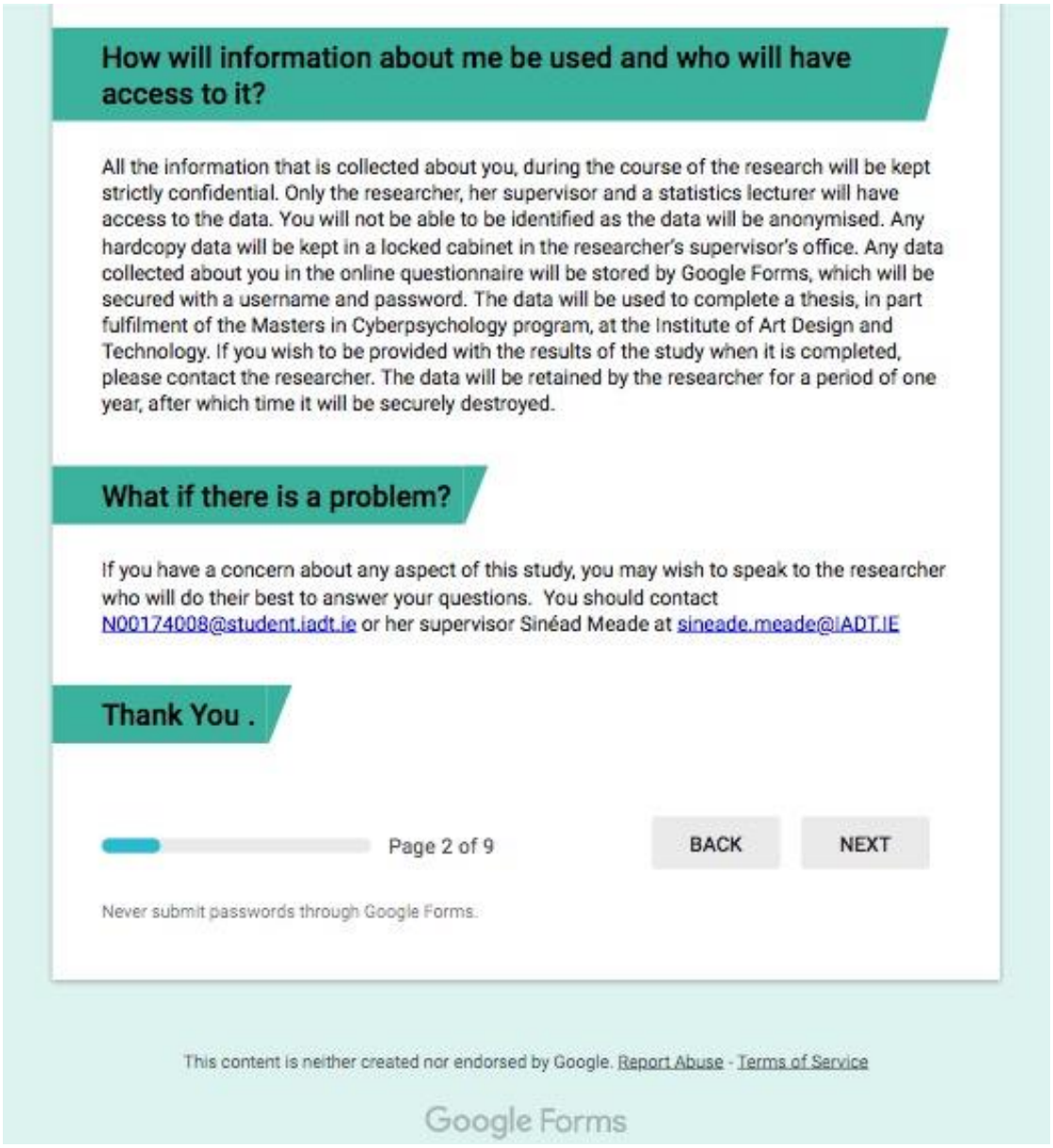
If during the past week, your Netflix auto-play function has been switched on, you will be asked to turn the auto-play function off, for a period of one week, and will be emailed instructions on how to do this.

If during the past week, your Netflix auto-play function has been switched off, you will be asked to leave the auto-play function in Netflix switched off, for a further one week period.

Following the one week period, you will be emailed a post-test survey to complete. This will take approximately ten minutes.

What are the benefits and risks (if any) of taking part?

It is not anticipated that your participation in this study will cause you any distress or discomfort, as it will be the same as any experienced in everyday life.



How will information about me be used and who will have access to it?

All the information that is collected about you, during the course of the research will be kept strictly confidential. Only the researcher, her supervisor and a statistics lecturer will have access to the data. You will not be able to be identified as the data will be anonymised. Any hardcopy data will be kept in a locked cabinet in the researcher's supervisor's office. Any data collected about you in the online questionnaire will be stored by Google Forms, which will be secured with a username and password. The data will be used to complete a thesis, in part fulfilment of the Masters in Cyberpsychology program, at the Institute of Art Design and Technology. If you wish to be provided with the results of the study when it is completed, please contact the researcher. The data will be retained by the researcher for a period of one year, after which time it will be securely destroyed.

What if there is a problem?

If you have a concern about any aspect of this study, you may wish to speak to the researcher who will do their best to answer your questions. You should contact N00174008@student.iadt.ie or her supervisor Sinéad Meade at sineade.meade@IADT.IE

Thank You .

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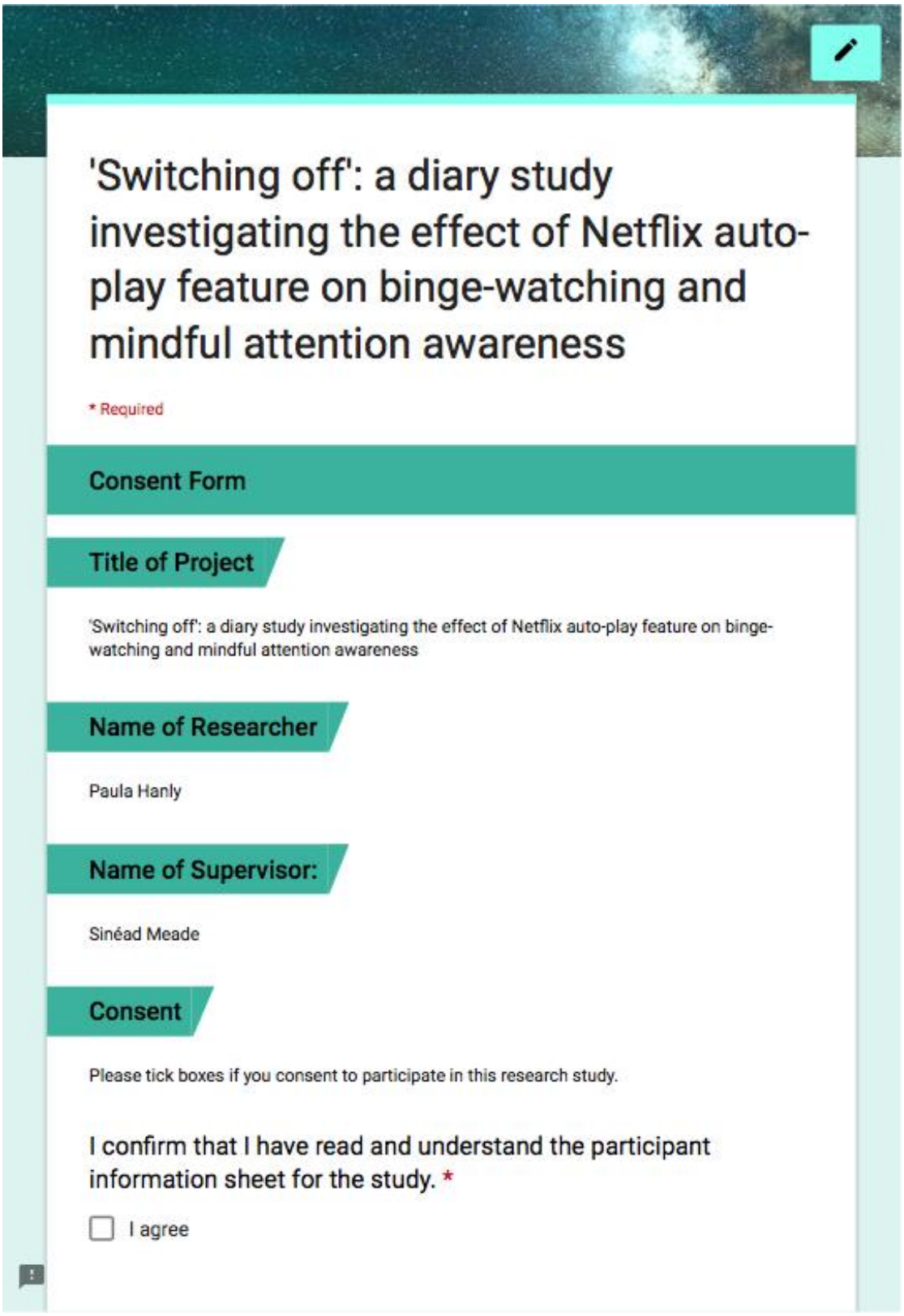
Google Forms

Appendix B

Consent Form



'Switching off': a diary study investigating the effect of Netflix auto-play feature on binge-watching and mindful attention awareness

* Required

Consent Form

Title of Project

'Switching off': a diary study investigating the effect of Netflix auto-play feature on binge-watching and mindful attention awareness

Name of Researcher

Paula Hanly

Name of Supervisor:

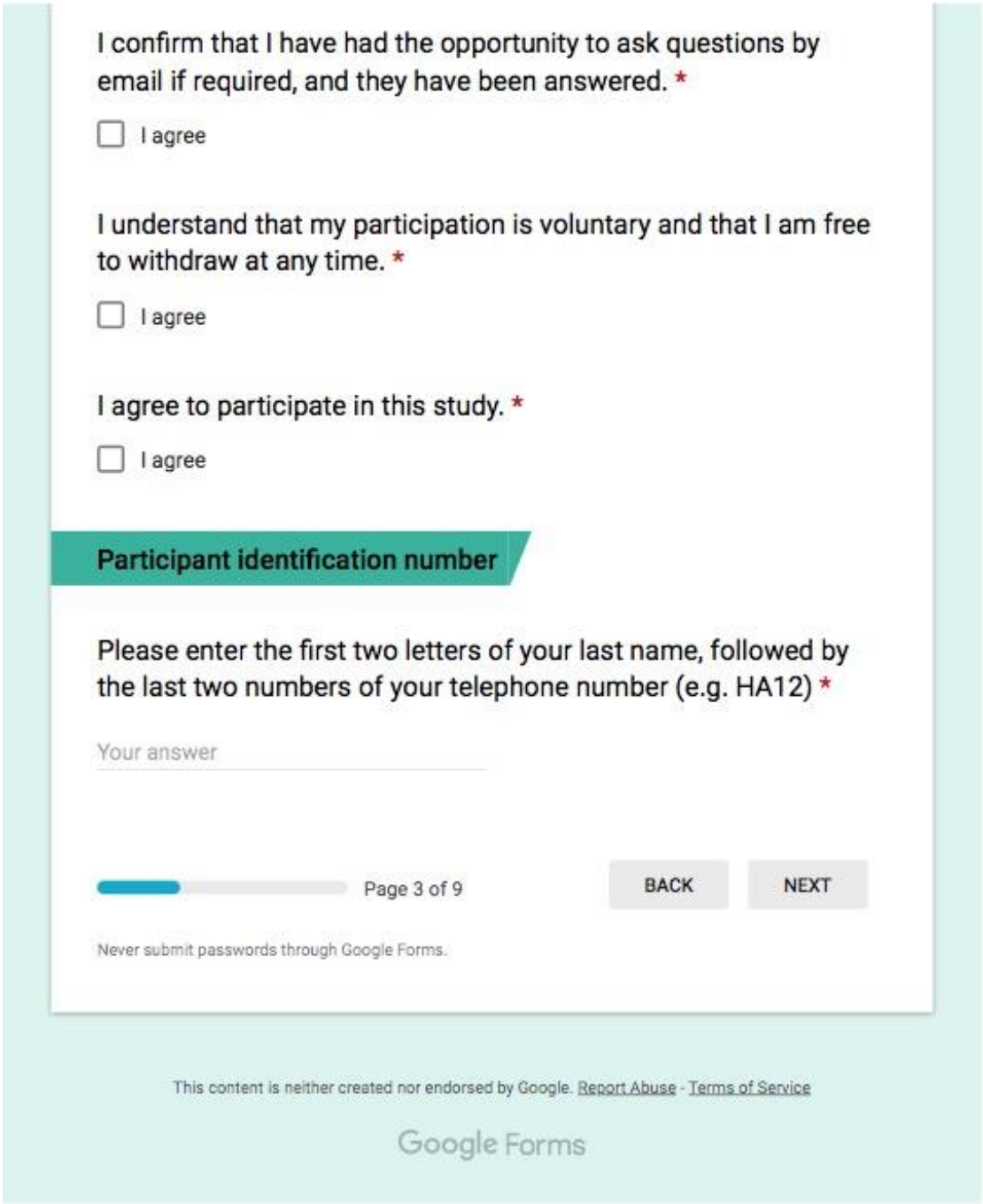
Sinéad Meade

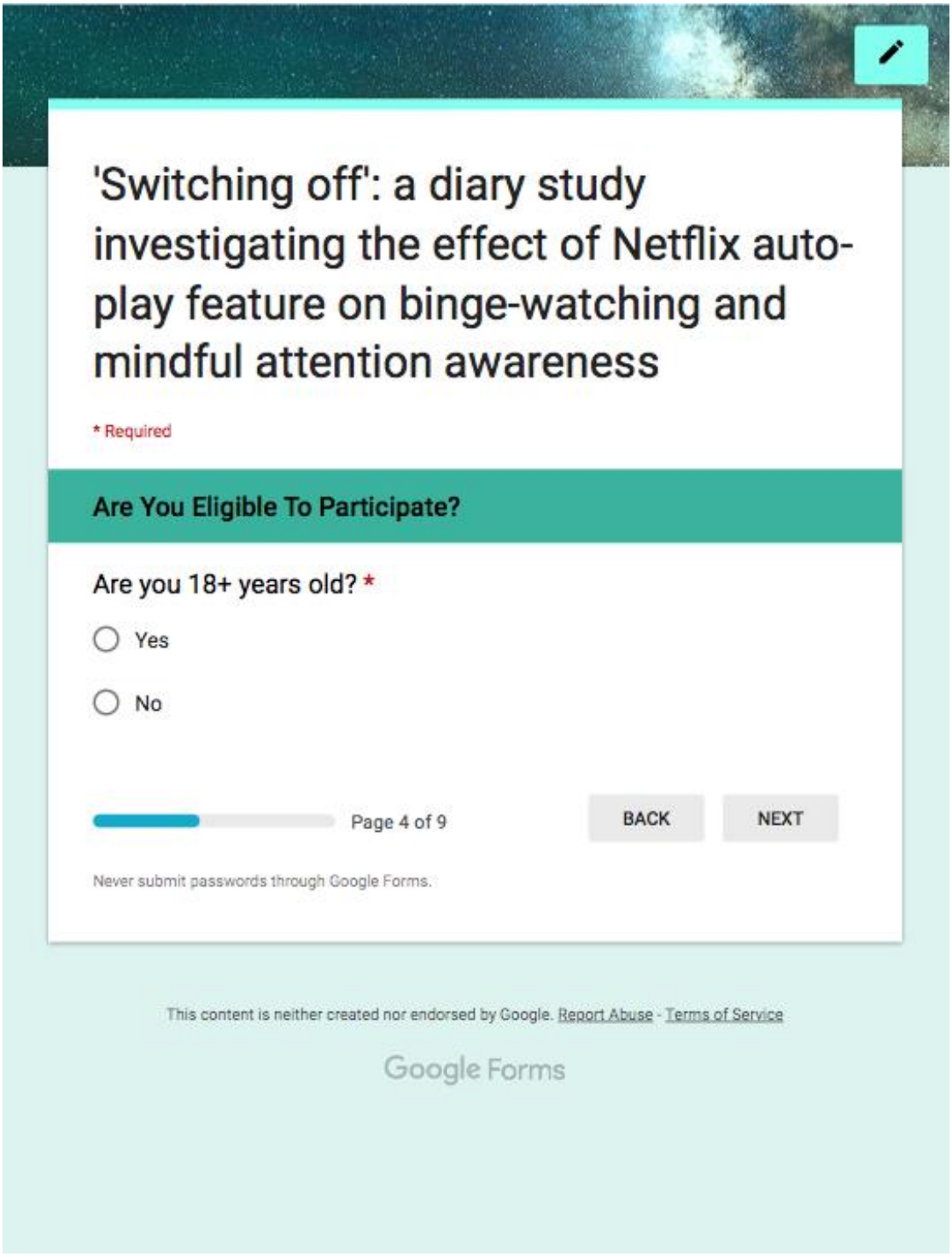
Consent

Please tick boxes if you consent to participate in this research study.

I confirm that I have read and understand the participant information sheet for the study. *

☐ I agree


I confirm that I have had the opportunity to ask questions by email if required, and they have been answered. *
I agree
I understand that my participation is voluntary and that I am free to withdraw at any time. *
I agree
I agree to participate in this study. *
I agree
Participant identification number
Please enter the first two letters of your last name, followed by the last two numbers of your telephone number (e.g. HA12) *
Your answer
Page 3 of 9
BACK
NEXT
Never submit passwords through Google Forms.
This content is neither created nor endorsed by Google. Report Abuse - Terms of Service
Google Forms


'Switching off': a diary study investigating the effect of Netflix auto-play feature on binge-watching and mindful attention awareness
* Required
Are You Eligible To Participate?
Are you 18+ years old? *
Yes
No
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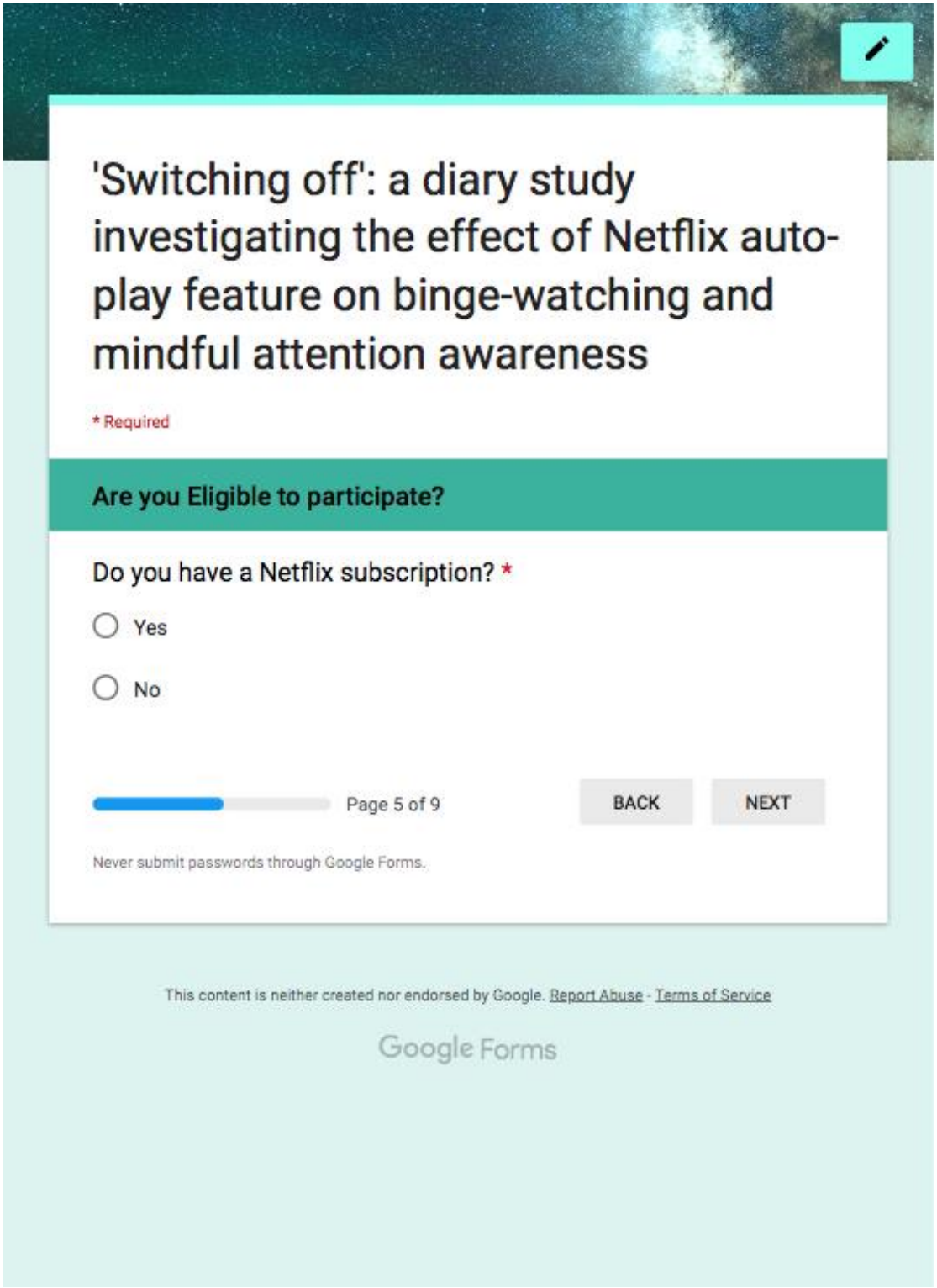
'Switching off': a diary study investigating the effect of Netflix auto-play feature on binge-watching and mindful attention awareness
* Required
Are you Eligible to participate?
Do you have a Netflix subscription? *
Yes
No
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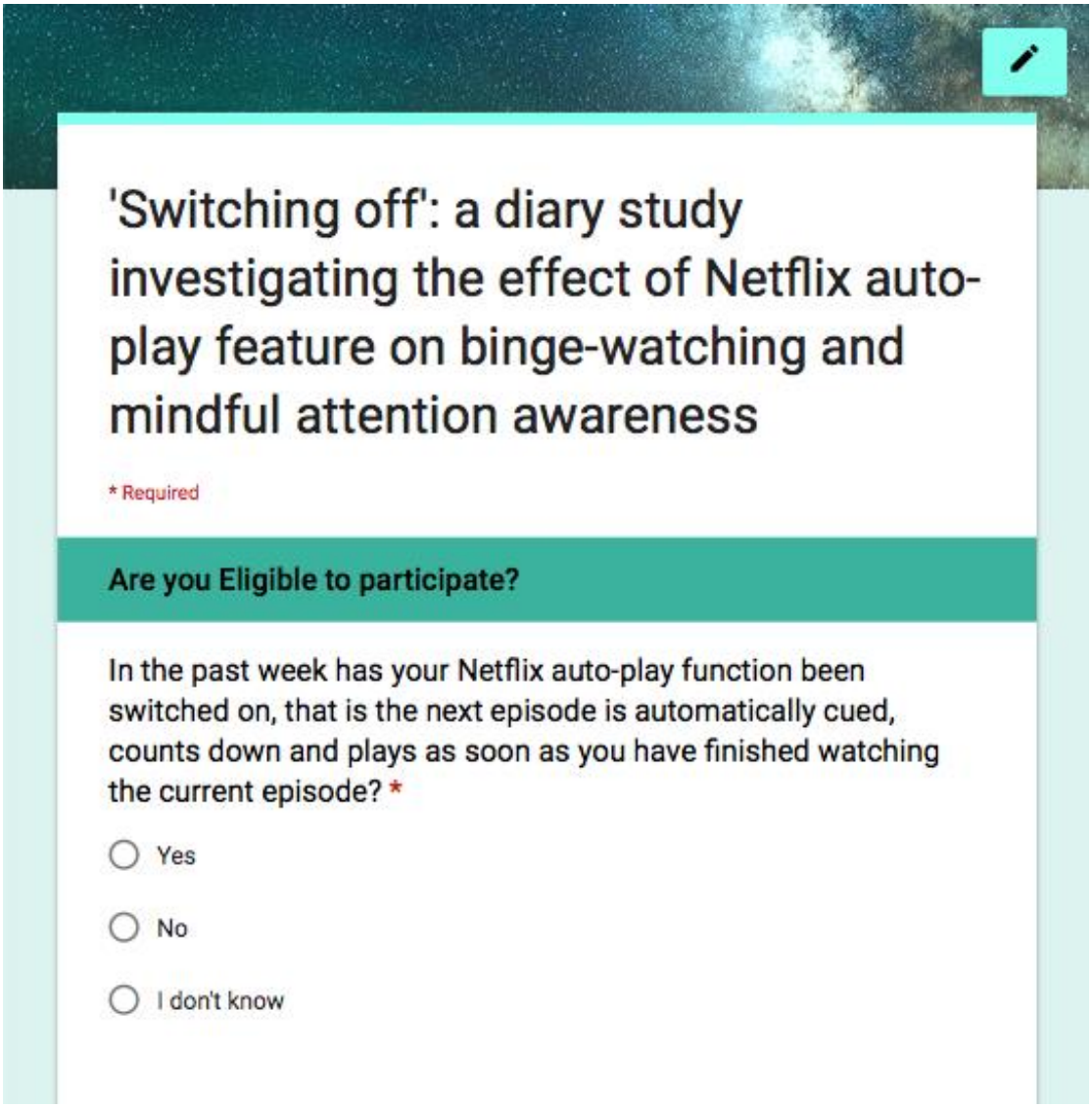


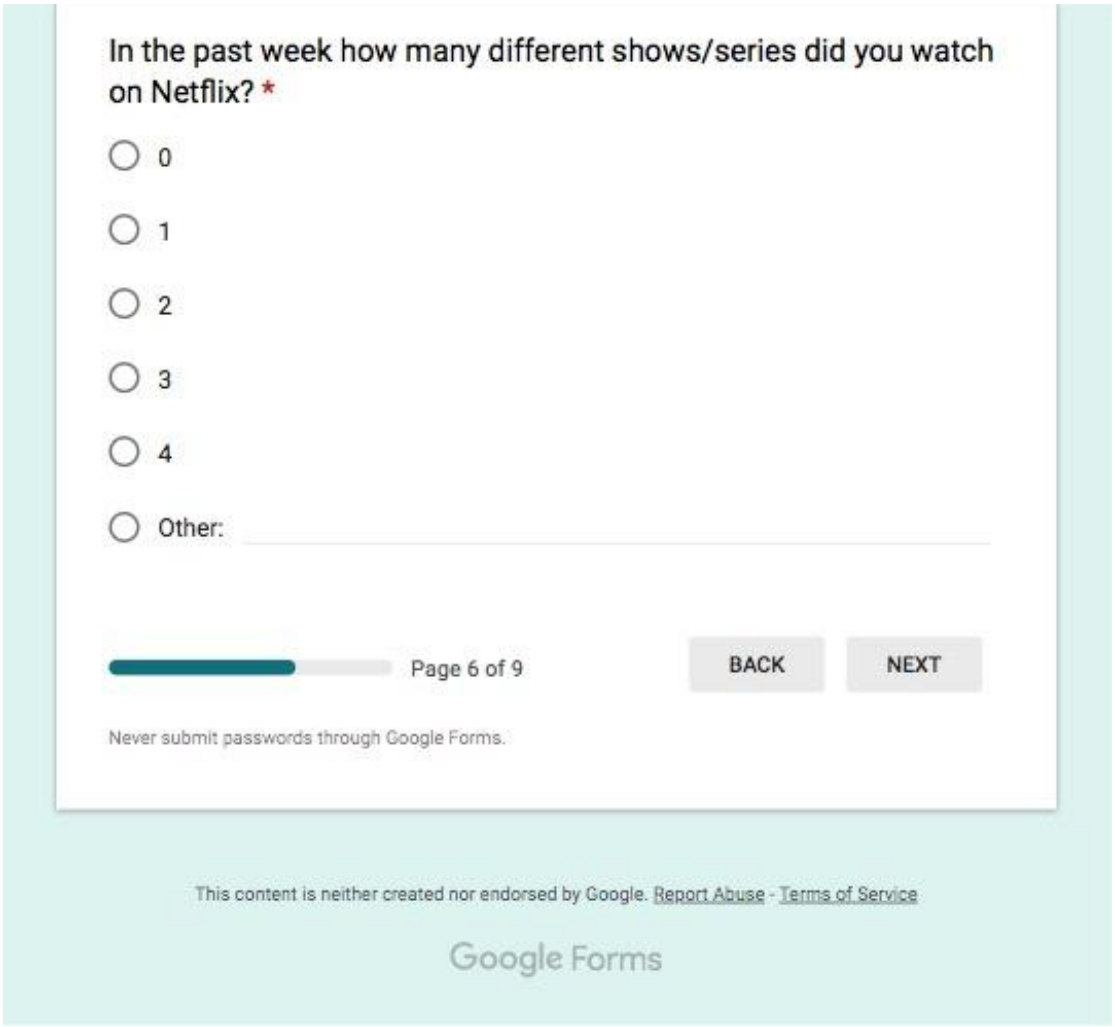
'Switching off': a diary study investigating the effect of Netflix auto-play feature on binge-watching and mindful attention awareness

* Required

Are you Eligible to participate?

In the past week has your Netflix auto-play function been switched on, that is the next episode is automatically cued, counts down and plays as soon as you have finished watching the current episode? *

- ○ Yes
- ○ No
- ○ I don't know


In the past week how many different shows/series did you watch on Netflix? *
0
1
2
3
4
Other:
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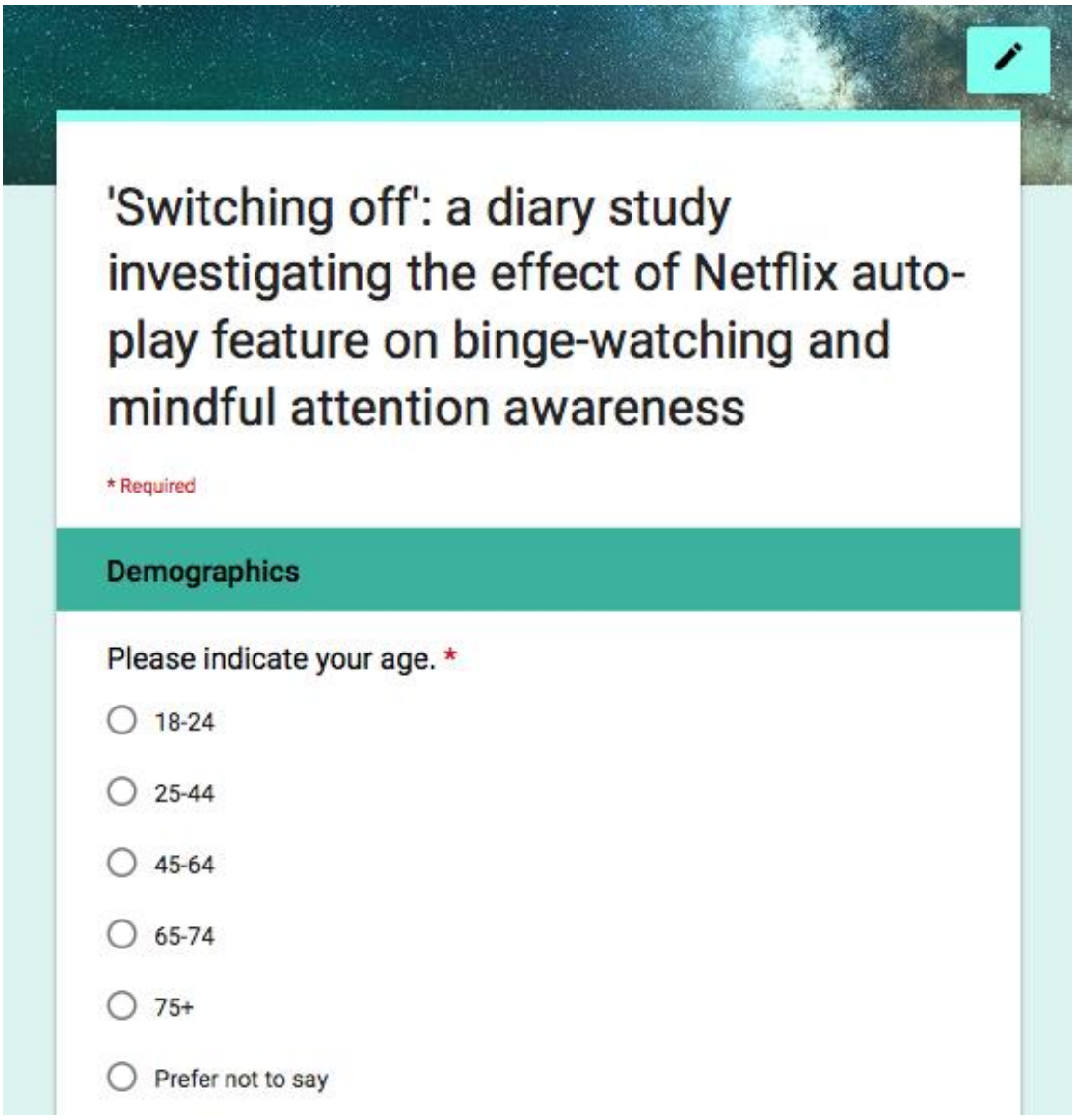
Appendix C

Pre-Test Questionnaire



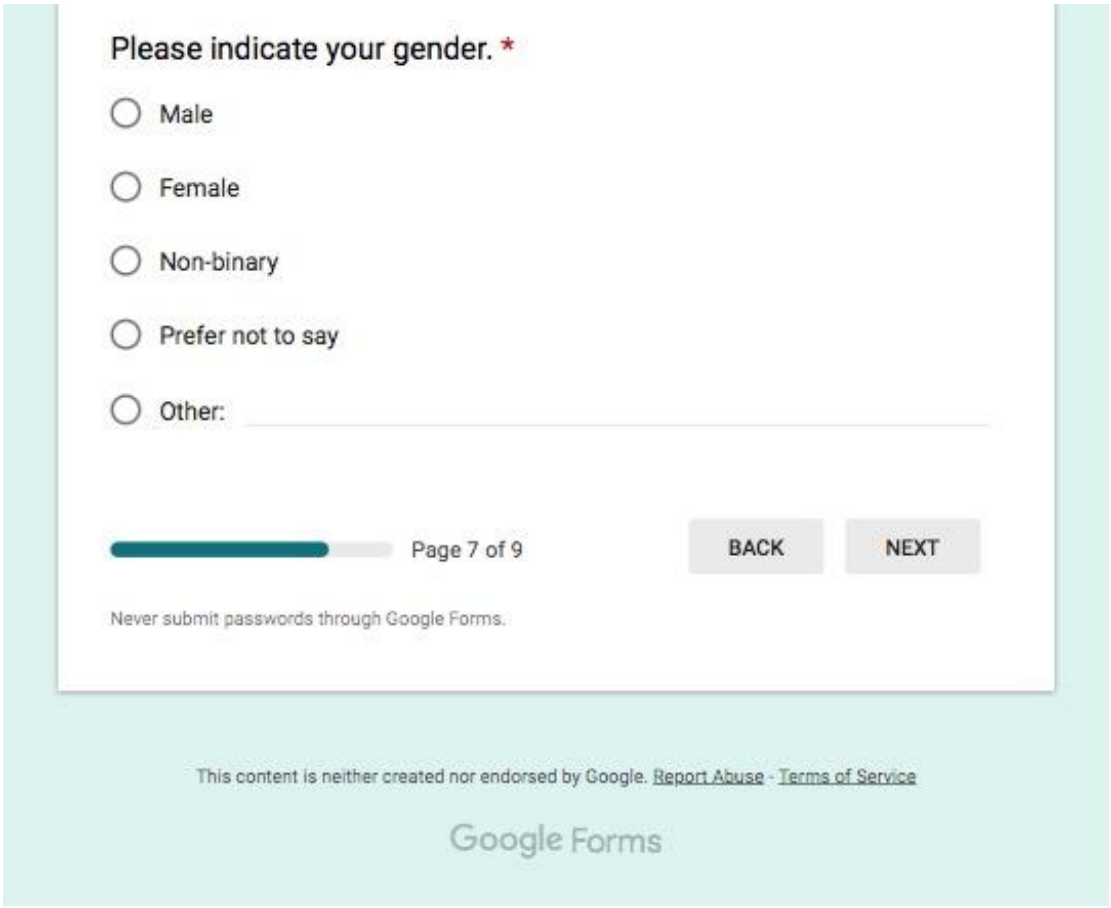
'Switching off': a diary study investigating the effect of Netflix auto-play feature on binge-watching and mindful attention awareness

* Required

Demographics

Please indicate your age. *

- ○ 18-24
- ○ 25-44
- ○ 45-64
- ○ 65-74
- ○ 75+
- ○ Prefer not to say


Please indicate your gender. *
Male
Female
Non-binary
Prefer not to say
Other:
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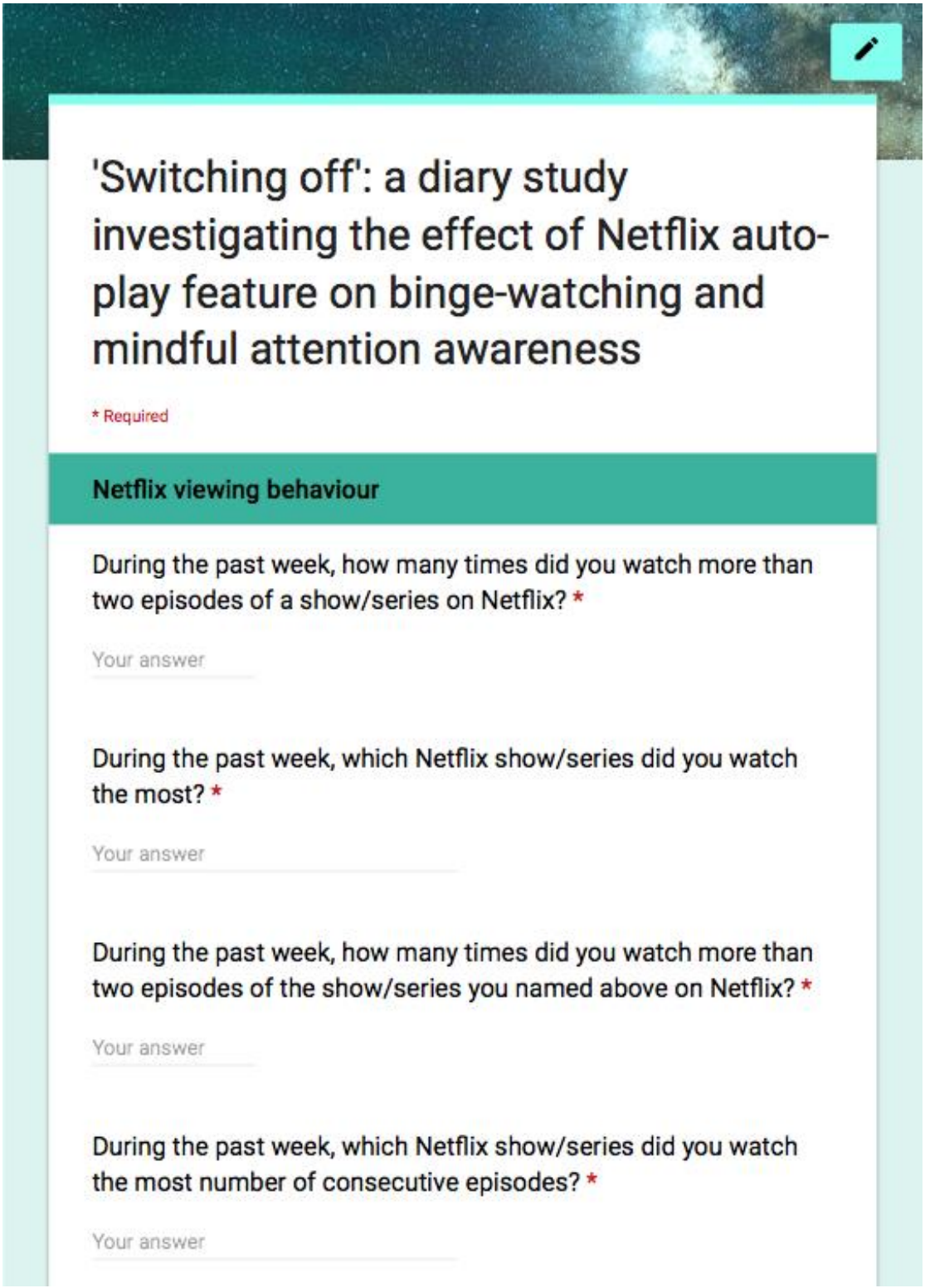


'Switching off': a diary study investigating the effect of Netflix auto-play feature on binge-watching and mindful attention awareness

* Required

Netflix viewing behaviour

During the past week, how many times did you watch more than two episodes of a show/series on Netflix? *

Your answer

During the past week, which Netflix show/series did you watch the most? *

Your answer

During the past week, how many times did you watch more than two episodes of the show/series you named above on Netflix? *

Your answer

During the past week, which Netflix show/series did you watch the most number of consecutive episodes? *

Your answer

Thinking of the time you watched the most number of consecutive episodes of this show during the last week, please answer the following questions.

How many consecutive episodes of this show/series did you intend to watch? *

- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ I didn't plan on watching a specific number of episodes
- ○ Other:

How many consecutive episodes of this show/series did you watch? *

Your answer

How many hours did you spend watching this show/series (in hours rounded to the nearest half hour)? *

Your answer

What device did you typically use to watch this show/series? *

- ○ Television
- ○ Laptop
- ○ Smartphone
- ○ Tablet/iPad
- ○ Other: _____

What time of day did you typically watch this show/series? *

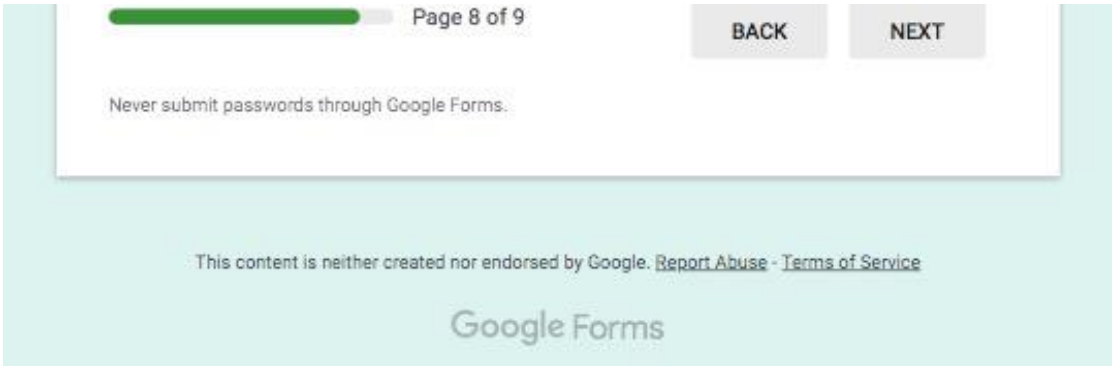
- ○ Morning
- ○ Afternoon
- ○ Evening
- ○ Night

Did you typically watch this show/series during the week or weekend? *

- ○ Weekday
- ○ Weekend
- ○ Both

Did you typically watch this show/series? *

- ○ Alone
- ○ WIth another person
- ○ In a group (more than two people)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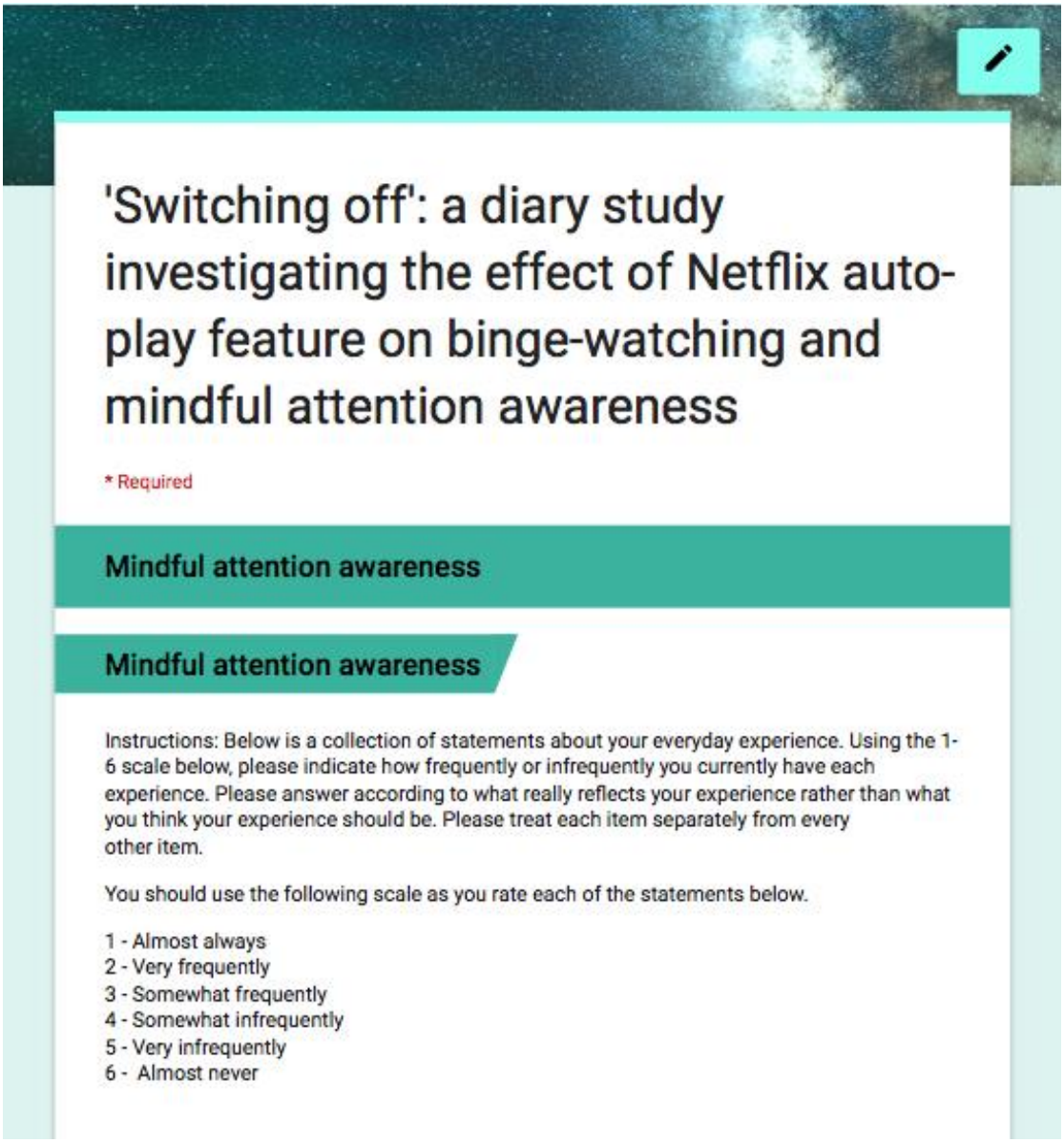
Appendix D

Mindful Attention Awareness Scale



'Switching off': a diary study investigating the effect of Netflix auto-play feature on binge-watching and mindful attention awareness

* Required

Mindful attention awareness

Mindful attention awareness

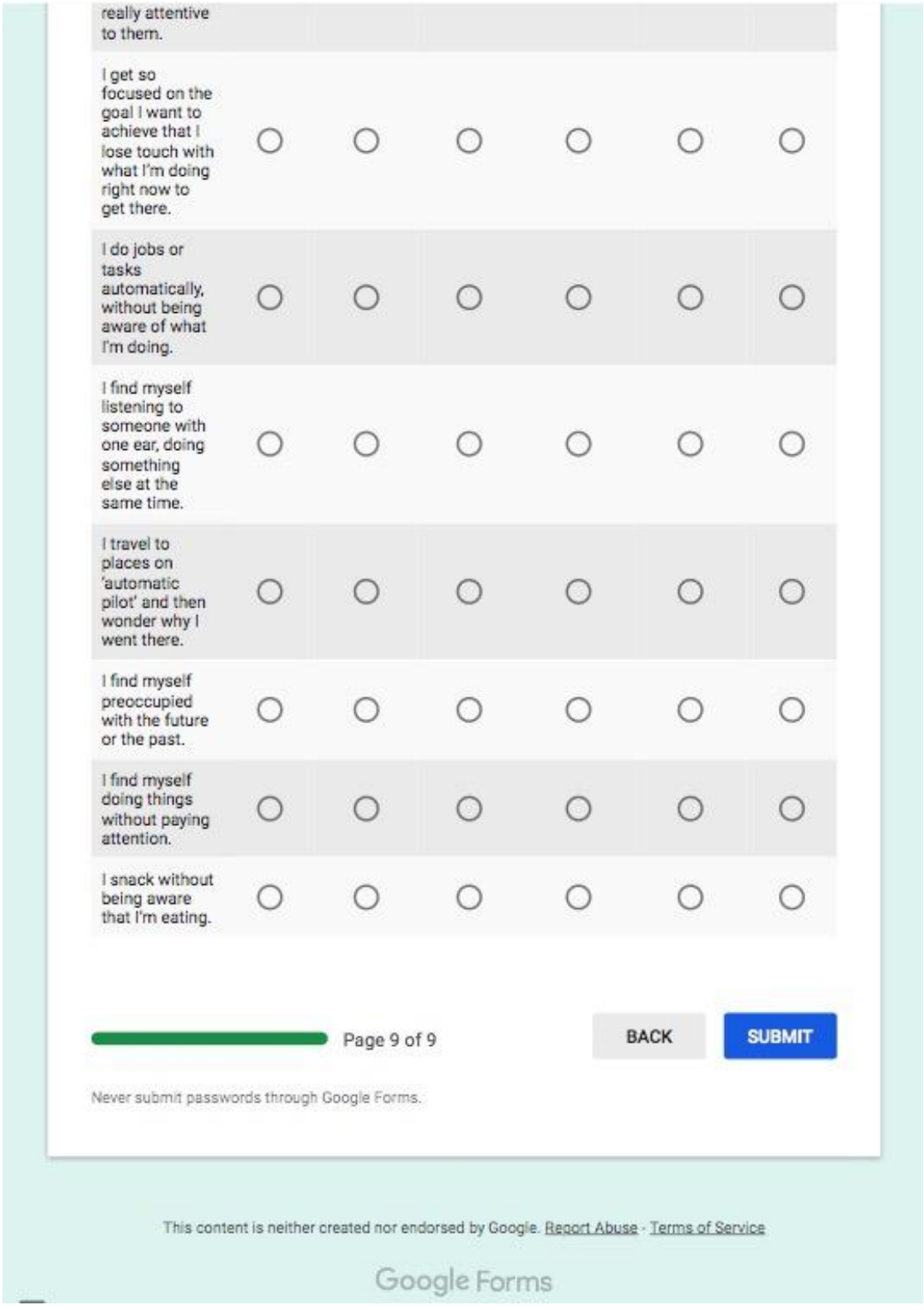
Instructions: Below is a collection of statements about your everyday experience. Using the 1-6 scale below, please indicate how frequently or infrequently you currently have each experience. Please answer according to what really reflects your experience rather than what you think your experience should be. Please treat each item separately from every other item.

You should use the following scale as you rate each of the statements below.

1 - Almost always
2 - Very frequently
3 - Somewhat frequently
4 - Somewhat infrequently
5 - Very infrequently
6 - Almost never

*

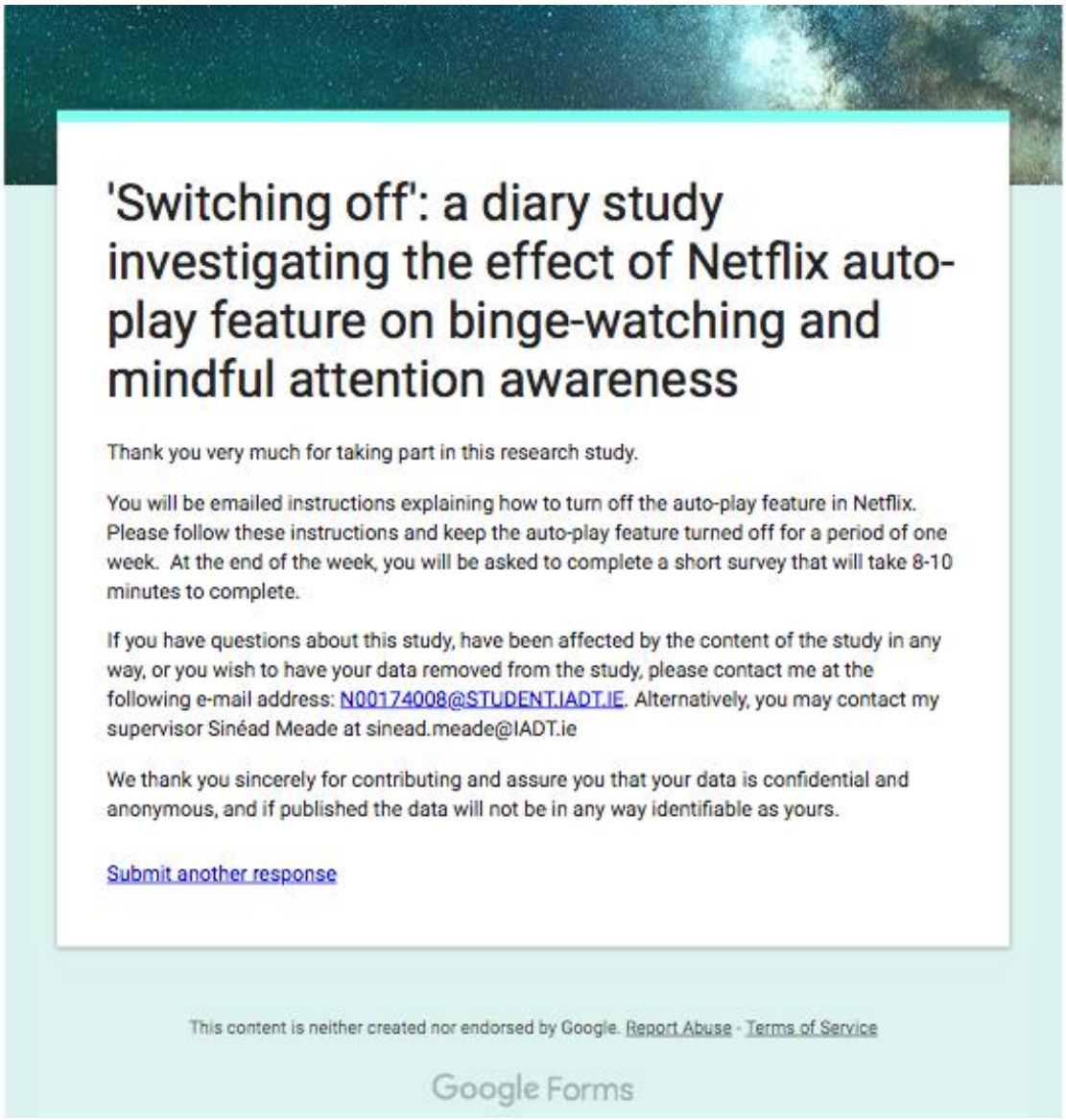
	Almost always	Very frequently	Somewhat frequently	Somewhat infrequently	Very infrequently	Almost never
I could be experiencing some emotion and not be conscious of it until some time later.	○	○	○	○	○	○
I break or spill things because of carelessness, not paying attention, or thinking of something else.	○	○	○	○	○	○
I find it difficult to stay focused on what's happening in the present.	○	○	○	○	○	○
I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	○	○	○	○	○	○
I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	○	○	○	○	○	○
I forget a person's name almost as soon as I've been told it for the first time.	○	○	○	○	○	○
It seems I am "running on automatic," without much awareness of what I'm doing.	○	○	○	○	○	○
I rush through activities without being	○	○	○	○	○	○



really attentive to them.						
I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.	○	○	○	○	○	○
I do jobs or tasks automatically, without being aware of what I'm doing.	○	○	○	○	○	○
I find myself listening to someone with one ear, doing something else at the same time.	○	○	○	○	○	○
I travel to places on 'automatic pilot' and then wonder why I went there.	○	○	○	○	○	○
I find myself preoccupied with the future or the past.	○	○	○	○	○	○
I find myself doing things without paying attention.	○	○	○	○	○	○
I snack without being aware that I'm eating.	○	○	○	○	○	○

Appendix E

Debrief Statement



'Switching off': a diary study investigating the effect of Netflix auto-play feature on binge-watching and mindful attention awareness

Thank you very much for taking part in this research study.

You will be emailed instructions explaining how to turn off the auto-play feature in Netflix. Please follow these instructions and keep the auto-play feature turned off for a period of one week. At the end of the week, you will be asked to complete a short survey that will take 8-10 minutes to complete.

If you have questions about this study, have been affected by the content of the study in any way, or you wish to have your data removed from the study, please contact me at the following e-mail address: N00174008@STUDENT.IADT.IE. Alternatively, you may contact my supervisor Sinéad Meade at sinead.meade@IADT.ie

We thank you sincerely for contributing and assure you that your data is confidential and anonymous, and if published the data will not be in any way identifiable as yours.

Submit another response

Appendix F

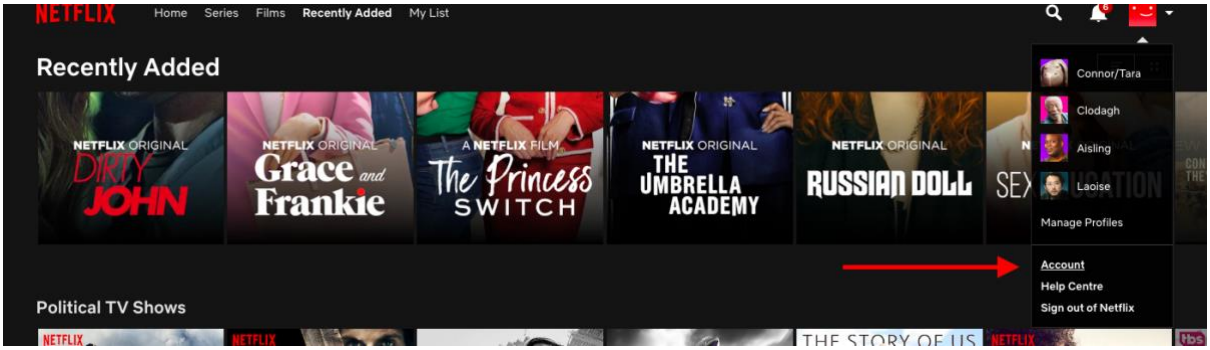
Instructions to Disable Post-Play Feature on Netflix

To disable auto-play feature on a Netflix profile

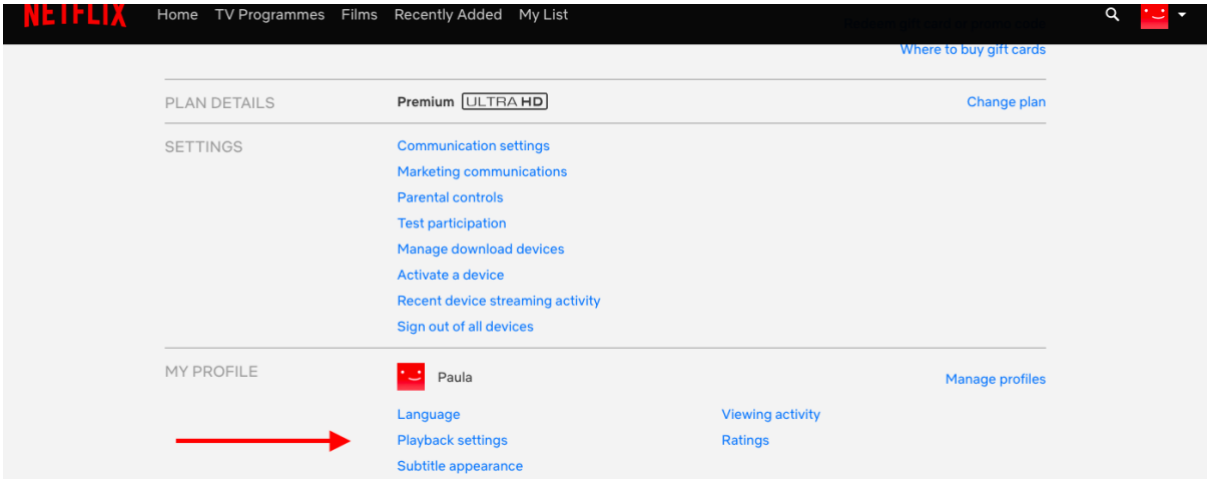
1. Open a web browser on your device and head over to Netflix.com

2. Select the **Profile** for which you wish to disable auto-play.

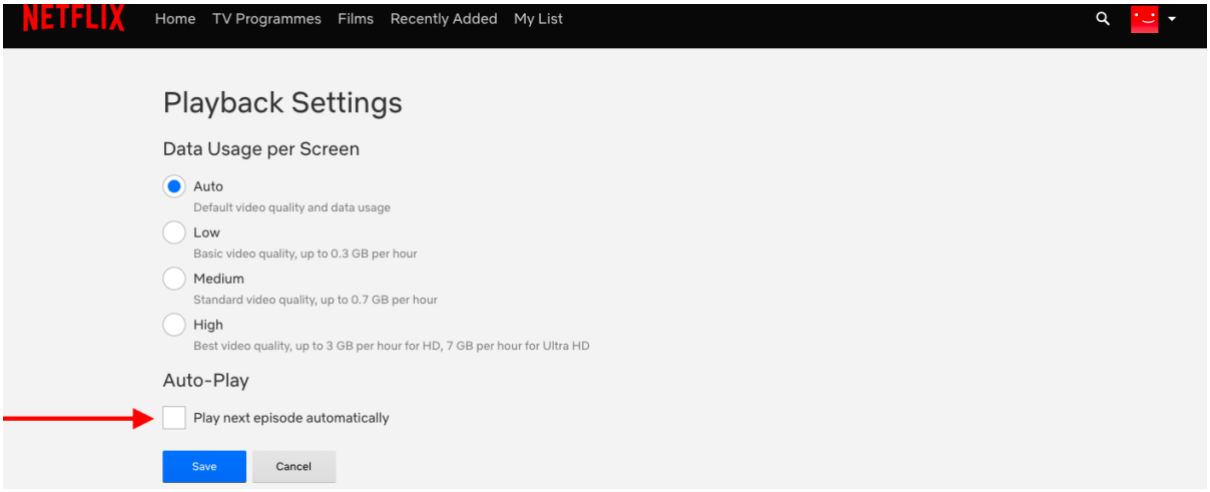
3. Navigate to your **Account**.



4. Click **Playback Settings**.



5. Uncheck the option to **Play next episode automatically**.



Appendix G

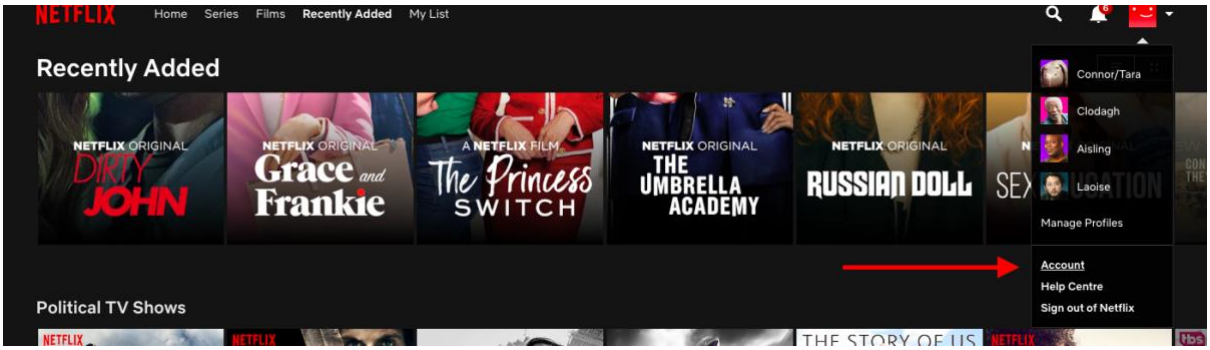
Instructions to Enable Post-Play Feature on Netflix

To enable auto-play feature on a Netflix profile

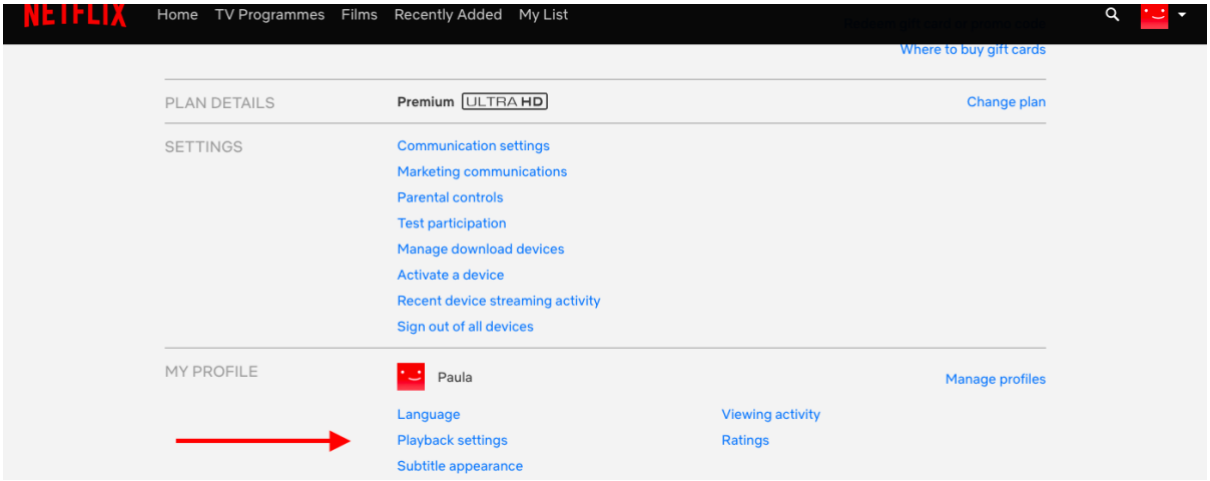
6. Open a web browser on your device and head over to Netflix.com

7. Select the **Profile** for which you wish to enable auto-play.

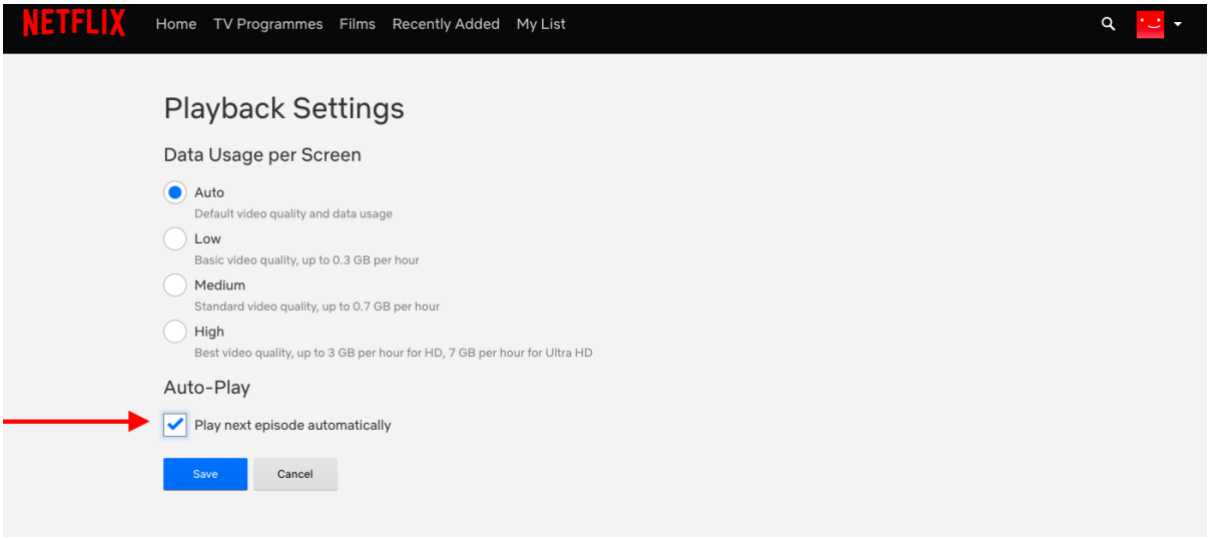
8. Navigate to your **Account**.



9. Click **Playback Settings**.



10. Check the option to **Play next episode automatically**.



Appendix H

Ethical Approval Submission

DEPARTMENT OF TECHNOLOGY AND PSYCHOLOGY

ETHICAL APPROVAL FORM A

Title of project Binge-watching, auto-play and attentiveness: A diary study

Name of researcher Paula Hanly

Email contact N00174008@student.iadt.ie

Name of supervisor

		Yes	No	N/A
1	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	X		
2	Will you tell participants that their participation is voluntary?	X		
3	Will you obtain written consent for participation (through a signed or 'ticked' consent form)?	X		
4	If the research is observational, will you ask participants for their consent to being observed?			X
5	Will you tell participants that they may withdraw from the research at any time and for any reason?	X		
6	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	X		
7	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	X		
8	Will you debrief participants at the end of their participation (i.e., give them a brief explanation of the study)?	X		

9	If your study involves people between 16 and 18 years, will you ensure that passive consent is obtained from parents/guardians, with active consent obtained from both the child and their school/organisation?				X
10	If your study involves people under 16 years, will you ensure that active consent is obtained from parents/guardians and that a parent/guardian or their nominee (such as a teacher) will be present throughout the data collection period?				X
11*	Does your study involve an external agency (e.g. for recruitment)?			X	
12	Is there any realistic risk of any participants experiencing either physical or psychological distress or discomfort?			X	
13	Does your project involve work with animals?			X	
14	Do you plan to give individual feedback to participants regarding their scores on any task or scale?			X	
15	Does your study examine any sensitive topics (such as, but not limited to, religion, sexuality, alcohol, crime, drugs, mental health, physical health)			X	
16	Is your study designed to change the mental state of participants in any negative way (such as inducing aggression, frustration, etc.)			X	
17	Will your project involve deliberately misleading participants in any way?			X	
18	Do participants fall into any of the following special groups?	People with learning or communication difficulties		X	
		Patients (either inpatient or outpatient)		X	
		People in custody		X	

If you have ticked **No** to any of questions 1 to 11, or **Yes** to any of questions 12 to 18 you should refer to the PSI Code of Professional Ethics and BPS Guidelines and consult with your supervisor without delay. You will need to fill in Ethical Approval Form B and submit it to the Department of Technology and Psychology Ethics Committee (DTPEC) in place of this form.

There is an obligation on the researcher to bring to the attention of the DTPEC any issues with ethical implications not clearly covered by the above checklist.

I consider that this project has **no** significant ethical implications to be brought before the DTPEC. I have read and understood the specific guidelines for completion

of Ethics Application Forms. I am familiar with the PSI Code of Professional Ethics and BPS Guidelines (and have discussed them with my supervisor).

Signed _____ Print Name Paula Hanly Date 1st May 2018

Applicant

I have discussed this project with my student, and I agree that it has no significant ethical implications to be brought before the DTPEC.

Signed _____ Print Name _____ Date _____

Supervisor

* If you are dealing with an external agency, you must submit a letter from that agency with the form A. The letter must provide contact details, and must show that they have agreed for you to carry out your research in their organization.

Appendix I

Descriptive Statistics Pre-Test SPSS

Statistics

		Age	Gender	Device pre test	Time of day pre test	Time of week pre test	Who watched with pre test
N	Valid	85	85	85	85	85	85
	Missing	0	0	0	0	0	0

Frequency Table

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	58	68.2	68.2	68.2
	25-44	9	10.6	10.6	78.8
	45-64	18	21.2	21.2	100.0
	Total	85	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	24	28.2	28.2	28.2
	Female	61	71.8	71.8	100.0
	Total	85	100.0	100.0	

Device pre test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Television	36	42.4	42.4	42.4
	Laptop	24	28.2	28.2	70.6
	Smartphone	14	16.5	16.5	87.1
	Tablet/iPad	9	10.6	10.6	97.6
	Other	2	2.4	2.4	100.0
	Total	85	100.0	100.0	

Time of day pre test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Morning	1	1.2	1.2	1.2
	Afternoon	15	17.6	17.6	18.8
	Evening	39	45.9	45.9	64.7
	Night	30	35.3	35.3	100.0
	Total	85	100.0	100.0	

Time of week pre test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weekday	32	37.6	37.6	37.6
	Weekend	20	23.5	23.5	61.2
	Both	33	38.8	38.8	100.0
	Total	85	100.0	100.0	

Who watched with pre test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Alone	61	71.8	71.8	71.8
	With another person	24	28.2	28.2	100.0
	Total	85	100.0	100.0	

Appendix J

Descriptive Statistics Post-Test SPSS

Statistics

		Age	Gender	Device post test	Time of day post test	Time of week post test	With who post test
N	Valid	51	51	50	51	51	51
	Missing	0	0	1	0	0	0

Frequency Table

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	29	56.9	56.9	56.9
	25-44	5	9.8	9.8	66.7
	45-64	17	33.3	33.3	100.0
	Total	51	100.0	100.0	

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	13	25.5	25.5	25.5
	Female	38	74.5	74.5	100.0
	Total	51	100.0	100.0	

Device post test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Television	21	41.2	42.0	42.0
	Laptop	12	23.5	24.0	66.0
	Smartphone	10	19.6	20.0	86.0
	Tablet/iPad	7	13.7	14.0	100.0
	Total	50	98.0	100.0	
Missing	9999	1	2.0		
Total		51	100.0		

Time of day post test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Afternoon	6	11.8	11.8	11.8
	Evening	27	52.9	52.9	64.7
	Night	18	35.3	35.3	100.0
	Total	51	100.0	100.0	

Time of week post test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Weekday	18	35.3	35.3	35.3
	Weekend	14	27.5	27.5	62.7
	Both	19	37.3	37.3	100.0
	Total	51	100.0	100.0	

With who post test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Alone	33	64.7	64.7	64.7
	With another person	18	35.3	35.3	100.0
	Total	51	100.0	100.0	

Appendix K

Hypothesis 1: Independent Samples T-Test

T-Test

Group Statistics

	Binge-watching group	N	Mean	Std. Deviation	Std. Error Mean
MAASPRETOT	Low	23	3.9217	.81616	.17018
	Medium	62	3.6043	.82102	.10427

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
MAASPRETOT	Equal variances assumed	.037	.849	1.586	83	.117	.31744	.20014	-.08062	.71550
	Equal variances not assumed			1.590	39.605	.120	.31744	.19958	-.08606	.72094

Appendix L

Hypothesis 2: SPSS Paired Samples T-Test

T-Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	MAAS Total Pre-test	3.6967	51	.83313	.11666
	MAAS Total Post-test	3.5778	51	.85309	.11946

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	MAAS Total Pre-test & MAAS Total Post-test	51	.770	.000

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	MAAS Total Pre-test - MAAS Total Post-test	.11895	.57199	.08009	-.04192	.27983	1.485	50	.144

Appendix M

Hypothesis 3: SPSS Wilcoxon Signed Ranks Test

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles 25th	50th (Median)	75th
Number of times binge-watched that show during the past week (Pre-Test)	51	2.24	1.394	0	6	1.00	2.00	3.00
Number of times binge-watched that show during the past week (Post-Test)	51	1.80	2.164	0	10	1.00	1.00	2.00

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
Number of times binge-watched that show during the past week (Pre-Test)	Negative Ranks	25[a]	17.08	427.00
	Positive Ranks	9[b]	18.67	168.00
	Ties	17[c]		
	Total	51		

a. Number of times binge-watched that show during the past week (Post-Test) < Number of times binge-watched that show during the past week (Pre-Test)

b. Number of times binge-watched that show during the past week (Post-Test) > Number of times binge-watched that show during the past week (Pre-Test)

c. Number of times binge-watched that show during the past week (Post-Test) = Number of times binge-watched that show during the past week (Pre-Test)

Test Statistics[a]

	Number of times binge-watched that show during the past week (Post-Test) - Number of times binge-watched that show during the past week (Pre-Test)
Z	-2.258[b]
Asymp. Sig. (2-tailed)	.024

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

Appendix N

Hypothesis 4: SPSS Wilcoxon Signed Ranks Test

NPar Tests

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum	Percentiles 25th	50th (Median)	75th
Actual number episodes pre-test	51	3.20	1.662	1	12	2.00	3.00	4.00
Actual number shows post-test	51	2.53	1.461	0	7	2.00	3.00	3.00

Wilcoxon Signed Ranks Test

Ranks

		N	Mean Rank	Sum of Ranks
Actual number shows post-test - Actual number episodes pre-test	Negative Ranks	24[a]	19.83	476.00
	Positive Ranks	12[b]	15.83	190.00
	Ties	15[c]		
	Total	51		

a. Actual number shows post-test < Actual number episodes pre-test
b. Actual number shows post-test > Actual number episodes pre-test
c. Actual number shows post-test = Actual number episodes pre-test

Test Statistics[a]

	Actual number shows post-test - Actual number episodes pre-test
Z	-2.292[b]
Asymp. Sig. (2-tailed)	.022

a. Wilcoxon Signed Ranks Test
b. Based on positive ranks.

Appendix O

Descriptive Statistics: Most Watched Shows SPSS

Most watched show pre-test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Altered Carbon	1	1.2	1.2	1.2
	Assassination Gianni Versace	3	3.5	3.5	4.7
	Atypical	1	1.2	1.2	5.9
	Baby	1	1.2	1.2	7.1
	Big mouth	2	2.4	2.4	9.4
	Big school	1	1.2	1.2	10.6
	Breaking bad	1	1.2	1.2	11.8
	Brooklyn nine-nine	6	7.1	7.1	18.8
	Chef's table	1	1.2	1.2	20.0
	Dirty John	8	9.4	9.4	29.4
	Forensic files	1	1.2	1.2	30.6
	Friday night dinner	1	1.2	1.2	31.8
	Friends	5	5.9	5.9	37.6
	Friends from college	1	1.2	1.2	38.8
	Full house	1	1.2	1.2	40.0
	Gilmore girls	1	1.2	1.2	41.2
	Hardy Bucks	1	1.2	1.2	42.4
	Hitler's circle of evil	1	1.2	1.2	43.5
	How I met my mother	1	1.2	1.2	44.7
	It's always sunny in Philadelphia	1	1.2	1.2	45.9
	iZombie	1	1.2	1.2	47.1
	Jane the virgin	2	2.4	2.4	49.4
	London spy	1	1.2	1.2	50.6
	Luther	3	3.5	3.5	54.1
	Man hunt: the unabomber	1	1.2	1.2	55.3
	One day at a time	2	2.4	2.4	57.6
	Peeky blinders	3	3.5	3.5	61.2
	Peep show	1	1.2	1.2	62.4
	Power	1	1.2	1.2	63.5
	Prison break	1	1.2	1.2	64.7
	QB1	1	1.2	1.2	65.9

	Rick and Morty	1	1.2	1.2	67.1
	Riverdale	1	1.2	1.2	68.2
	Ru Paul's drag race	3	3.5	3.5	71.8
	Secret city	1	1.2	1.2	72.9
	Sex education	4	4.7	4.7	77.6
	Shark tank	1	1.2	1.2	78.8
	Sopranos	1	1.2	1.2	80.0
	Suburra	1	1.2	1.2	81.2
	Ted Bundy's confession tapes	1	1.2	1.2	82.4
	That 70's show	1	1.2	1.2	83.5
	The Crown	1	1.2	1.2	84.7
	The Dragon Prince	1	1.2	1.2	85.9
	The good place	3	3.5	3.5	89.4
	The great interior design challenge	1	1.2	1.2	90.6
	The umbrella academy	6	7.1	7.1	97.6
	Three girls	1	1.2	1.2	98.8
	Young offenders	1	1.2	1.2	100.0
	Total	85	100.0	100.0	

Most watched show post-test

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Big mouth	1	2.0	2.1	2.1
	Brooklyn nine-nine	3	5.9	6.3	8.3
	Dirty John	2	3.9	4.2	12.5
	Forensic files	1	2.0	2.1	14.6
	Full house	1	2.0	2.1	16.7
	20	1	2.0	2.1	18.8
	Luther	1	2.0	2.1	20.8
	Peeky blinders	2	3.9	4.2	25.0
	Power	1	2.0	2.1	27.1
	QB1	1	2.0	2.1	29.2
	Riverdale	1	2.0	2.1	31.3
	Secret city	1	2.0	2.1	33.3
	Stranger things	1	2.0	2.1	35.4

	Suburra	1	2.0	2.1	37.5
	The umbrella academy	3	5.9	6.3	43.8
	Workin' Moms	1	2.0	2.1	45.8
	Afterlife	3	5.9	6.3	52.1
	Shadow Hunters	1	2.0	2.1	54.2
	You	3	5.9	6.3	60.4
	Schitts Creek	1	2.0	2.1	62.5
	Dark tourist	1	2.0	2.1	64.6
	Can't cope won't cope	1	2.0	2.1	66.7
	White collar	1	2.0	2.1	68.8
	Ozark	1	2.0	2.1	70.8
	Drive to survive	1	2.0	2.1	72.9
	On my block	1	2.0	2.1	75.0
	Call the midwife	1	2.0	2.1	77.1
	World war in colour	1	2.0	2.1	79.2
	Queer eye	1	2.0	2.1	81.3
	Locked up	1	2.0	2.1	83.3
	The Disappearance of Madeline McCann	7	13.7	14.6	97.9
	Young offenders	1	2.0	2.1	100.0
	Total	48	94.1	100.0	
Missing	9999	3	5.9		
Total		51	100.0		

Appendix P

Tests for Normality

Test for Normality Hypotheses 1

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
MAASPRETOT	.047	85	.200*	.986	85	.511

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Test for Normality Hypotheses 2

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
MAAS Total Pre-test	.103	51	.200*	.976	51	.388
MAAS Total Post-test	.093	51	.200*	.975	51	.357

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Test for Normality Hypothesis 3

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Number of times binge-watched that show during the past week (Pre-Test)	.178	51	.000	.921	51	.002
Number of times binge-watched that show during the past week (Post-Test)	.300	51	.000	.691	51	.000

a. Lilliefors Significance Correction

Test for Normality Hypothesis 4

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Actual number episodes pre-test	.272	51	.000	.705	51	.000
Actual number shows post-test	.193	51	.000	.924	51	.003

a. Lilliefors Significance Correction