



Is binge-watching addictive? Effects of motives for TV series use on the relationship between excessive media consumption and problematic viewing habits

Alexander Ort^{a,*}, D.S. Wirz^b, A. Fahr^b

^a Department of Public Health and Medicine, Universität Luzern, Luzern, Switzerland

^b Department of Communication and Media Research, University of Fribourg, Fribourg, Switzerland

ARTICLE INFO

Keywords:

Binge-watching
Problematic viewing behavior
Addiction
Motives
TV series use

ABSTRACT

This study investigates the circumstances under which binge-watching can become a problematic behavior. Applying a user-centered perspective, it demonstrates how different motivations to engage in high-dosage TV series consumption influence the occurrence of problematic viewing habits. A quantitative online survey of $N = 415$ media users with access to at least one streaming service was conducted. The questionnaire assessed current viewing habits, motivations to watch series, and indicators of problematic viewing habits. The results suggest that frequency of use, motives to engage in high dosage viewing sessions, as well as the combined effect of these two factors help to explain problematic viewing behaviors. Moreover, the results give cause to refrain from a generalizing problematization of binge-watching.

1. Introduction

The excessive use of audiovisual content, such as TV series or movies, is not a new phenomenon (Jenner, 2016; Pittman & Sheehan, 2015). Nevertheless, it has substantially gained relevance within the last couple of years, as the popularity and consumption of TV series has reached unprecedented levels (GfK, 2016). One of the driving forces behind this trend is that streaming platforms, such as *Netflix*, *Amazon Prime*, and *Hulu*, offer their subscribers unlimited access to an exponentially increasing number of serialized programs (Reelgood, 2019) at an affordable rate¹. The result is that streaming providers report continuous and rapid growth. Subscription video-on-demand services have seen an increase of almost 300% on a global level from 2015 (US\$ 171 million) to 2018 (US\$ 508 million) and predictions expect a continuous growth up to almost one billion subscribers by 2024 (Digital TV Research, 2019). From a user perspective, such video-on-demand services are popular because they increase choice and personal autonomy, as they allow to watch any quantity of content whenever and wherever they like (Granow, Reinecke, & Ziegele, 2018). The combination of cheap and effortless accessibility to a sheer unlimited amount of content as well as the possibility to not only consume series at home but also on mobile devices while commuting to work or traveling are likely to facilitate,

encourage, or even trigger excessive consumption behaviors. This high-dosage use of series content is frequently referred to as *binge-watching* and has sparked increasing academic interest over the last couple of years (for an overview see, for example: Merikivi, Bragge, Scornavacca, & Verhagen, 2019).

Regardless of the rapidly growing number of studies investigating the predictors and consequences of this behavior, a clear definition of what exactly constitutes binge-watching is still under discussion. The Oxford Dictionary simply defines binge-watching as viewing “multiple episodes of (a television program) in rapid succession” (Oxford English Dictionary, 2020). While some studies follow this rather vague definition (e.g., Exelmans & Van den Bulck, 2017; Schweidel & Moe, 2016), other sources define specific cut-off points to allow a differentiation between “regular” series use and binge-watching. Even though Netflix (Broadband Technology Report, 2013) as well as some other researchers (e.g., Castro, Rigby, Cabral, & Nisi, 2019; Pittman & Sheehan, 2015) conclude that binge-watching begins when people watch two or more episodes of the same series in one sitting, the most frequent perspective is to define binge-watching from the third consecutive episode onwards (e.g., de Feijter, Khan, & van Gisbergen, 2016; Erickson, Dal Cin, & Byl, 2019; Riddle, Peebles, Davis, Xu, & Schroeder, 2018; Tukachinsky & Eyal, 2018; Walton-Pattison, Dombrowski, & Pesseau, 2018).

* Corresponding author at: Frohburgstrasse 3, Postfach 4466, CH-6002 Luzern, Switzerland.

E-mail address: alexander.ort@unilu.ch (A. Ort).

¹ Between US\$ 5 and US\$ 16 for entertainment-based content (Los Angeles Times, 2019)

<https://doi.org/10.1016/j.abrep.2020.100325>

Received 23 June 2020; Received in revised form 21 October 2020; Accepted 9 December 2020

Available online 13 December 2020

2352-8532/© 2020 The Authors.

Published by Elsevier Ltd.

This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Such episode-centered definitions have been criticized to ignore other important aspects, such as the autonomy of users (Merikivi et al., 2019, p. 7) or the total amount of viewing time (Glebatis Perks, 2015; Petersen, 2016) which, in turn, is strongly influenced by the length of episodes (Sung, Kang, & Lee, 2018). While we acknowledge these shortcomings and the urgent need for a concise definition to further the understanding of the phenomenon, this research is based on the widespread approach to consider binge-watching as a continuous and high-dosage media consumption (Conlin & Tefertiller, 2016) where individuals watch multiple episodes of the same series in one sitting (Merikivi, Bragge, Scornavacca, & Verhagen, 2019). Following the most common perspective, we set the cut-off point at three or more episodes of the same series in one sitting.

As with other forms of excessive media consumption, such as playing video games (Hartmann et al., 2019), mobile phone use (Karsay, Schmuck, Matthes, & Stevic, 2019), or Internet use (Weinstein & Lejoyeux, 2010), negative social, mental, and physical detriments are under repeated discussion. Potential negative consequences involve being anxious about social isolation due to an increased amount of time that is spent watching series alone (Vaterlaus, Spruance, Frantz, & Kruger, 2019). Research by de Feijter, Khan, and van Gisbergen (2016) points to health issues arising or being promoted by an increasingly sedentary lifestyle, i.e., lack of movement and exercise. Besides, binge-watching can reduce sleep quality (Exelmans & Van den Bulck, 2017), which eventually affects physical as well as mental health. Moreover, a study with college students found that they report to regularly watch longer than intended and that series consumption is a form of procrastinating. This lack of control and the substitution of otherwise important tasks eventually can affect school performance (Rubenking, Bracken, Sandoval, & Rister, 2018).

On a related note, studies repeatedly found that people report not being able to reduce the time they spend watching, even though they tried (de Feijter et al., 2016; Devasagayam, 2014; Flayelle, Maurage, & Billieux, 2017). Other studies support this assessment and document a positive relationship between the strength of individuals' involvement in binge-watching and self-control deficits (Hasan, Jha, & Liu, 2018; Sung et al., 2018; Tukachinsky & Eyal, 2018), impulsivity (Flayelle et al., 2019; Riddle, Peebles, Davis, Xu, & Schroeder, 2018) as well as a self-reported susceptibility towards immediate gratifications (Shim, Lim, Jung, & Shin, 2018).

Given that binge-watching is characterized by some sort of excessive type of behavior and has been linked to impaired control, some researchers even consider it as an addiction (Orosz, Bóthe, & Tóth-Király, 2016; Panda & Pandey, 2017; Riddle et al., 2018; Shim & Kim, 2018; Shim et al., 2018; Starosta, Izydorczyk, & Lizińczyk, 2019). A common definition of addictive behavior involves "[...] continued engagement in self-destructive behavior despite adverse consequences" (Holden, 2001, p. 980). Since outcomes of media use are diverse and often positive, a high duration or frequency of watching TV series is not a sufficient indicator for problematic use (Sussman & Moran, 2013). Rather, researchers recommend considering the motivations for watching as an additional indicator of media dependency. For example, when individuals perceive extensive use as the only means to reduce stress or to feel socially connected, they may continue to excessively watch series even when negative consequences occur. Depending on the underlying motivations, binge-watching may, thus, be considered as an addictive behavior for some, but certainly not for all individuals.

Viewers' motives to engage in binge-watching have widely been researched, mostly following a uses and gratifications approach (Katz, Blumler, & Gurevitch, 1973; Rubin, 1983): For example, Castro, Rigby, Cabral, and Nisi (2019) found that people mostly engaged in binge-watching sessions for reasons of relaxation (see also: Steiner & Xu, 2018), relieve of boredom, and escapism. Pittman and Sheehan (2015) linked binge-watching behavior with factors such as relaxation, engagement, and hedonism. Rubenking and Bracken (2018), as well as Shim and Kim (2018), found binge-watching to be driven by a desire for

emotion regulation and by seeking out suspense (see also: Shim & Kim, 2018). Flayelle et al. (2019) also linked binge-watching to motives of emotional enhancement, escapism, and social interaction.

Since all of these motives explain entertainment media use in general, the question arises which (combination) of these are relevant factors that may contribute to promoting or attenuating problematic TV series use. A step in this direction was taken by Sung et al. (2018), who split their sample into two groups based on the number of episodes watched, as well as the duration and frequency of sittings. The group of light binge viewers mainly reported entertainment as a motivation, while the group of heavy binge viewers also indicated their motivation to consume series to pass the time. These results suggest that comparing motives between different types of series use helps to distinguish between problematic and worry-free use. It remains, however, still an open question how motives to engage in binge-watching are related to the problematic nature of this behavior. This study aims to fill this gap by investigating the addictive potential of binge-watching from by asking:

Do different motives to engage in binge-watching foster problematic (addictive) viewing habits?

2. Method

2.1. Design and procedure

The current study employs a quantitative online survey to address the research question. Participants were recruited between 8th and 12th October 2018 using *Amazon MTurk*. To be eligible to be included in the analysis, participants were required to have access to a streaming service for series (e.g., Amazon Prime, Netflix, Hulu) and to have previous binge-watching experience². The final sample consisted of $N = 415$ adult US-citizens aged between 19 and 86 years ($M = 37.60$, $SD = 12.37$; 55% female)³.

2.2. Measures

The questionnaire was designed to quantify individuals' series consumption (frequency of binge-watching sessions). Moreover, motives and indicators for problematic use were assessed. The following section will describe the applied measures.

2.2.1. Frequency of binge-watching

In order to assess how often participants engage in binge-watching (i.e., watching more than two episodes of the same program in one sitting), they were asked to provide information about the frequency of such sittings, i.e.: "How often do you normally watch more than two consecutive episodes of the same TV series in one sitting?" (single-item, 1 = "less than once a month", 6 = "daily"; $M = 4.14$; $SD = 1.50$).

2.2.2. Motives for watching TV series

In order to determine users' general motives to watch series, a scale based on Rubin's (1983) measure for gratification expectations was

² We used the widely applied criterion to categorize series use as binge-watching starting from the third consecutively watched episode (e.g., de Feijter et al., 2016; Erickson, Dal Cin, & Byl, 2019; Riddle et al., 2018; Tukachinsky & Eyal, 2018; Walton-Pattison, Dombrowski, & Proulx, 2018) and asked, if participants have ever watched more than two episodes of the same series in one sitting. Only few participants ($N = 17$) indicated having no experience with binge-watching sessions at all and were excluded from the final sample.

³ Altogether, 512 people completed the questionnaire. However, for reasons of data quality, participants that took less than eight and more than 40 min to complete the survey were excluded from the final sample. Also, cases with more than 10% of missing values and peculiarities in response patterns were deleted.

deployed. The scale assesses motives of relaxation ($M = 3.98, SD = 0.75, \alpha = 0.68$), escapism ($M = 3.06, SD = 1.04, \alpha = 0.68$), companionship ($M = 2.72, SD = 1.23, \alpha = 0.84$), pastime ($M = 3.55, SD = 1.01, \alpha = 0.79$), entertainment ($M = 4.23, SD = 0.71, \alpha = 0.74$), social interaction ($M = 2.67, SD = 1.08, \alpha = 0.74$), learning ($M = 2.72, SD = 1.16, \alpha = 0.84$), and stimulation ($M = 3.41, SD = 0.90, \alpha = 0.69$) each with 3-items (5-point Likert-type scale; 1 = “not at all”, 5 = “exactly”).

2.2.3. Indicators for the prevalence of problematic viewing habits

As gambling is the only addictive behavioral disorder that has been officially recognized until now, the DSM-5® scale for gambling disorders (American Psychiatric Association, 2013) was adapted to assess participants’ prevalence of problematic viewing habits. Subdimensions (5-point Likert-type scale; 1 = “never”, 5 = “always”) included impaired control (seven items; e.g., “I end up watching more episodes in one sitting than I had intended to”; $M = 2.49, SD = 0.93, \alpha = 0.95$), social impairment (six items; e.g., “I have postponed or canceled plans with family or friends because of my urge to watch a TV series”; $M = 2.04, SD = 1.07, \alpha = 0.97$). Thereby this study follows previous findings, that have linked problematic viewing behavior to a lack of control (Flayelle, Verbruggen, Schiel, Vögele, Maurage, & Billieux, 2020; Rubenking, Bracken, Sandoval, & Rister, 2018) and negative social consequences (Waterlaus, Spruance, Frantz, & Kruger, 2019). As problematic use potentially involves the consumption of an uncontrolled amount of series content, risky use (three items; e.g., “As time goes by, I feel I need to watch more and more episodes in a row to feel satisfied”; $M = 2.29, SD = 1.10, \alpha = 0.88$), adapted from the DSM-5® scale for binge-eating disorders (American Psychiatric Association, 2013), was included as an additional dimension. The overall score, indicating the sample’s prevalence of problematic viewing habits ranked below the scale mean ($M = 2.34, SD = 0.96, \alpha = 0.98$).

2.6. Data analysis

Moderation analyses using the PROCESS macro for SPSS, V3.1 (Hayes, 2018) were conducted to investigate the influence of different motives for series use on participants’ prevalence to develop problematic viewing habits. In the analyses (Model 1; 5000 bootstrapping samples, 95% confidence intervals, using HC3 correction for standard errors and mean-centering variables for products) the frequency of binge-watching sittings was entered as the independent variable and the index of participants’ prevalence of problematic viewing habits served as the dependent variable. Motives to watch series were included as moderators in separate moderation analyses for every motive, while at the same time controlling for all other motives (introduced as covariates). The results, thus, not only include the direct effect of binge-watching frequency on the prevalence of problematic viewing habits and the moderating effect of eight different motives, but also the direct and independent effects of those motives on the tendency to develop

problematic viewing habits (see Fig. 1).

3. Results

Overall, all eight models explain a highly significant and substantial share of variance in scores indicating the prevalence for problematic viewing habits between participants ($0.51 < R^2 < 0.63, p < .001$; see Table 1). Throughout all moderation analyses, binge-watching frequency predicts such a habits ($0.09 < b < 0.11, p < .01$). Hence, the more often individuals engage in binge-watching, the more likely they are to indicate problems resulting from this consumption behavior. Binge-watching frequency is, therefore, a reliable predictor for the prevalence of problematic use.

The relationship between motives for use and indications for problematic use turns out to be even more pronounced. Motives for binge-watching generally seem to be more important to predict problematic viewing habits than the mere frequency of binge-sittings. The following description summarizes findings for the relationship between motives and problematic viewing habits as well as the interaction of frequency of binge-sittings with motives on this measure.

The direct negative relationships of entertainment ($b = -0.20, p < .001$) and relaxation ($b = -0.08, p = .075$) on problematic viewing habits indicate that such recreational motives even reduce the prevalence of developing problematic behavior, although the effect of relaxation slightly misses significance; the relationship of pastime as another recreational motive did not reach significance ($b = -0.03, p = .57$). These motives did not interact with the frequency of binge-watching sessions; thus, they neither promote nor attenuate the positive relationship between frequency of use and signs for problematic viewing. All other

Table 1
Direct and Moderating Effects of Motives of Series-Use on Participants Prevalence of Problematic Viewing Habits.

	$b (X \rightarrow Y)$	$b (W \rightarrow Y)$	$B (X*W \rightarrow Y)$	R^2	ΔR^2
Escapism	0.10***	0.15***	0.04*	0.59***	0.004
Loneliness	0.10***	0.18***	.03 ^a	0.59***	.004 ^a
Stimulation	0.10***	0.11**	.04 ^b	0.59***	.003 ^b
Social Interaction	0.11***	0.22***	0.07***	0.60***	0.01***
Learning	0.10***	0.15***	0.06**	0.59***	0.01**
Pastime	0.09***	-0.03	0.03	0.59***	0.002
Relaxation	0.09***	-.08 ^c	0.01	0.58***	0.000
Entertainment	0.09***	-0.20***	-0.01	0.59***	0.000

Note. b = unstandardized regression weights; X = binge-watching frequency; Y = problematic viewing habit score; W = moderators (motives of series use); R^2 = variance explained by the model; ΔR^2 = additional variance explained by the interaction between X and W .

* $p < .05$, ** $p < .01$, *** $p < .001$; ^a $p = .077$, ^b $p = .083$, ^c $p = .075$

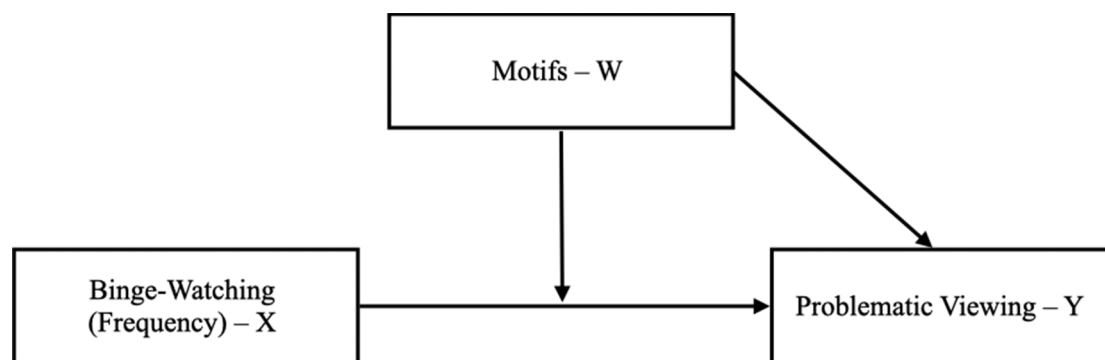


Fig. 1. Model for the moderation effect of motives to engage in binge-watching (W ; i.e.: escapism, loneliness, stimulation, social interaction, learning, pastime, relaxation, entertainment) on the relationship between frequency of binge-sittings (X) and the prevalence to develop a problematic viewing behavior (Y).

investigated motives show a positive direct effect on participants problematic viewing score ($0.11 < b < 0.22, p < 0.01$) as well as a positive interaction with binge-watching frequency ($0.03 > b > 0.07$, all p 's < 0.05 —except for loneliness [$p = .077$] and stimulation [$p = .083$]). Binge-watching for any other than recreational reasons thus promotes problematic viewing, and the more often individuals engage in this behavior, the stronger these habits become. Out of all motives, the urge for social interaction and learning emerge as the largest drivers for problematic viewing behaviors, as they have the strongest impact (considering the sum of the direct and indirect effect).

Additional analyses for the subdimensions of problematic viewing (i. e., impaired control, social impairment, and risky use) offer a more detailed insight into their specific roles in fostering those problematic behaviors (see appendix: Tables 2–4). The explained variance of the models for the sample under investigation differs depending on the subdimension of problematic viewing habits. While risky use ($0.51 < R^2 < 0.52, p$'s < 0.001) and impaired control ($0.56 < R^2 < 0.57, p$'s < 0.001) explain less variance in the sample than the model for problematic viewing in general, the model for social impairment has more explanatory power ($0.61 < R^2 < 0.63, p$'s < 0.001). Thus, compared to the other subdimensions, binge-watching frequency and motives provide the most explanatory power for differences in social impairment. Nonetheless, the overall effect of binge-watching frequency on the indicators for problematic viewing behavior is significant for all three subdimensions. The same applies for the pattern of motives and their interaction effects with the regularity of binge-sessions; social impairment is more strongly affected than impaired control and risky use.

4. Discussion

Since binge-watching has become a widespread phenomenon, there is an ongoing debate about its potential risk for people engaging in this behavior. One reason for the negative connotation is that the term “binge” implies a connection with other disorders, such as binge-eating (American Psychiatric Association, 2013), binge-drinking (Wechsler et al., 2002), or otherwise hazardous and problematic behaviors. Additionally, research on the effects of binge-watching points to the negative consequences of excessive TV series use in terms of sleep and well-being (Exelmans & Van den Bulck, 2017; Orosz et al., 2016; Panda & Pandey, 2017; Riddle et al., 2018; Shim & Kim, 2018; Shim et al., 2018; Starosta et al., 2019). In this sense, the discussion about the deteriorating effects binge-watching joins the line of discussion about other excessive usage behaviors, such as playing video games (Hartmann et al., 2019), mobile phone use (Karsay et al., 2019), or internet use (Weinstein & Lejoyeux, 2010). To gain a better understanding about the role of different motives and their potential to predict problematic viewing habits beyond the mere occurrence of binge-sitting, this study investigated the effect of (1) the frequency of high-dosage consumption and (2) the motives that drive this behavior on problematic viewing habits. Our data supports the notion that there is indeed a relationship between binge-watching frequency and tendencies to develop problematic viewing habits. This substantiates findings from previous research exploring these relationships (Riddle et al., 2018). However, even though it is obvious to assume that the heavy use of a product or substance might promote the development of problematic (excessive) habits, it is important to acknowledge the reciprocal relationships between both factors (Dockner & Feichtinger, 1993). Moreover, Riddle et al. (2018) also elaborate and investigate that the frequency to engage in binge-watching is partly driven by other factors, such as impulsivity, which in turn is more likely to occur in people with low inhibitory control. Therefore, future research should further investigate the

Table 2

Direct and Moderating Effects of Motives of Series-Use on Participants Prevalence of Problematic Viewing Habits (Impaired Control).

	$b (X \rightarrow Y)$	$b (W \rightarrow Y)$	$B (X*W \rightarrow Y)$	R^2	ΔR^2
Escapism	0.10***	0.12**	0.04*	0.56***	0.004*
Loneliness	0.10***	0.17***	0.02	0.56***	0.001
Stimulation	0.09***	0.11***	0.03**	0.56***	0.001
Social	0.10***	0.20***	0.06**	0.57***	0.01**
Interaction					
Learning	0.10***	0.17***	0.05**	0.57***	0.007**
Pastime	0.09***	-0.01	0.02	0.56***	0.001
Relaxation	0.09***	-0.08	0.01	0.56***	0.000
Entertainment	0.09***	-0.16**	-0.01	0.56***	0.000

Note. b = unstandardized regression weights; X = binge-watching frequency; Y = problematic viewing habit score; W = moderators (motives of series use); R^2 = variance explained by the model; ΔR^2 = additional variance explained by the interaction between X and W .

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 3

Direct and Moderating Effects of Motives of Series-Use on Participants Prevalence of Problematic Viewing Habits (Social Impairment).

	$b (X \rightarrow Y)$	$b (W \rightarrow Y)$	$B (X*W \rightarrow Y)$	R^2	ΔR^2
Escapism	0.10***	0.20***	0.05***	0.62***	0.005*
Loneliness	0.11***	0.19***	0.05**	0.62***	0.008**
Stimulation	0.10***	0.08*	0.06*	0.62***	0.006*
Social	0.11***	0.27***	0.08***	0.63***	0.02***
Interaction					
Learning	0.11***	0.17***	0.07**	0.62***	0.01**
Pastime	0.10***	-0.07	0.05*	0.62***	0.005*
Relaxation	0.09***	-0.12*	-0.00	0.61***	0.000
Entertainment	0.09***	-0.31***	-0.02	0.61***	0.000

Note. b = unstandardized regression weights; X = binge-watching frequency; Y = problematic viewing habit score; W = moderators (motives of series use); R^2 = variance explained by the model; ΔR^2 = additional variance explained by the interaction between X and W .

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4

Direct and Moderating Effects of Motives of Series-Use on Participants Prevalence of Problematic Viewing Habits (Risky Use).

	$b (X \rightarrow Y)$	$b (W \rightarrow Y)$	$B (X*W \rightarrow Y)$	R^2	ΔR^2
Escapism	0.09***	0.18**	0.03***	0.51***	0.002
Loneliness	0.10***	0.21***	0.04	0.52***	0.003
Stimulation	0.09***	0.16**	.05 ^a	0.52***	.005 ^a
Social	0.10***	0.21***	0.07**	0.52***	0.009**
Interaction					
Learning	0.10***	0.14**	0.05*	0.52***	0.006*
Pastime	0.09***	-0.02	0.01	0.51***	0.000
Relaxation	0.09***	-0.09	0.02	0.51***	0.000
Entertainment	0.09***	-0.21**	-0.03	0.51***	0.001

Note. b = unstandardized regression weights; X = binge-watching frequency; Y = problematic viewing habit score; W = moderators (motives of series use); R^2 = variance explained by the model; ΔR^2 = additional variance explained by the interaction between X and W .

* $p < .05$, ** $p < .01$, *** $p < .001$, ^a $p = .067$

underlying relationships between personality traits and binge-watching (frequency, motivations, and gratifications), as well as their role for problematic viewing behaviors. A step in this direction is provided by our finding that even though frequency plays a role, motives to engage in high-dosage TV series use are comparable (or even larger) explanatory factors for individuals' development of problematic habits.

A first important finding of this study is that certain motives can facilitate the development of problematic viewing habits. The emerging pattern aligns with the continuum between recreational, risky, and addictive behaviors. While recreational motives such as entertainment and relaxation even reduce indicators for detrimental habits, motives that could be interpreted as riskier are positively related to problematic usage behavior. In particular, people watching series for motives of escapism, loneliness, stimulation, social interaction, and learning also report stronger tendencies for problematic viewing behaviors. Another important finding is that only those latter motives significantly interact with the frequency of binge viewing sessions. Thus, while relaxation and entertainment seem to be unproblematic and rather recreational motives regardless of binge-watching frequency, the negative impact of all other (more risky) motives increases with the frequency of use.

The nature of motives identified as proliferating problematic viewing behavior is different as not all of them would intuitively be linked to problematic media use, such as learning and social interaction. However, although TV series use provides an effortless and inspiring way of learning things about life, successfully obtaining a gratification through this behavior has been found to contribute to its addictiveness (Sussman & Moran, 2013). Concerning social interaction, socialization motives and group dynamics have previously been linked to other excessive behaviors (e.g.: Kuntsche & Kuntsche, 2009; McGrath, Stewart, Klein, & Barrett, 2010). In this sense, perceived pressure to be up to date regarding important series content in one's social group could be a potential driver. Relatedly, fear of missing out (FOMO, i.e., an apprehension associated with the fear that other people are having a pleasurable experience that one is not a part of) could also be an explanation for engaging in excessive viewing behavior, as it boosts the pace of media consumption (Conlin, Billings, & Averset, 2016). Further, binge-watching can also serve as highly suitable compensation for social interaction. A recent study by Hofer and Eden (2020) indeed demonstrates that motives have differential effects depending on whether media use is a selective or a compensatory activity. We, thus, assume that the less functional equivalents are available to provide a given gratification, the higher the problematic potential of binge-watching. However, it is reasonable to assume that a well-functioning social environment may at the same time act as a buffer (or controlling function) and reduce the tendency to develop problematic viewing behaviors. This calls for more research.

Another important finding relates to the level of the observed measure for problematic use in this study. Participants' scores on the adapted DSM-5 scale were rather low in general ($M = 2.37$, $SD = 0.96$; 5-point Likert type scale). Out of $N = 415$ participants, $n = 300$ scored below the midpoint of the scale, and $n = 115$ scored above. Out of the latter, only $n = 30$ individuals ranked higher than four. These numbers suggest that binge-watching should not generally be considered as problematic behavior—at least if it only happens from time to time. This notion is further supported by our finding that motives like entertainment and relaxation even show a negative relationship with the scores for problematic use. Based on that, we would advocate considering binge-watching as a recreational activity that can become problematic under the mentioned specific circumstances, but is not problematic per se. In accordance with this, Flayelle et al. (2020) did not find differences between pre-defined non-problematic and problematic binge-watchers regarding self-control, suggesting that occasionally losing control over the number of episodes watched in one sitting is not a gateway to addiction. We can thus only emphasize the call to rethink conceptualizations of problematic series use or labelling binge-watching as an addiction per se (Flayelle et al., 2020). Consequently, research needs to

further focus on heavy binge-watchers to find out if there is such a thing as an addiction to binge-watch TV series and to explain the circumstances that promote or lead to the development of such habits.

There are limitations of the present study that need to be addressed. First, the choice to use self-reports as a measure for participants' past viewing behavior could potentially affect the reliability of data due to issues of social desirability or poor memory. Even though this research only investigated participants that already reported to engage in binge-watching, thereby decreasing the chance for skewed answers, an observational study acquiring objective usage data might prove more reliable results. On a related note, this study gives insight about the impact of different intensities of binge-watching on the risk to develop problematic viewing habits. However, people who never binge-watch were not included in the study. Therefore, we cannot be certain, if those people are significantly less at risk to develop problematic viewing habits than those who do tend to frequently watch more than two episodes in a row.

As there are complex relationships underlying binge-watching, future studies should account for additional triggers that potentially influence viewing habits, for instance, situational, psychological, social, or demographic factors. Moreover, the applied measure for problematic viewing habits was adapted from existing scales for acknowledged addictive behaviors, i.e., gambling and binge-eating. As excessive series use or binge-watching is not categorized as an addiction, future studies should try to verify the applicability of this adapted scale. Future research could apply longitudinal designs to investigate if addiction symptoms further promote the frequency with which people engage in binge-sessions, and if gratifications obtained from this behavior, in turn, predict motives and use.

Furthermore, this research applied a cross-sectional design to investigate the relationship between binge-watching, motifs to watch series, and indicators for problematic viewing habits. However, even though the model investigated in this study was theoretically and empirically based on existing findings, the question of causality and mutual dependency prevails. Even though there is a general lack of longitudinal studies in the field of behavioral addictions, research on mobile phone addiction (Jun 2016; Kang et al., 2020; Liu et al., 2019; Zhang, Yang, Tu, Ding, & Lau, 2020) and internet addiction (Ko, Yen, Chen, Yeh, & Yen, 2009; Lam & Peng, 2010; Lin, Hsiao, Liu, & Yen, 2020; Strittmatter et al., 2016) already found proof for bidirectional associations. Thus, future research should try to overcome this limitation and apply longitudinal designs to investigate if addiction symptoms further promote the frequency with which people engage in binge-sessions, and if gratifications obtained from this behavior, in turn, predict motives and use.

5. Conclusion

The present study found that binge-watching of TV series is, overall, only related to low levels of problematic usage. Although problematic behavior increases with the frequency of binge-sessions, the results of this study suggest that even regular binge-watching cannot be characterized as a problematic behavior or even an addiction. Bingeing TV series for reasons of entertainment or relaxation was even negatively related to indicators for problematic viewing. Since motives like escapism, loneliness, stimulation, social interaction, and learning proliferate problematic viewing to an even greater extent than the frequency of binge-sessions, accounting for individuals' motivations to binge-watch is crucial to understand its' addictive potential.

CRedit authorship contribution statement

Alexander Ort: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Writing - original draft, Writing - review & editing, Visualization. **D.S. Wirz:** Conceptualization, Methodology, Formal analysis, Writing - review & editing. **A. Fahr:** Conceptualization,

Writing - review & editing, Supervision.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgment

Swiss National Science Foundation, Grant number: 10DL16_183181.

Appendix

(See Tables 2–4)

References

- American Psychiatric Association. (2013). *DSM-5 (diagnostic and statistical manual of mental disorders)* (5. ed.). Washington, DC: American Psychiatric Association.
- Broadband Technology Report. (2013). Binge-watching is the new normal. Retrieved from <https://www.broadbandtechreport.com/video/streaming-video/article/16439978/netflix-binge-watching-is-the-new-normal>.
- Castro, D., Rigby, J. M., Cabral, D., & Nisi, V. (2019). The binge-watcher's journey: Investigating motivations, contexts, and affective states surrounding Netflix viewing. *Convergence*, 1–18. <https://doi.org/10.1177/1354856519890856>.
- Conlin, L., Billings, A. C., & Averset, L. (2016). Time-shifting vs. appointment viewing: The role of fear of missing out within TV consumption behaviors. *Communication & Society*, 29(4), 151–164.
- Conlin, L., & Tefertiller, A. C. (2016). *Binge-watching is the new reading: Comparing the entertainment and transportation outcomes of reading, playing video games, and watching TV*. Philadelphia, PA: Paper presented at the Annual conference of the National Communication Association.
- de Feijter, D., Khan, V.-J., & van Gisbergen, M. (2016). Confessions of a “guilty” couch potato understanding and using context to optimize binge-watching behavior. Paper presented at the *ACM International Conference on Interactive Experiences for TV and Online Video*, Chicago, IL. <https://doi.org/10.1145/2932206.2932216>.
- Devasagayam, R. (2014). Media bingeing: A qualitative study of psychological influences. Paper presented at the *Once Retro Now Novel Again: 2014 Annual Spring Conference Proceedings of the Marketing Management Association*.
- Digital TV Research. (September 17, 2019). Gross number of subscription video on demand (SVoD) subscribers worldwide from 2015 to 2024 (in millions) [Graph]. In Statista. Retrieved June 08, 2020, from <https://www.statista.com/statistics/949391/svod-subscribers-world/>.
- Dockner, E. J., & Feichtinger, G. (1993). Cyclical consumption patterns and rational addiction. *The American Economic Review*, 83(1), 256–263.
- Erickson, S. E., Dal Cin, S., & Byl, H. (2019). An experimental examination of binge watching and narrative engagement. *Social Sciences*, 8(1), 1–9. <https://doi.org/10.3390/socsci8010019>.
- Exelmans, L., & Van den Bulck, J. (2017). Binge viewing, sleep, and the role of pre-sleep arousal. *Journal of Clinical Sleep Medicine*, 13(08), 1001–1008. <https://doi.org/10.5664/jcsm.6704>.
- Flayelle, M., Canale, N., Vögele, C., Kazirka, L., Maurage, P., & Billieux, J. (2019). Assessing binge-watching behaviors: Development and validation of the “Watching TV Series Motives” and “Binge-watching Engagement and Symptoms” questionnaires. *Computers in Human Behavior*, 90, 26–36. <https://doi.org/10.1016/j.chb.2018.08.022>.
- Flayelle, M., Maurage, P., & Billieux, J. (2017). Toward a qualitative understanding of binge-watching behaviors: A focus group approach. *Journal of Behavioral Addictions*, 6(4), 457–471. <https://doi.org/10.1556/2006.6.2017.060>.
- Flayelle, M., Verbruggen, F., Schiel, J., Vögele, C., Maurage, P., & Billieux, J. (2020). Non-problematic and problematic binge-watchers do not differ on prepotent response inhibition: A preregistered pilot experimental study. *Human Behavior and Emerging Technologies*, 1–10. <https://doi.org/10.1002/hbe2.194>.
- GfK. (May 11, 2016). Original Digital Video Consumer Study. Retrieved June 22, 2020, from <https://www.iab.com/wp-content/uploads/2016/05/2016-Original-Digital-Video-Study-Full-Report.pdf>.
- Glebatis Perks, L. (2015). *Media marathoning: Immersions in morality*. New York, NY: Lexington Books.
- Granov, V. C., Reinecke, L., & Ziegele, M. (2018). Binge-watching and psychological well-being: Media use between lack of control and perceived autonomy. *Communication Research Reports*, 35(5), 392–401. <https://doi.org/10.1080/08824096.2018.1525347>.
- Hartmann, M., Pelzl, M. A., Kann, P. H., Koehler, U., Betz, M., Hildebrandt, O., & Cassel, W. (2019). The effects of prolonged single night session of videogaming on sleep and declarative memory. *PLoS ONE*, 14(11), 1–13. <https://doi.org/10.1371/journal.pone.0224893>.
- Hasan, M. R., Jha, A. K., & Liu, Y. (2018). Excessive use of online video streaming services: Impact of recommender system use, psychological factors, and motives. *Computers in Human Behavior*, 80, 220–228. <https://doi.org/10.1016/j.chb.2017.11.020>.
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). New York, NY: Guilford Press.
- Hofer, M., & Eden, A. (2020). Successful aging through television: Selective and compensatory television use and well-being. *Journal of Broadcasting & Electronic Media*, 1–19. <https://doi.org/10.1080/08838151.2020.1721259>.
- Holden, C. (2001). ‘Behavioral’ addictions: Do they exist? *Science*, 294(5544), 980–982. <https://doi.org/10.1126/science.294.5544.980>.
- Jenner, M. (2016). Is this TVIV? On Netflix, TVIII and binge-watching. *New Media & Society*, 18(2), 257–273. <https://doi.org/10.1177/1461444814541523>.
- Jun, S. (2016). The reciprocal longitudinal relationships between mobile phone addiction and depressive symptoms among Korean adolescents. *Computers in Human Behavior*, 58, 179–186. <https://doi.org/10.1016/j.chb.2015.12.061>.
- Kang, Y., Liu, S., Yang, L., Xu, B., Lin, L., Xie, L., ... Zhang, B. (2020). Testing the bidirectional associations of mobile phone addiction behaviors with mental distress, sleep disturbances, and sleep patterns: A one-year prospective study among chinese college students. *Frontiers in Psychiatry*, 11, 1–9. <https://doi.org/10.3389/fpsy.2020.00634>.
- Karsay, K., Schmuck, D., Matthes, J., & Stevic, A. (2019). Longitudinal effects of excessive smartphone use on stress and loneliness: The moderating role of self-disclosure. *Cyberpsychology, Behavior, and Social Networking*, 22(11), 706–713. <https://doi.org/10.1089/cyber.2019.0255>.
- Katz, E., Blumler, J. G., & Gurevitch, M. (1973). Uses and gratifications research. *The Public Opinion Quarterly*, 37(4), 509–523.
- Ko, C.-H., Yen, J.-Y., Chen, C.-S., Yeh, Y.-C., & Yen, C.-F. (2009). Predictive values of psychiatric symptoms for internet addiction in adolescents: A 2-year prospective study. *Archives of Pediatrics & Adolescent Medicine*, 163(10), 937–943. <https://doi.org/10.1001/archpediatrics.2009.159>.
- Kuntsche, E., & Kuntsche, S. (2009). Development and validation of the Drinking Motive Questionnaire Revised Short Form (DMQ-R SF). *Journal of Clinical Child & Adolescent Psychology*, 38(6), 899–908. <https://doi.org/10.1080/15374410903258967>.
- Lam, L. T., & Peng, Z.-W. (2010). Effect of pathological use of the internet on adolescent mental health: A prospective study. *Archives of Pediatrics & Adolescent Medicine*, 164(10), 901–906. <https://doi.org/10.1001/archpediatrics.2010.159>.
- Lin, Y.-J., Hsiao, R. C., Liu, T.-L., & Yen, C.-F. (2020). Bidirectional relationships of psychiatric symptoms with internet addiction in college students: A prospective study. *Journal of the Formosan Medical Association*, 119(6), 1093–1100. <https://doi.org/10.1016/j.jfma.2019.10.006>.
- Liu, S., Wing, Y. K., Hao, Y., Li, W., Zhang, J., & Zhang, B. (2019). The associations of long-time mobile phone use with sleep disturbances and mental distress in technical college students: A prospective cohort study. *Sleep*, 42(2). <https://doi.org/10.1093/sleep/zsy213>.
- McGrath, D. S., Stewart, S. H., Klein, R. M., & Barrett, S. P. (2010). Self-generated motives for gambling in two population-based samples of gamblers. *International Gambling Studies*, 10(2), 117–138. <https://doi.org/10.1080/14459795.2010.499915>.
- Merikivi, J., Bragge, J., Scornavacca, E., & Verhagen, T. (2019). Binge-watching serialized video content: A transdisciplinary review. *Television & New Media*, 1527476419848578. <https://doi.org/10.1177/1527476419848578>.
- Orosz, G., Bóthe, B., & Tóth-Király, I. (2016). The development of the Problematic Series Watching Scale (PSWS). *Journal of Behavioral Addictions J Behav Addict*, 5(1), 144–150. <https://doi.org/10.1556/2006.5.2016.011>.
- Oxford English Dictionary. (2020). Binge-watching. Retrieved from <https://www.oed.com/view/Entry/64181819?rskey=HwvS6O&result=2&isAdvanced=false#eid>.
- Panda, S., & Pandey, S. C. (2017). Binge watching and college students: Motivations and outcomes. *Young Consumers*, 18(4), 425–438. <https://doi.org/10.1108/YC-07-2017-00707>.
- Petersen, T. G. (2016). To binge or not to binge: A qualitative analysis of binge watching habits of college students. *Florida Communication Journal*, 44(1), 77–88.
- Pittman, M., & Sheehan, K. (2015). Sprinting a media marathon: Uses and gratifications of binge-watching television through Netflix. *First Monday*, 20(10). <https://doi.org/10.5210/fm.v20i10.6138>.
- Reelgood. (September 17, 2019). Number of movies and television shows available on selected SVOD services in the United States in 2019 [Graph]. In Statista. Retrieved June 08, 2020, from <https://www.statista.com/statistics/1060559/movies-tv-shows-number-svod-platforms-us/>.
- Riddle, K., Peebles, A., Davis, C., Xu, F., & Schroeder, E. (2018). The addictive potential of television binge watching: Comparing intentional and unintentional binges. *Psychology of Popular Media Culture*, 7(4), 589–604. <https://doi.org/10.1037/ppm0000167>.
- Rubeking, B., & Bracken, C. C. (2018). Binge-watching: A suspenseful, emotional, habit. *Communication Research Reports*, 35(5), 381–391. <https://doi.org/10.1080/08824096.2018.1525346>.
- Rubeking, B., Bracken, C. C., Sandoval, J., & Rister, A. (2018). Defining new viewing behaviours: What makes and motivates TV binge-watching? *International Journal of Digital Television*, 9(1), 69–85. <https://doi.org/10.1386/jdvt.9.1.69.1>.
- Rubin, A. M. (1983). Television uses and gratifications: The interactions of viewing patterns and motivations. *Journal of Broadcasting*, 27(1), 37–51. <https://doi.org/10.1080/08838158309386471>.
- Schweidel, D. A., & Moe, W. W. (2016). Binge watching and advertising. *Journal of Marketing*, 80(5), 1–19. <https://doi.org/10.1509/jm.15.0258>.
- Shim, H., & Kim, K. J. (2018). An exploration of the motivations for binge-watching and the role of individual differences. *Computers in Human Behavior*, 82, 94–100. <https://doi.org/10.1016/j.chb.2017.12.032>.
- Shim, H., Lim, S., Jung, E. E., & Shin, E. (2018). I hate binge-watching but I can't help doing it: The moderating effect of immediate gratification and need for cognition on

- binge-watching attitude-behavior relation. *Telematics and Informatics*, 35(7), 1971–1979. <https://doi.org/10.1016/j.tele.2018.07.001>.
- Starosta, J., Izydorczyk, B., & Lizińczyk, S. (2019). Characteristics of people's binge-watching behavior in the "entering into early adulthood" period of life. *Health Psychology Report*, 7(2), 149–164. <https://doi.org/10.5114/hpr.2019.83025>.
- Steiner, E., & Xu, K. (2018). Binge-watching motivates change: Uses and gratifications of streaming video viewers challenge traditional TV research. *Convergence*. <https://doi.org/10.1177/1354856517750365>.
- Strittmatter, E., Parzer, P., Brunner, R., Fischer, G., Durkee, T., Carli, V., ... Kaess, M. (2016). A 2-year longitudinal study of prospective predictors of pathological Internet use in adolescents. *European Child & Adolescent Psychiatry*, 25(7), 725–734. <https://doi.org/10.1007/s00787-015-0779-0>.
- Sung, Y. H., Kang, E. Y., & Lee, W.-N. (2018). Why do we indulge? Exploring motivations for binge watching. *Journal of Broadcasting & Electronic Media*, 62(3), 408–426. <https://doi.org/10.1080/08838151.2018.1451851>.
- Sussman, S., & Moran, M. B. (2013). Hidden addiction: Television. *Journal of Behavioral Addictions JBA*, 2(3), 125–132. <https://doi.org/10.1556/jba.2.2013.008>.
- Times, L. A. (2019). How much will it cost to subscribe to the ever-expanding streaming universe? Retrieved from. <https://www.latimes.com/entertainment-arts/tv/story/2019-10-10/streaming-wars-per-month-total-shocking-apple-hbo-disney-netflix>.
- Tukachinsky, R., & Eyal, K. (2018). The psychology of marathon television viewing: Antecedents and viewer involvement. *Mass Communication and Society*, 21(3), 275–295. <https://doi.org/10.1080/15205436.2017.1422765>.
- Vaterlaus, J. M., Spruance, L. A., Frantz, K., & Kruger, J. S. (2019). College student television binge watching: Conceptualization, gratifications, and perceived consequences. *The Social Science Journal*, 56(4), 470–479. <https://doi.org/10.1016/j.soscij.2018.10.004>.
- Walton-Pattison, E., Dombrowski, S. U., & Presseau, J. (2018). 'Just one more episode': Frequency and theoretical correlates of television binge watching. *Journal of Health Psychology*, 23(1), 17–24. <https://doi.org/10.1177/1359105316643379>.
- Wechsler, H., Lee, J. E., Kuo, M., Seibring, M., Nelson, T. F., & Lee, H. (2002). Trends in college binge drinking during a period of increased prevention efforts. Findings from 4 Harvard School of Public Health College Alcohol Study surveys: 1993-2001. *Journal of American College Health*, 50(5), 203-217. doi:10.1080/07448480209595713.
- Weinstein, A., & Lejoyeux, M. (2010). Internet addiction or excessive internet use. *The American Journal of Drug and Alcohol Abuse*, 36(5), 277–283. <https://doi.org/10.3109/00952990.2010.491880>.
- Zhang, G., Yang, X., Tu, X., Ding, N., & Lau, J. T. F. (2020). Prospective relationships between mobile phone dependence and mental health status among Chinese undergraduate students with college adjustment as a mediator. *Journal of Affective Disorders*, 260, 498–505. <https://doi.org/10.1016/j.jad.2019.09.047>.