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Investigating consumer binge-watching behavior: A valence framework perspective

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ABSTRACT

Binge-watching (BW) behavior has emerged rapidly in recent years. However, a comprehensive understanding of how BW is influenced and how it has changed is lacking. This study uses the valence framework to hypothesize the effects of positive valences (advantages) and negative valences (drawbacks) on consumers' tendency of BW through the mediating effects of consumer attitudes toward BW and tests the role played by consumers' self-control in the association between consumer attitudes toward BW and the tendency of BW. The results from the survey data analysis (N = 454) identify three negative valences (depression, loneliness, and social problems) and four positive valences (enjoyment, passing time, stress relief, and social interaction) that influence consumer attitudes toward BW. In addition, we confirm a U-shaped relationship between consumers' attitudes toward BW and the tendency of BW and find that consumers' self-control has a moderating effect on this U-shaped association. Theoretically, we extend the valence theory into the study of BW behavior and investigate the specific positive and negative valences in this area. Practically, our findings could help broadcasters design strategies to promote BW.

1. Introduction

Media consumption has changed dramatically in recent years because of the proliferation of online video websites. The fixed schedules of program broadcast by traditional television stations are being disrupted by the flexibility of consumption time offered by online video platforms (Hirsen, 2015). Binge-watching (hereafter BW), which is the consumption of multiple episodes of a television series in one sitting (Schweidel and Moe, 2016), has become increasingly popular among people. A survey found that 73% of Americans binge-watch videos (Deloitte, 2017); they even streamed and watched an average of 8 h of programs per day in 2020 (Anderer, 2020). BW causes greater consumption of programs and advertisements and generates more paid subscribers. Hence, BW behavior is highly related to program ratings, advertising effectiveness, and the revenues of video websites and advertising firms. Both broadcasters and advertisers desire to understand BW more deeply to design broadcasting and advertising strategies accordingly.

Despite its growing popularity (e.g., Netflix, 2013; Nielsen, 2013), BW has both advantages and drawbacks for consumers (Panda and Pandey, 2017). For instance, BW may result in a positive disposition toward life (Kubey and Csikszentmihalyi, 2002; Rubin, 2009). Alternatively, it can be detrimental to a person's general well-being (Chaudhary, 2014; De Feijter, Khan and Van Gisbergen, 2016). Through reviewing the literature, some studies reflect positive valences of BW behavior, such as enjoyment and relaxation, which may lead to positive attitudes toward BW (e.g., Pittman and Sheehan, 2015). Others reflect negative valences of BW, such as regret and loneliness, which may trigger negative attitudes toward BW (e.g., Shim et al., 2018). Different types of valences may lead to different outcomes of watching behaviors, such as enhancing or stopping BW behavior (Panda and Pandey, 2017). Identifying specific valences and examining how the different types of valences combine to influence BW behavior are valuable in comprehending future trends of BW and understanding possible changes in media consumption. Although past works have considered the drawbacks or advantages of BW behavior (Shim and Kim, 2018; Steiner and Xu, 2018; Sung et al., 2018), they have not simultaneously considered the combined effects of both positive and negative valences on an individual's behavior. This study addresses this research issue by developing a valence framework examining the impacts of both drawbacks and advantages on the future tendency of BW through the mediating effects of consumers' attitudes toward BW.

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Regarding the influence of attitudes toward BW on future levels of BW, to the best of our knowledge, only one study, that of Shim et al. (2018), has examined the effects of negative attitudes toward BW on the future extent of BW. However, the authors have ignored the possible effects of positive attitudes, which may not be the opposite of negative attitudes toward BW (Pittinsky et al., 2011). A comprehensive approach is required to fully comprehend how attitudes affect BW behavior (Panda and Pandey, 2017). The studies using the motivational approach toward BW indicate the possible positive impact of the attitudes toward BW on the future tendency of BW (Pittman and Sheehan, 2015; Nanda and Banerjee, 2020), while other studies considering the addictive nature of BW behavior maintain attitude-discrepant results (Shim et al., 2018). Hence, although a nonlinear relationship between attitude toward BW and the tendency of BW may occur, none of the previous studies have examined this issue. Our study closes this gap in the research by considering the effects of a full range of attitudes on future BW behavior.

Moreover, since BW is an individual behavior, individual characteristics may moderate the impact of a person's attitude toward BW on their future tendency of BW. Several studies confirm the moderating effects of individual characteristics such as sensation seeking, need for cognition (Shim and Kim, 2018), and self-control (Nanda and Banerjee, 2020). However, these moderating effects occur in the relationship between motivators (e.g., entertainment and the technological modal experience) and BW behavior, and they have not been tested in the relationship between attitudes toward BW and the tendency of BW. A few studies have found that consumers with high self-control are more rational in balancing the good and bad aspects of a specific action (e.g., Baumeister et al., 2007; Vohs and Faber, 2007). Self-control, as an individual characteristic, may weaken the impact of attitudes toward BW on the tendency of BW. We examine this point as well in this study.

Based on the abovementioned issues, we have three research questions in this study.

RQ1: How does the valence model explain viewers' tendency to binge-watch? Specifically, how should a valence framework with the two types of valences, drawbacks and advantages, be built, and how should the specific valences be identified according to the uses and gratifications theory (UGT) and binge behavior literature?

RQ2: How are consumers' attitudes toward BW associated with the tendency of participating in it?

RQ3: How does self-control weaken the impact of consumers' attitudes toward BW on the tendency of BW?

Our study contributes to the extant literature by employing the valence theory to develop and test a model with positive and negative valences influencing the tendency of BW. Theoretically, we extend the valence framework by integrating it with UGT to explain how the valences are identified and how they influence BW behavior. By testing the nonlinear relationship between consumer attitudes and BW tendency and identifying self-control as the moderator in this relationship, we contribute to the literature with the understanding of how consumer attitudes affect the tendency of BW, and how consumers' self-control changes this tendency of BW.

Practically, studying how positive and negative valences simultaneously influence consumers' BW behavior can help video broadcasters better understand the crucial elements in participating in BW or ceasing BW. The U-shaped relationship between consumer attitudes toward BW and the tendency of BW will assist managers of video websites in designing strategies to promote BW behavior. Moreover, the finding of the moderating effect of self-control can help website managers implement market segment strategies.

The remainder of this article is organized as follows: we introduce the related literature and theories in the next section. After we develop the research model and hypotheses, we design the research methodology and summarize the data analysis. Finally, we present the research findings, implications, and some directions for future research.

2. Literature review

2.1. BW and the tendency of BW

BW refers to a self-scheduled manner of consuming videos. Merikivi, Salovaara, Mäntymäki, and Zhang (2017) and Pittman and Sheehan (2015) defined BW as consuming more than two episodes of the same television show in one sitting. Based on the research purpose, we adopted this definition in the current study. BW is usually based on the platforms of some video websites, such as Hulu, YouTube, and Youku. Video websites face fierce competition with other video providers in attracting potential consumers. An important indicator of winning more market share is the tendency to binge-watch (Shim et al., 2018).

Consumer attitude is an important antecedent of the tendency of taking action (Paul et al., 2016; Maichum et al., 2017; EkStyvén and Mariani, 2020). For example, attitude toward online shopping and the tendency of online purchasing (Law and Ng, 2016; Zhang et al., 2019); attitude toward advertising and the tendency of product purchasing (Zhu and Kanjanamekanant, 2021; Luo et al., 2020). However, research on attitude toward BW is scarce. To the best of our knowledge, only Shim et al. (2018) examined consumers' attitude toward BW and its effect on the tendency of BW. However, they focused on a negative attitude and confirmed the positive relationship between a negative attitudes toward BW and the extent of BW. The research perspective and findings of Shim et al. (2018) lead to some issues. These issues are, namely, why do they consider only negative attitude toward BW and what is the effect of a positive attitude toward BW on the tendency of BW? These questions are important since the effects of negative attitudes may not be the opposite of the effects of positive attitudes toward BW. One study on functional separability (Cacioppo and Berntson, 1994) indicates that positive and negative attitudes differentially predict future behaviors. Specifically, Cacioppo and Berntson (2001) and Cacioppo et al. (1999) concluded that positive attitudes play the role of predispositions to approach responses, while negative attitudes play the role of predispositions to withdraw responses. Therefore, investigating the effects of a comprehensive attitude is necessary to understand the effects of attitudes completely and predict trends of BW behaviors.

A comprehensive attitude toward BW includes the positive and negative aspects of attitude. Hence, we are required to consider both the drawbacks and advantages of BW behavior. BW has some drawbacks for consumers in terms of psychological and sociological aspects. Given the aspect of heavy viewing, BW may have various negative consequences. For example, bingers with higher average screen time are more likely to have higher levels of depression (Ahmed, 2017), loneliness (Zhang et al., 2017), and regret (Walton-Pattison et al., 2016) and are prone to be less active with others or become neglectful of other people (Ciaramella and Biscuiti, 2014). These psychological and sociological drawbacks are key points in influencing consumers' BW tendency. However, BW has some advantages that may increase this behavior. For example, Pittman and Sheehan (2015) found that BW could satisfy consumers' needs of enjoyment, passing time, stress relief, and escape (Greene and Maggs, 2017). Shim and Kim (2018) reported that BW could help in social interaction. Additionally, Nanda and Banerjee (2020) confirmed that BW could meet consumers' model experience. These advantages of BW are also very important in measuring the future trend of BW. Although previous studies have focused on one of the two aspects, namely, drawbacks or advantages, they have not examined their combined effect on BW behavior. This study draws on the valence framework, through the mediating variable of consumer attitude toward BW, to examine the drawbacks and advantages as determinants of BW behavior.

2.2. Role of self-control

Several studies have examined the moderating effects of individual characteristics on the relationship between motivators and BW behavior. For example, Shim and Kim (2018) found that sensation

seeking and need for cognition moderate the relationship between consumer needs and time spent BW. Nanda and Banerjee (2020) confirmed the moderating effects of self-control on the relationships between some gratifications (e.g., entertainment, technology modal experience, navigability, and escape) and BW. These two studies analyzed moderators such as self-control, sensation seeking, and need for cognition in the relationship between consumer needs and BW behavior, ignoring their moderating role in the associations between consumer attitudes toward BW and BW behavior. Shim, Lim, Jung, and Shin (2018) covered this research gap by confirming that immediate gratification moderates the association between negative attitude toward BW and BW behavior. However, their study focused on negative attitude toward BW. It has not been explored whether individual characteristics moderate the associations between the comprehensive attitude toward BW and the tendency of BW. This study endeavors to address this issue.

Among several individual characteristics that have been discussed in existing studies, we focus on self-control and its moderating role in the relationship between attitude toward BW and the tendency of BW for two reasons. One reason is to match the definition of self-control to our research background. Self-control refers to the capability of an individual to alter dominant responses and change behaviors (de Ridder et al., 2012). In our study, we want to identify an individual characteristic that may weaken the effects of consumer attitude toward BW on the tendency of BW. Consumer attitude is the response to the BW phenomenon (Eagly and Chaiken, 1993), and the tendency of BW is the future behavior (Shim et al., 2018). Self-control fits the research question. The other reason is that certain potential effective characteristics, such as immediate gratification, sensation seeking, and need for cognition, are different forms of self-control failure (Reinecke and Hoffman, 2016). In other words, those who have little self-control are more inclined toward immediate gratifications, sensation seeking, and need for cognition (Panek, 2013), while consumers with high self-control are more rational in balancing the good and bad aspects of a specific action (e.g., Baumeister et al., 2007; Vohs and Faber, 2007). Hence, examining the potential effects of self-control may reveal a general understanding of the influence of individual characteristics on BW behavior.

Prior research on binge behavior, for example, binge drinking (Wechsler et al., 2002), binge eating (Heatherton and Baumeister, 1991), and binge shopping (Faber et al., 1995), has indicated that self-control failure is the reason for these behaviors. Using a similar theoretical approach, we assume that self-control weakens the effect of consumer attitudes toward BW on the tendency of BW. Examining the moderating constructs enhances our understanding of BW behaviors and continues to explain why some consumers' intention to binge-watch depends entirely on their attitudes toward BW while other consumers' intention does not. This may generate further practical insights.

2.3. Theoretical underpinnings

2.3.1. Valence framework

Although consumers may perceive advantages to BW, some drawbacks still characterize this behavior. Therefore, theories that consider both advantages and drawbacks when examining consumer decision making are related to this study. Hence, we employ the valence framework (Peter and Tarpey, 1975), which originates from areas of economics and psychology. The valence framework explains consumer decision making as being combined influenced by perceived risks and values of purchasing a product. Since the valence framework includes two fundamental aspects, positive and negative aspects, it is superior to theories that examine only one aspect of behavior consequences. It has been widely employed when examining online behaviors, such as e-health (Mou et al., 2016), internet protocol (Park et al., 2016), mobile payment (Gao and Waechter, 2017), and cross-border e-commerce (Cui et al., 2019). We summarize the prior literature using the valence framework to explain online behaviors in Table 1. Our review reveals that none of the previous studies has examined online BW behaviors.

Table 1
Review of the valence framework.

Previous research	Research context	Positive valence	Negative valence	Consumer behavior
Lu et al. (2011)	Mobile payment	Relative advantage Compatibility Image	Perceived cost Perceived risk	Behavioral intention
Yang et al. (2012)	Mobile payment	Relative advantage Compatibility	Perceived fee Perceived risk	Behavioral intention
Lin et al. (2014)	Mobile commerce	Perceived benefit	Perceived risk	Mobile commerce usage
Yang et al. (2015)	Mobile shopping	Perceived benefit	Perceived risk	Behavior toward mobile shopping
De Kerviler et al. (2016)	In-store mobile payment	Perceived utilitarian Hedonic and social benefit	Perceived risk	Usage intention
Mou et al. (2016)	E-health service	Perceived benefit	Perceived risk Perceived severity Perceived susceptibility	Behavioral intention
Park et al. (2016)	Internet protocol television	Perceived usefulness	Perceived resistance	Willingness to subscribe
Chen and Li (2017)	Mobile payment	Perceived usefulness	Perceived risk	Continuance of usage
Gao and Waechter (2017)	Mobile payment	Perceived system Information and service quality	Perceived uncertainty Perceived asset specificity	Trust and usage intention
Ozturk et al. (2017)	NFC mobile payment	Convenience Utilitarian value	Perceived risk Privacy concern	Mobile payment acceptance
Sullivan and Kim (2018)	Online shopping	Perceived value	Perceived risk	Repurchase intention
Cui et al. (2019)	Cross-border e-commerce	Perceived benefit	Perceived cost	Usage intention
Mou et al. (2019)	Cross-border e-commerce	Monetary savings Product offerings Convenience	Pre-contractual uncertainty Post-contractual uncertainty	Repurchase intention
Chin et al. (2020)	Mobile payment systems	Perceived benefit	Perceived risk	Usage intention

2.3.2. Uses and gratifications theory

In order to understand BW behavior better, we also employ the uses and gratifications theory (UGT) to identify the positive valences under the BW context. The UGT was initially proposed by Fisher (1978). After evolving over several decades, it has become the major communication theory for understanding why and how consumers seek out specific media (Ruggiero, 2000). Through the lens of the UGT, researchers have defined some factors that explain the need to binge-watch and how these needs influence the gratifications gained from BW. For example, from the psychological perspective, BW can satisfy consumers' needs of enjoyment, passing time, stress relief, and escape (Pittman and Sheehan, 2015; Greene and Maggs, 2017). From the sociological perspective, BW can satisfy consumers' desires for social interaction (Shim and Kim, 2018). From the technological perspective, BW can meet consumers' model experience, like their needs for technology modal experience and technology navigability (Nanda and Banerjee, 2020).

In order to examine consumers' perceptions regarding BW behavior,

we focus on the psychological and sociological valences. Those factors that can satisfy consumers' psychological and sociological needs are called positive valences. They influence consumers' overall perceptions of value, which are represented by "attitude toward BW" in this study. Therefore, in this study, we examine the impact of enjoyment, passing time, stress relief, escape, and social interaction on the tendency of BW through the mediating effects of consumer attitudes toward BW.

Drawbacks are the negative valences detracting from BW behavior. In line with the method of choosing positive valences, we focus on the psychological and sociological valences and identify the constructs from previous studies regarding the consequences of BW. Four drawbacks are discussed in BW literature: three psychological drawbacks, namely, depression, loneliness, and regret (Zhang et al., 2017) and one sociological drawback, namely, social problems (Ciaramella and Biscuiti, 2014). Depression and loneliness are the most cited propositions since excessive watching causes people to immerse themselves into the programs and isolate themselves from the real world (Karmarkar and Kruger, 2016; Ahmed, 2017). Walton-Pattison et al. (2016) stated that BW may cause regret, since BW often extends into the early hours of the next morning, thus affecting sleep and the next day. A few studies suggest that the "heavy" viewing makes consumers avoid relationship maintenance (Chory and Banfield, 2009) or become less active (Ciaramella and Biscuiti, 2014), resulting in social problems (Zhang et al., 2017). Together, these negative.

consequences of BW—depression, loneliness, regret, and social problems—are the negative valences influencing the overall attitude toward BW.

3. Research model and hypotheses

This study seeks to identify how the valences are associated with the tendency of BW. Specifically, we achieve this by (1) proposing a valence framework examining the effects of negative and positive valences on the future tendency of BW; (2) proposing and testing a research model that predicts the tendency of BW based on the comprehensive attitude toward BW; and (3) identifying the moderator of the relationship between attitude toward BW and the tendency of BW. The theoretical model is shown in Fig. 1.

The dependent variable in our research model is the consumer tendency of BW. The negative valances are depression, loneliness, regret, and social problems. The positive valences are enjoyment, passing time, stress relief, escape, and social interaction. The combined effects of positive and negative valences on the tendency of BW are measured through the intermediating variable of consumer attitude toward BW. Self-control is the moderator in the relationship between consumer attitude toward BW and the tendency of BW.

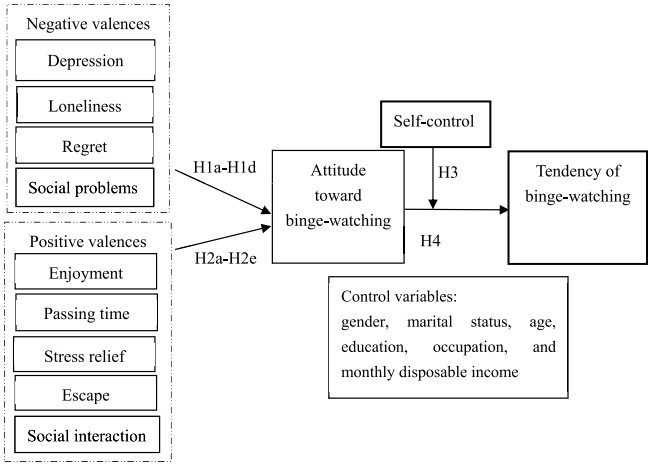


Fig. 1. Research model.

3.1. Negative valences and consumer attitudes toward BW

Attitude is defined as "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object" (Fishbein and Ajzen, 1975). Measuring a person's attitude toward BW yields a reasonably reliable indicator of their predisposition to engage in this behavior (Fishbein and Ajzen, 1975). Some psychological and sociological valences, such as depression, loneliness, regret, and social problems, have been discussed in the extant literature, but the relationship between the valences and consumer attitudes has not been explored. We will propose hypotheses regarding the impact of the four valences on the attitudes toward BW in this section.

Depression Depression is understood as a despondent mood together with an inability or lack of motivation to move (Radloff, 1977). Binge behaviors are often related to depression, such as binge eating and binge drinking (Sung et al., 2015b). Ahmed (2017) demonstrated that bingers score higher in depression scores than non-bingers. Some people express feelings of depression after BW. Two prior studies, Wheeler (2015) and Ahmed (2017), showed that BW has a significant positive impact on depression. In summary, BW may cause people to feel depressed. Because of this negative feeling, people may have negative attitudes toward BW.

Loneliness Page, Hammermeister, Scanlan, and Allen (1996) found that adolescents who viewed television heavily (more than 5 h a day) had higher loneliness scores than adolescents who viewed it moderately (two to 4 h a day) or lightly (less than 2 h a day). Sung, Kang, and Lee (2015) showed that binge behaviors are closely related to negative feelings of loneliness. Ahmed (2017) reported that most of the respondents in her study tended to binge-watch while alone at home. This may raise a question regarding "isolation," wherein an individual lives in a virtual zone and withdraws from interacting with other people. If people spend much or most of their time BW and avoid real life for a lengthy period, they may feel lonely. The loneliness caused by BW is a negative consequence, and hence, people who feel lonely while BW may form negative attitudes toward the behavior.

Regret Walton-Pattison, Dombrowski, and Presseau (2016) stated that BW causes feelings of regret. As stated previously, viewers may choose to continue BW even though they realize there are things they must do the next day (Sung et al., 2015b; Hsu, 2014); later, people may usually regret not doing what they should have done. Coincidentally, Frey et al. (2007) suggested that people with high opportunity costs of time are dissatisfied with their television viewing behavior and regret the amount of time spent watching television. The negative consequence of regret regarding BW might result in viewers forming negative attitudes toward BW.

Social problems Horvath (2004) indicated that television addiction has a negative effect on social desirability. Media dependence may decrease relational maintenance for several reasons. First, people who are addictive to a given medium have less time to maintain interpersonal relationships since they spend a great deal of time on the medium (Salguero and Moran, 2002; Young, 1998). Second, people who are addictive to a given medium lack sufficient vigor to engage in relational maintenance because the use of the medium fatigues them (Griffiths, 2003). Third, the influence of the media content may cause people may think, feel, and behave in the ways shown in the media, which may be unpleasant toward their relational partners (Potter and Warren, 1998; Chiu et al., 2004). Therefore, BW may cause underinvestment in social contacts (Chory and Banfield, 2009). Consumers who are aware of such social problems may form negative attitudes toward BW.

We speculate that:

H1a-1d. (a) Depression (b) Loneliness (c) Regret and (d) Social problems are negatively correlated with consumers' attitudes toward BW.

3.2. Positive valences and consumer attitudes toward BW

Although some researchers have examined the negative effects of BW on viewers' psychological and sociological health (e.g., Chaudhary, 2014), many prior studies have identified positive valences for media use, such as enjoyment (Atkin, 1985; Sherry, 2004), passing time (Rubin, 1977; Conway and Rubin, 1991), stress relief (Sung et al., 2015a; Panda and Pandey, 2017), escape (Sung et al., 2015a; Panda and Pandey, 2017), and social interaction (Pittman and Sheehan, 2015; Shim and Kim, 2018). Since these factors are associated with positive experiences, they are possible predictors of positive attitudes toward BW.

Enjoyment Atkin (1985) argued that individuals choose to use media to satisfy essential requirements such as enjoyment. Sherry (2004) concluded from previous studies that people primarily use media for enjoyment. Rubin (1983) found that one of the uses and gratifications of television is entertainment (enjoyment). Pittman and Sheehan (2015) suggested that continuous viewing media may enable individuals to fulfill their need for enjoyment. BW, as one kind of continuous exposure to media, can also satisfy people's enjoyment gratification. Individuals who achieve enjoyment gratification by BW may obtain a positive emotional boost and form positive attitudes toward BW.

Passing time Rubin (1981) found that some viewers watch television simply as a means of passing time or relieving boredom. Pittman and Sheehan (2015) showed that the psychological factors that drive BW include passing time. Findings indicate that people with a high level of television watching mainly use it to pass time (Sung et al., 2018). Television viewing and BW have typically been used as a way to pass time when individuals feel bored or have nothing to do. Results of previous studies indeed demonstrate that watching television helps people pass time and obtain gratification, which further drives them to do so the next time.

Stress relief Several studies have found that individuals are motivated to watch television because it helps with stress relief (Frey et al., 2007; Rubin, 2009; Pittman and Sheehan, 2015). Kubey and Csikszentmihalyi (2002) reported that people exhibited little mental stimulation while watching television in the electroencephalogram studies of television program watching. Unsurprisingly, watching television series can relax the audience and have positive gratifications (Paswan et al., 2015). People who relieve stress and enjoy relaxing by BW therefore have a positive attitude toward BW.

Escape Literature related to the UGT demonstrates that consumers adopt heavy viewing behavior in order to escape reality (Greenberg, 1974; McQuail, 2010; Rubin, 1983). Binge behavior is generally considered the excessive consumption of one item in a short period to escape from reality (Greene and Maggs, 2017; Heatherton and Baumeister, 1991). Compared with traditional appointment viewing, BW provides better gratification of escape for audiences (Pena, 2015; Panda and Pandey, 2017). To sum up, individuals can obtain the gratification of escaping reality by BW when they face pressure, negative emotions, or other untreatable situations, while BW can help them avoid these negative psychological feelings and instead have a positive psychological experience. In other words, BW can help individuals reduce or avoid negative emotions and gain positive ones and thus form a positive attitude toward BW.

Social interaction The UGT framework suggests that enhancing social interactions is one of the basic gratifications that audiences tend to seek (McQuail, 2010). It shows that bingers like to talk about their watched programs in person, online, or via mobile devices (*The New Yorker, 2013*; Murphy, 2014). College students prefer BW to feel integrated into the social circles of program discussion (Panda and Pandey, 2017). In this sense, people may obtain the satisfaction of social interaction through BW and thus form a positive attitude toward BW.

Therefore, we can hypothesize that:

H2a-2e. (a) Enjoyment (b) Passing time (c) Stress relief (d) Escape and (e) Social interaction are positively related to consumers' attitudes toward BW.

3.3. Attitude toward BW and the tendency of BW

Attitude means a psychological response when assessing a specific item with various degrees of favor or disfavor (Eagly and Chaiken, 1993). The emotional attitude can be positive or negative. Research has demonstrated that positive and negative attitudes are two separate activation systems that operate independently but also interact with each other and lead to distinct consequences (Carver and Scheier, 1990; Watson et al., 1999).

Regarding positive attitude, it is logical to predict that people who enjoy BW would continue the BW behavior (Pittman and Sheehan, 2015; Shim and Kim, 2018). For example, people who think that BW relaxes them, helps in passing time, and enhances social interaction are likely to generate positive attitudes to engage in BW (Panda and Pandey, 2017; Shim and Kim, 2018).

However, BW is a special behavior. Some prior studies have suggested that BW is a kind of addictive behavior, similar to binge eating and binge drinking (Gold et al., 2003). In the online environment, BW is related to the concept of "flow" (Hoffman and Novak, 1996). Researchers have tied experiencing flow with addictive behaviors such as video games (Chou and Ting, 2003). Playing video games, smoking, drinking alcohol, and BW are habit-forming behaviors, and people who form such habits often engage in attitude-discrepant behavior (Rigby, 2005; Krahé and Altwasser, 2006). In other words, although people perceive that bad feelings, such as loneliness and depression, result from BW and form a negative attitude toward BW, they continue to engage in BW. Shim and Kim (2018) confirmed that a negative attitude toward BW is positively related to BW behavior.

It is easy to understand that a person may have good feelings, such as enjoyment and stress relief, about BW, while simultaneously having bad feelings, such as regret and depression, about the behavior. This leads to ambivalence (Orford, 2001). In the case of BW, if the positive attitude is stronger, the viewer may engage in BW—however, if the negative attitude is stronger, the viewer may also engage in BW. Hence, the overall attitude toward BW is assumed to have a U-shaped course of effect on the tendency of BW.

Therefore, we propose the following hypothesis:

H3. Attitudes toward BW have a U-shaped course of effect on the tendency of BW.

3.4. The moderator of self-control

Consumers may suffer a self-control problem when they use some items, such as tobacco and alcohol, in a quantity greater than what is good for them (Schelling, 1984). de Ridder et al. (2012) defined self-control as a person's capability to change their major response and to regulate behavior, thoughts, and emotions. Faber, Christenson, Martina, and Mitchell (1995) reported that people with higher self-control can control their purchasing impulses better than people with lower self-control. Some binge behaviors, such as excessive shopping (Vohs and Faber, 2007), eating (Faber et al., 1995), and drinking (Wechsler et al., 2002), are due to the failure of self-control. Since BW is also a type of binge behavior, individuals' self-control may be similar in that context.

BW is an individual behavior, and it is affected by individual differences. Shim and Kim (2018) found that two types of individual differences—sensation seeking and need for cognition—moderate the impact of consumer needs on time spent BW. Nanda and Banerjee (2020) also confirmed the moderating effect of self-control on the relationships between some gratifications (e.g., entertainment and escape) and BW. Self-control, as a type of individual difference, may influence the impact of attitudes toward BW on the tendency of BW. Those consumers with more self-control will not permit their attitudes to decide the extent of

BW completely; they will instead be more rational in considering the good and bad aspects of BW. In contrast, consumers with less self-control may be guided by their attitudes without weighing the advantages and disadvantages of BW. For example, a person with a positive attitude toward BW would prefer BW, but greater self-control would alter this person's tendency to continue BW when they consider the time and conditions (e.g., work the following day). In contrast, less self-control cannot alter a person's BW behavior, even though they know that more watching is not beneficial.

Therefore, we suggest that:

H4. Self-control weakens the U-shaped relationship between attitude toward BW and the tendency of BW.

4. Methodology

4.1. Research setting

We apply online video websites as the research context of BW behavior. Major video websites in Mainland China—Youku.com, iQIYI.com, v.QQ.com, tudou.com, sohu.com, and m.le.com—have a common broadcast pattern: video on-demand. Each video website offers both free and paid programs. Consumers can subscribe to a video website in order to watch paid programs on this website. The subscription fee is cheap, and some consumers subscribe to two or more video websites. Thus, consumers can watch their favorite programs episode-by-episode, and even all the episodes of a given series. BW occurs within this context.

The other reason we chose video websites as the research context is that they are convenient to use. BW is more likely to occur with video websites. People can use smartphones, PCs, and tablets to access video websites anytime and anywhere. BW can be a tiring activity; one BW session typically lasts three or more hours and mainly involves sitting throughout it. Using phones or tablets may also enable BW while lying down and standing. Our pretest also showed that nearly all BW happened with video websites. Therefore, we focus on BW behavior with video websites.

4.2. Measurement items

The constructs in this study were measured using the reliable and valid scales from prior literature (Sung et al., 2018; Shim and Kim, 2018; Mirowsky and Ross, 1992; Russell et al., 1978; Russell, 1996; Watson and Clark, 1994; Johnson et al., 2004; Goodrich et al., 2015; Flayelle et al., 2019; Shim et al., 2018; Nanda and Banerjee, 2020). Minor modifications were made to fit the BW context. A 5-point Likert scale was used to measure all constructs. It is necessary to explain the measures used to assess positive and negative attitudes. Prior literature has measured consumer attitude toward something, such as attitude toward an advertisement or brand, on a three-item Likert scale (i.e., items are anchored by "good/bad," "pleasant/unpleasant," and "favorable/unfavorable") (Choi and Rifon, 2002; Goodrich et al., 2015). We adopt this method by using one group of scales: three positive attitude items (good, pleasant, favorable) rated on a 5-point Likert scale, ranging from 1 (*not at all appropriate*) to 5 (*very appropriate*). Total scores on the attitude scale can vary between 3 and 15. Scores between 3 and 9 indicate negative attitudes toward BW, and scores between 10 and 15 indicate positive attitudes toward BW. All the latent variables are reflective measurements; no formative measurements have been used.

4.3. Data collection

We conducted two pretests of the survey. The first round was conducted with 20 undergraduate business students to test the validity of the survey items, and several changes were made. The second pretest also involved 20 undergraduates, and it focused on ambiguity based on the revised questionnaire. None of the pretest students participated in the data collection.

The questionnaire was based on previous research, and it was originally in English. We implemented a back-translation strategy (Zhang et al., 2017) to obtain a Chinese version, since our empirical data was collected in China. Specifically, we invited two bilingual researchers to conduct the back-translation. One researcher translated the English version into Chinese, and the other researcher translated the Chinese survey back into English. We then compared the translated English version with the original English version and did not find any substantial differences. Hence, the translation obtained the essential meaning of all indicators.

The survey was conducted on sojump.com, which is a professional online survey website in China (Xiao et al., 2019), and the paid sample service was employed to collect data. The survey was released on September 1, 2020, and it was recycled one month later. In total, 454 valid responses were obtained. To explore the effect of BW behavior better, we focused on video website users who had watched at least three episodes of episodic programs (e.g., dramas) in the previous week (Zhang, 2014). Similar to previous studies (Cheung et al., 2009), in order to maximize the data validity, we required each respondent to provide the program name, the website name, and the device used to binge-watch, and we deleted those providing the same answers for all indicators. Table 2 shows the demographics: 28.2% were male and 71.8% were female; 43% were married and 57% were single. Almost all the respondents (92.1%) were aged between 19 and 40; among them, 72.7% had a bachelor's degree; in addition, majority of the respondents (63%) were managers, clerks, or students; and 71.3% respondents had a monthly disposable income of more than 4000.

5. Results

We used two types of software, Smart-PLS and SPSS, in the empirical study. PLS is particularly effective for testing the reliability, convergent validity, and discriminant validity of a measurement model and the

Table 2
Respondents' demographic profiles ($N = 454$).

Measure	Items	Frequency	Percentage (%)
Gender	Male	208	45.8
	Female	246	54.2
Marital status	Married	195	43.0
	Single	259	57.0
Age	18 or below	2	0.4
	19–30	260	57.3
	31–40	158	34.8
	41–50	25	5.5
	Above 50	9	2.0
Education	High school or below	19	4.2
	Junior	55	12.1
	Bachelor	330	72.7
	Master	45	9.9
	Doctorate	5	1.1
Occupation	Management	121	26.7
	Clerk	91	20.0
	Service or sales	59	13.0
	Craft and skilled work	23	5.1
	Workshop or machine operation work	14	3.1
	Education or scientific research	44	9.7
	Students	74	16.3
	Housewife	5	1.1
	Retired or unemployed	1	0.2
	Freelancer	22	4.8
Monthly disposable income	2,000RMB and below	64	14.1
	2,001RMB-4,000RMB	66	14.5
	4,001RMB-6,000RMB	106	23.3
	6,001RMB-8,000RMB	104	22.9
	8,001RMB and above	114	25.1

significance of the paths in the research model (Ringle et al., 2012). However, we aimed to test the U-shaped relationship between attitude and extent of BW, and Smart-PLS is unsuitable for nonlinear causal relationships among structures. Therefore, we used SPSS to test hypothesis 3. Finally, Smart-PLS 2.0 and IBM SPSS 22 software were used for data analysis.

5.1. Measurement model evaluation

The sample size was confirmed based on the criteria suggested by Hair et al. (2017) and Faul et al. (2009), namely, that the necessary sample size be computed as a function of user-specified values for the required significance level (0.05), the desired statistical power (0.95), and effort size (0.3), using the software G*3.1.9.2. The T test showed the necessary sample size to be 147, while the correlation test showed it to be 134. Our study employed a sample size of 454, which satisfies the sample size criteria.

We assessed the reliability, convergent validity, and discriminant validity of the measurement model. Reliability was verified using the three criteria suggested by Hair et al. (2006): Cronbach's alpha (α) should exceed 0.7, composite reliabilities (CR) should exceed 0.7, and average variance extracted (AVE) by each construct should exceed 0.5. The three criteria are shown in Table 3, and the results indicate satisfactory reliability. The model exhibited convergent validity according to the three criteria (Fornell and Larcker, 1981). In addition to the CR and AVE, the loadings of all items should be above the required 0.70 (as shown in Appendix B, Table A1). The results satisfy the required convergent validity. We used two techniques to evaluate discriminant validity. First, we presented the correlation matrix in Table 3 and checked that the square root of the AVE for each construct was greater than the correlations between that construct and others (Chin, 1998). Second, we presented the cross-loading in Appendix B, Table A2, and checked that all the items loaded well onto their corresponding constructs and poorly on other constructs. Moreover, we checked the collinearity problem by calculating VIFs; all VIF values are less than 5, indicating that the research model does not suffer from multicollinearity (shown in Appendix B, Table A3). Cross-validated redundancy and cross-validated communality are above 0.68 (shown in Appendix B, Tables A4-5). These results confirm that our positive and negative valences are valid in explaining the variations in the consumer tendency of BW.

We considered two methods to evaluate common method variance (CMV). First, we conducted Harman's one-factor test (Podsakoff and Organ, 1986). We found that the most significant factor explained 35.5% of the variance, which is less than the critical value of 50%. Second, we employed the method with a common method factor proposed by Liang et al. (2007). We calculated the squares of substantive factor loading and method factor loading of each indicator. The results (see Table A2) show that the average indicator's substantive variance was 0.890, and the average method-based variance was 0.001. Thus, we summarized that the CMV was not a serious problem in this study.

5.2. Research model evaluation

The bootstrap method (5000 re-samples) was used to verify the significance of the paths from the positive and negative valences to the attitudes toward BW. The control variables are the demographic variables: gender, marital status, age, education, occupation, and monthly disposable income. The results are shown in Fig. 2.

The valence model explains 78.3% of the variance in attitudes toward BW. As seen in Fig. 2, in terms of negative valences, depression (β=-0.133, $p<0.05$), loneliness (β=-0.169, $p<0.05$), and social problems (β=-0.140, $p<0.05$) had significant effects on consumer attitudes toward BW. Therefore, we confirmed hypotheses H1a-1b and 1d. The effect size of the three constructs (f^2 = 0.338, 0.262, and 0.155, respectively) shows that dropping any one of the three constructs will have a medium or high effect (Cohen, 1988). In terms of positive valences, enjoyment (β=0.270, $p<0.001$), passing time (β=0.143, $p<0.05$), stress relief (β=0.200, $p<0.05$), and social interaction (β=0.129, $p<0.05$) had significant effects on consumer attitudes toward BW. Thus, we confirmed H2a-2c and 2e. The effect size of these four constructs (f^2 = 0.445, 0.488, 0.565, and 526, respectively) shows that dropping any one of the four constructs will have a high effect. In terms of the control variables, only three, namely, education (β=0.188, $p<0.05$), occupation-students (β=-0.306, $p<0.01$), and monthly disposable income (β=-0.151, $p<0.05$) significantly affected consumers' attitudes toward BW.

5.3. U-shape and moderation tests

To test the U-shaped effect of consumers' attitudes toward BW, we included the quadratic term of attitudes in the regression formula—*attitude*^{2}. H4 predicted that self-control weakens the U-shaped effects of attitudes toward BW and the tendency of BW. Therefore, we included the interaction terms in the model—*selfcontrol* ×*attitude*^{2} to test the moderating effects of self-control.

The regression formula is presented below:

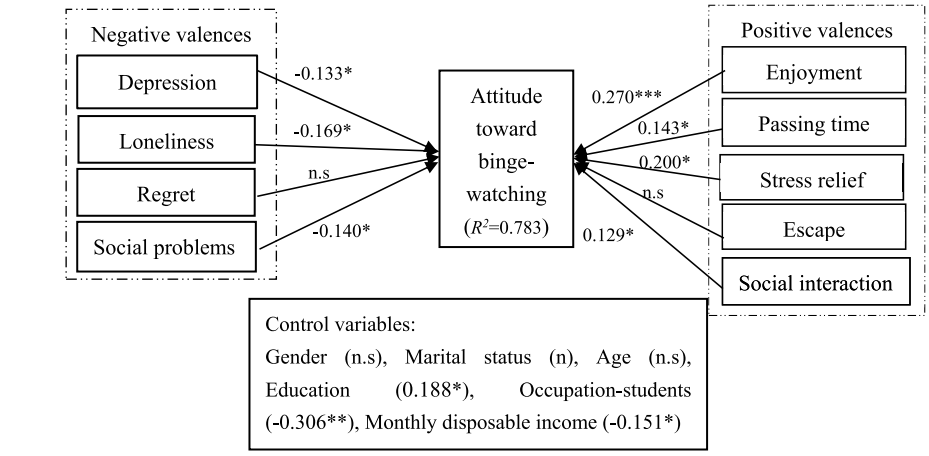
$$\text{Tendency of BW} = \beta_0 + \beta_1 \times attitude^2 + \beta_2 \times attitude + \beta_3 \times selfcontrol + \beta_4 \times selfcontrol \times attitude^2 + \beta_5 \times selfcontrol \times attitude + \boldsymbol{\beta}_5 * controlvariables \quad (1)$$

Where *attitude*^{2} refers to the square of consumers' attitudes toward BW, *selfcontrol* refers to the value of self-control provided by the respondents, *controlvariables* refers to all the control variables, and $\boldsymbol{\beta}_5$ is the vector of

Table 3
Correlations among constructs.

	α	CR	AVE	DP	LO	RE	SP	EN	PT	SR	ES	SO	AT	SC	TE
DP	0.99	0.99	0.92	**0.96**											
LO	0.98	0.98	0.90	0.68	**0.95**										
RE	0.97	0.98	0.89	0.34	0.34	**0.94**									
SP	0.94	0.96	0.89	0.32	0.36	0.49	**0.94**								
EN	0.81	0.89	0.73	-0.44	-0.40	-0.23	-0.19	**0.85**							
PT	0.85	0.91	0.77	-0.47	-0.36	-0.25	-0.20	0.81	**0.88**						
SR	0.84	0.89	0.68	-0.43	-0.35	-0.32	-0.23	0.59	0.66	**0.82**					
ES	0.83	0.90	0.75	-0.43	-0.35	-0.28	-0.24	0.56	0.63	0.81	**0.87**				
SO	0.87	0.91	0.71	-0.42	-0.35	-0.26	-0.20	0.52	0.56	0.64	0.65	**0.84**			
AT	0.93	0.96	0.88	-0.58	-0.51	-0.39	-0.39	0.67	0.70	0.75	0.74	0.73	**0.94**		
SC	0.97	0.97	0.88	-0.03	0.00	-0.02	-0.01	0.07	0.07	0.01	0.04	0.00	0.05	**0.94**	
TE	0.89	0.92	0.81	-0.14	-0.08	-0.13	-0.19	0.32	0.32	0.35	0.31	0.28	0.42	0.24	**0.90**

Note 1: DP = depression; LO = loneliness; RE = regret; SP = social problems; EN = enjoyment; PT = passing time; SR = stress relief; ES = escape; SO = social interaction; AT = attitude; SC = self-control; TE = tendency of BW.
Note 2: Bold values in the diagonal row are the square roots of the AVE.



Notes: *** p < 0.001, ** p < 0.01, * p < 0.05.

Fig. 2. Partial least squares test of the valence model.

the coefficients of the control variables. The results of the regression analysis are summarized in Table 4.

The results indicate that consumers' attitudes toward BW had a U-shaped effect on the extent of future BW, with significant coefficients on both the quadratic term (β=0.258, p<0.001) and the first term (β=-1.541, p<0.01), thus supporting H3. To test H4, we followed Haans, Pieters, and He's (2016) suggestion for testing flattening in U-shaped relationships. Regarding the questions for the construct of self-control, a higher construct value indicates low self-control, and flattening occurs when the coefficient of the second-order interaction term is positive and significant (Haans et al., 2016). Based on this criterion, the sign and p value of the second-order interaction term (β_4=0.078; p < 0.001) indicate support for H4.

Fig. 3 illustrates the interaction pattern based on Aiken and West's (1991) procedure. We derived "low self-control" and "high self-control" indicators for self-control. Scores classified as low include values greater than one standard deviation below the mean, and those classified as high include values greater than one standard deviation above the mean.

We drew two separate regression lines under self-control for low and high.

Table 4
Results of U-shape and moderation tests.

Variables	Coefficient	T value	Hypothesis test
R^2 = 0.557			
Attitude^2	0.259	3.627***	H3 is supported
Attitude	-1.541	-3.155**	
Self-control×Attitude^2	0.078	3.330***	H4 is supported
Self-control×Attitude	-0.047	-2.897**	
Self-control	0.788	2.903**	
Gender	-0.058	-0.864	
Marital status	-0.022	-0.283	
Age	0.027	0.530	
Education	-0.023	-0.445	
Monthly disposable income	-0.018	-0.540	
Management	0.156	1.027	
Clerk	-0.030	-0.199	
Service or sales	0.220	1.402	
Craft work	0.104	0.545	
Workshop or machine operation	-0.024	-0.110	
Education or scientific research	0.195	1.179	
Students	-0.066	-0.396	
Housewife	-0.316	-1.027	
Retired or unemployed	0.091	0.146	

Notes: ***p < 0.001, **p < 0.01, *p < 0.05.

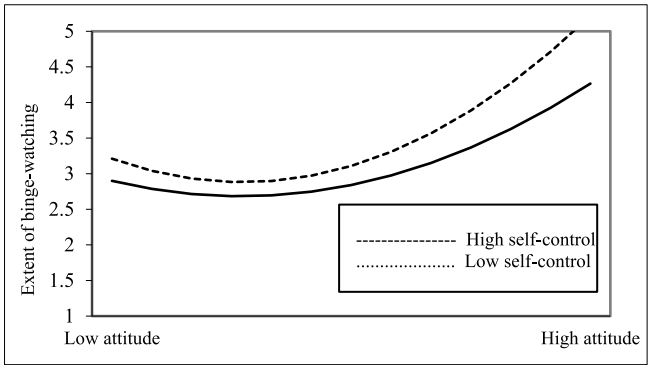


Fig. 3. Interaction pattern of self-control and attitudes on the tendency of BW.

6. Discussion

6.1. Research findings

This study has three key findings. First, we identify the negative and positive valences of the tendency of BW using the valence framework. Three negative valences, namely, depression, loneliness, and social problems, have significant negative effects on consumer attitudes toward BW. Four positive valences, namely, entertainment, passing time, stress relief, and social interaction, have significant positive effects on consumer attitudes toward BW. Based on these constructs, we can predict consumers' attitudes toward BW. However, we cannot confirm the significant effect of regret in the empirical study. This differs from some prior studies (Sung et al., 2015a,b; Christensen, 2015), which describe it as a negative consequence of binge behavior. This may be because the recreational aspect of BW differs slightly from binge eating and binge drinking (Shim and Kim, 2018). Regarding the positive valences, escape has not been confirmed to be significantly effective. This result differs from previous studies that show escape to be a significant motivator of BW (Kim and Lee, 2013). For example, Sung et al. (2018) stated that viewers tend to become addicted to television watching to escape from negative feelings. In order to understand this result, we interviewed a group of 12 students and asked, "Does BW make you get away from other things, and does this make you form a positive attitude toward BW (Sung et al., 2018)"? They consistently answered that although BW helps them escape from reality, it cannot cause positive attitudes toward BW to form since getting away from reality is in itself not a good action.

Second, our study confirms the U-shaped relationship between consumer attitude toward BW and the tendency of BW. Based on prior

studies that address the gratification aspect of BW (Panda and Pandey, 2017; Nanda and Banerjee, 2020) and other studies that discuss the addictive feature of BW (Shim et al., 2018), we argue that attitude toward BW has a U-shaped effect on the tendency of BW. The empirical study confirms this relationship and shows that there is a tipping point from negative to positive attitude toward BW. Unlike Shim et al. (2018), who explored the effects of negative attitude toward BW on the extent of BW, we provide a full picture of the relationship between attitude toward BW and future intention to participate in the behavior. This comprehensive understanding of the influence of consumers' attitudes toward BW on the tendency of BW is valuable for the design of marketing strategies.

Third, our study verifies that self-control weakens the relationship between attitude toward BW and the tendency of BW. We classify consumers' self-control as high self-control (one deviation below the mean) and low self-control (one deviation above the mean). The effects of attitude toward BW on the tendency of BW differ under different levels of self-control. The empirical study shows that in the high self-control group, the effect of attitude toward BW on the tendency of BW weakens. The study by Nanda and Banerjee (2020) confirmed that self-control negatively moderates BW needs gratification. Our finding enriches understanding of the effect of self-control on BW behavior.

6.2. Research implications

This study contributes to the valence theory and BW literature in several respects. First, by extending the valence framework into the study of BW behavior, we have contributed to the literature on why consumers form negative or positive attitudes toward BW in an effort to predict the tendency of BW. Few studies have examined both positive and negative valences and their roles in explaining BW behavior. Moreover, the explicit integration of the valence theory and the UGT crystallizes the theoretical argument regarding how positive attitudes are formed in consumers' BW behavior. Using the UGT to explore positive valences refines the valence theory applied in the BW area. Future research could build on our model and examine other related valences of BW behaviors.

Second, we have contributed to BW literature by considering the nonlinear relationship between attitudes toward BW and the tendency of BW. When examining the effects of consumer attitudes on future intention, previous studies often set a linear relationship between the two. An example of this is the linear relationship between the attitude toward online shopping and the intention of online shopping (McKnight et al., 2002). However, considering the special addiction feature of BW (Nanda and Banerjee, 2020; Panda and Pandey, 2017), we propose a U-shaped relationship between the attitudes toward BW and the tendency of BW, and the empirical study supports this hypothesis. This finding offers a deep understanding of the impact of attitudes toward BW on the tendency of BW. In addition, the examination of the impact of the comprehensive attitude toward BW on the tendency of BW enriches the prior wisdom regarding the positive relationship between a negative attitude toward BW and the tendency of BW (Shim et al., 2018).

The final contribution of this study is identifying a moderator in the relationship between attitudes toward BW and the tendency of BW, which helps scholarly understanding of how consumers' self-control changes their future tendency of BW. Unlike the extant literature that identifies the moderating effects of immediate gratification and need for cognition (Shim et al., 2018) on the relationship between consumer attitudes toward BW and the tendency of BW, this study confirms an additional individual difference, self-control, as a moderator of BW behaviors. This undoubtedly enriches the literature on BW.

6.3. Practice implications

From a practical perspective, this study has several implications for website managers with respect to broadcast videos. First, the findings of the positive and negative valences of BW can assist broadcasters understand their consumers' needs better and attract more consumers. The positive valences, such as enjoyment, passing time, stress relief, and social interaction, can help broadcasters understand how to make consumers form positive attitudes toward BW. In contrast, the negative valences, such as depression, loneliness, and social problems, can assist broadcasters with an understanding of how to make consumers form negative attitudes toward BW.

Second, according to our finding of a U-shaped relationship between consumer attitudes toward BW and the tendency of BW, broadcasters may benefit from knowing that irrespective of whether the attitude is positive or negative, viewers may engage in BW to a larger extent in the future. Hence, managers of video websites may design strategies to promote BW behavior. For example, the video website could automatically broadcast the next episode when the current one ends (Pittman and Sheehan, 2015).

Moreover, our findings suggest that self-control can weaken the effect of attitude toward BW and the tendency of BW. This is a meaningful finding for broadcasters in terms of implementing market segment strategies. Promotion strategies can be employed for consumers with low self-control to obtain higher program and advertising ratings. However, broadcasters are required to design marketing and promotion strategies that are more specific by considering different situations, dates, and so on, for consumers with high self-control. For example, promotion strategies on weekends and holidays for consumers with high self-control may result in more bingers, since consumers with high self-control are more likely to binge-watch on holidays. If the next day is a workday, they may control themselves from BW, prioritizing rest for the next day's hard work.

7. Research limitations and future directions

Although we have endeavored to be comprehensive in model development and empirical analysis, we acknowledge that further refinements are possible. First, the data were collected in China, and hence, the empirical results may not be suitable for generalization to other cultural contexts. With the development of the internet and mobile devices, BW behavior has emerged rapidly in many countries, such as Korea and the U.S. (Shim et al., 2018; Schweidel and Moe, 2016). Future research may verify our research model using other countries' BW behaviors, which would confirm the generalizability of the research model and findings.

Second, we confirmed self-control as the moderator in the relationship between attitude toward BW and the tendency of BW. However, several other psychological traits, such as sensation seeking and need for cognition, may have moderating effects on the tendency of BW. However, due to data limitations, it is hard to examine these psychological trait variables. Future research may resolve this issue and obtain more insightful results.

Finally, the study only examined the intention to binge-watch in the future, without measuring actual future BW behavior; this is a common limitation in studies in this field. However, a future study could cooperate with a video website and track bingers' actual behaviors using "cookies" to measure degrees of BW.

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Appendix A. Measurement items

Constructs	Measurement items	
Depression (Mirowsky and Ross, 1992)	DP1	I often felt sad.
	DP2	I could not get going.
	DP3	I had trouble getting to sleep.
	DP4	I felt that everything was an effort.
	DP5	I felt lonely.
	DP6	I could not get rid of feeling sad and depressed.
	DP7	I had trouble keeping my mind on what I was doing.
Loneliness (Russell, 1996)	LO1	I felt unhappy doing so many things alone.
	LO2	I felt I have nobody with whom to talk.
	LO3	I felt I cannot tolerate being so alone.
	LO4	I felt I lack companionship.
	LO5	I felt as if nobody really understands me.
	LO6	I felt myself waiting for people to call or write.
	LO7	I felt there is no one to whom I can turn.
Regret (Watson and Clark, 1994).	RE1	I felt guilty when I was BW.
	RE2	I felt ashamed when I was BW.
	RE3	I felt blameworthy when I was BW.
	RE4	I felt angry with myself when I was BW.
	RE5	I felt disgusted with myself when I was BW.
	RE6	I felt dissatisfied with myself when I was BW.
Social problems (Chory and Banfield, 2009)	SP1	BW detracts from the time I spend nurturing my interpersonal relationships.
	SP2	BW makes me unable to engage in relational maintenance.
	SP3	The program content in BW makes me think, feel, and behave in unpleasant ways toward my relational partners.
Enjoyment (Sung et al., 2018)	EJ1	BW amuses me.
	EJ2	BW entertains me.
	EJ3	BW is enjoyable.
Passing time (Sung et al., 2018)	PT1	BW passes the time, particularly when I am bored.
	PT2	When I have nothing better to do, I will BW.
	PT3	BW gives me something to do to occupy my time.
Stress relief (Panda and Pandey, 2017)	SR1	BW takes my mind off things.
	SR2	BW clears my head.
	SR3	BW helps me unwind.
	SR4	BW is a great stress reliever.
Escape (Sung et al., 2018)	ES1	BW makes me get away from what I am doing.
	ES2	BW makes me forget about school, work, or other things.
	ES3	BW makes me get away from the rest of the family or others.
Social interaction (Sung et al., 2018)	SO1	BW does not disconnect me from my friends because most of my friends do it.
	SO2	BW makes me relate to others more easily because television series give me something to discuss.
	SO3	BW occurs because I bow to my close circle's pressure when they advise me to watch a given series.
	SO4	BW makes me feel valued in others' eyes thanks to the extent of my knowledge on the subject.
Attitude toward BW (Goodrich et al., 2015)	AT1	BW is good.
	AT2	BW is pleasant.
	AT3	BW is favorable.
Self-control (Nanda and Banerjee, 2020)	SC1	If the series is good, I can lose track of time and end up watching endlessly.
	SC2	It has altered my tendencies as a viewer. I can set aside time and finish watching a series instead of waiting for episodes.
	SC3	I enjoy BW. Once engrossed, it is hard to let go of the next episode.
	SC4	It is something that is simultaneously relaxing and entertaining. Moreover, some of the series are addictive.
	SC5	It is addictive and makes you feel high, provided the series is very good.
Tendency of BW (Shim et al., 2018)	TE1	I tend to watch multiple videos/episodes of a particular television program in one sitting.
	TE2	I tend to watch multiple videos/episodes of a particular television program as quickly as possible.
	TE3	I sometimes happen to binge-watch a particular television program.

Appendix B

Table A1
Loadings and cross-loadings

	DP	LO	RE	SP	EN	PT	SR	ES	SO	AT	SC	TE
DP1	**0.959**	0.636	0.335	0.305	-0.411	-0.436	-0.399	-0.409	-0.401	-0.544	-0.039	-0.130
DP2	**0.96**	0.662	0.329	0.312	-0.421	-0.45	-0.424	-0.434	-0.406	-0.569	-0.035	-0.146
DP3	**0.956**	0.656	0.306	0.297	-0.438	-0.474	-0.419	-0.417	-0.415	-0.57	-0.024	-0.142
DP4	**0.957**	0.655	0.317	0.299	-0.418	-0.455	-0.408	-0.41	-0.38	-0.544	-0.027	-0.116
DP5	**0.958**	0.647	0.322	0.308	-0.46	-0.475	-0.424	-0.409	-0.409	-0.577	-0.033	-0.141
DP6	**0.962**	0.662	0.337	0.315	-0.411	-0.448	-0.395	-0.408	-0.393	-0.546	-0.044	-0.157
DP7	**0.956**	0.639	0.305	0.283	-0.399	-0.433	-0.381	-0.381	-0.393	-0.543	-0.013	-0.127
LO1	0.644	**0.956**	0.32	0.335	-0.372	-0.338	-0.343	-0.352	-0.339	-0.503	-0.017	-0.091
LO2	0.637	**0.951**	0.327	0.349	-0.38	-0.348	-0.33	-0.327	-0.336	-0.482	0.015	-0.073
LO3	0.651	**0.947**	0.313	0.312	-0.386	-0.342	-0.309	-0.311	-0.326	-0.477	-0.002	-0.078
LO4	0.654	**0.944**	0.322	0.341	-0.373	-0.35	-0.318	-0.335	-0.34	-0.481	0.001	-0.062
LO5	0.638	**0.948**	0.32	0.369	-0.4	-0.345	-0.355	-0.354	-0.348	-0.505	-0.003	-0.107
LO6	0.651	**0.957**	0.339	0.333	-0.381	-0.341	-0.324	-0.343	-0.353	-0.486	-0.001	-0.064
LO7	0.646	**0.950**	0.311	0.33	-0.377	-0.323	-0.317	-0.325	-0.313	-0.464	0.004	-0.080

(*continued on next page*)

Table A1 (*continued*)

	DP	LO	RE	SP	EN	PT	SR	ES	SO	AT	SC	TE
RE1	0.315	0.325	**0.945**	0.484	-0.18	-0.199	-0.266	-0.234	-0.233	-0.341	-0.005	-0.087
RE2	0.313	0.318	**0.944**	0.485	-0.206	-0.244	-0.305	-0.263	-0.264	-0.385	-0.029	-0.133
RE3	0.306	0.295	**0.938**	0.454	-0.211	-0.242	-0.289	-0.251	-0.227	-0.357	-0.038	-0.131
RE4	0.333	0.32	**0.941**	0.458	-0.26	-0.268	-0.314	-0.279	-0.269	-0.381	-0.025	-0.116
RE5	0.315	0.335	**0.944**	0.472	-0.244	-0.264	-0.336	-0.301	-0.26	-0.397	0.004	-0.148
RE6	0.314	0.322	**0.943**	0.439	-0.189	-0.215	-0.299	-0.271	-0.238	-0.355	0.003	-0.123
SP1	0.291	0.335	0.458	**0.946**	-0.187	-0.193	-0.207	-0.218	-0.178	-0.373	-0.009	-0.191
SP2	0.293	0.324	0.456	**0.946**	-0.178	-0.2	-0.226	-0.255	-0.197	-0.377	-0.014	-0.166
SP3	0.312	0.35	0.485	**0.939**	-0.16	-0.161	-0.206	-0.208	-0.189	-0.364	-0.014	-0.181
EN1	-0.382	-0.333	-0.197	-0.156	**0.860**	0.684	0.488	0.466	0.461	0.559	0.079	0.258
EN2	-0.379	-0.356	-0.19	-0.161	**0.835**	0.744	0.512	0.499	0.457	0.576	0.045	0.267
EN3	-0.369	-0.337	-0.199	-0.158	**0.863**	0.645	0.513	0.466	0.419	0.572	0.064	0.309
PT1	-0.423	-0.323	-0.198	-0.156	0.727	**0.886**	0.583	0.564	0.491	0.621	0.015	0.250
PT2	-0.419	-0.298	-0.253	-0.204	0.7	**0.863**	0.552	0.531	0.471	0.598	0.101	0.296
PT3	-0.401	-0.322	-0.218	-0.156	0.701	**0.878**	0.594	0.548	0.509	0.618	0.07	0.304
SR1	-0.361	-0.229	-0.261	-0.116	0.488	0.559	**0.824**	0.703	0.527	0.587	0.003	0.227
SR2	-0.299	-0.282	-0.211	-0.227	0.497	0.534	**0.788**	0.684	0.532	0.599	0.060	0.307
SR3	-0.358	-0.316	-0.261	-0.202	0.484	0.542	**0.839**	0.679	0.528	0.643	-0.012	0.353
SR4	-0.381	-0.306	-0.321	-0.196	0.481	0.535	**0.841**	0.687	0.536	0.651	0.002	0.256
ES1	-0.366	-0.309	-0.24	-0.204	0.483	0.551	0.717	**0.871**	0.56	0.638	0.035	0.221
ES2	-0.359	-0.294	-0.277	-0.22	0.492	0.552	0.74	**0.865**	0.58	0.661	0.030	0.317
ES3	-0.386	-0.315	-0.216	-0.2	0.477	0.522	0.709	**0.859**	0.539	0.620	0.032	0.265
	DP	LO	RE	SP	EN	PT	SR	ES	SO	AT	SC	TE
SO1	-0.304	-0.258	-0.180	-0.15	0.417	0.455	0.510	0.518	**0.838**	0.57	0.005	0.192
SO2	-0.398	-0.352	-0.220	-0.191	0.445	0.476	0.558	0.542	**0.849**	0.636	-0.018	0.231
SO3	-0.401	-0.333	-0.244	-0.188	0.465	0.492	0.573	0.562	**0.829**	0.648	0.028	0.25
SO4	-0.296	-0.244	-0.246	-0.139	0.436	0.466	0.529	0.561	**0.860**	0.592	-0.002	0.267
AT1	-0.515	-0.458	-0.361	-0.358	0.6	0.632	0.709	0.700	0.697	**0.934**	0.052	0.374
AT2	-0.582	-0.519	-0.4	-0.403	0.63	0.659	0.707	0.696	0.684	**0.939**	0.041	0.373
AT3	-0.54	-0.463	-0.346	-0.348	0.650	0.680	0.710	0.690	0.668	**0.945**	0.051	0.431
SC1	-0.037	0.003	0.001	0.003	0.046	0.043	-0.031	-0.005	-0.03	0.007	**0.941**	0.203
SC2	-0.038	-0.002	-0.054	-0.031	0.06	0.059	0.007	0.032	0.003	0.039	**0.927**	0.217
SC3	-0.029	-0.006	0.016	0.007	0.079	0.076	0.029	0.053	0.022	0.064	**0.948**	0.247
SC4	-0.026	-0.006	-0.023	-0.031	0.071	0.065	0.023	0.040	0.006	0.068	**0.939**	0.235
SC5	-0.023	0.010	-0.017	-0.010	0.083	0.082	0.037	0.049	0.012	0.054	**0.945**	0.233
TE1	-0.157	-0.086	-0.141	-0.197	0.26	0.270	0.299	0.259	0.211	0.372	0.16	**0.881**
TE2	-0.119	-0.056	-0.12	-0.186	0.293	0.281	0.307	0.285	0.255	0.372	0.235	**0.918**
TE3	-0.113	-0.085	-0.098	-0.136	0.325	0.322	0.333	0.293	0.286	0.387	0.255	**0.907**

DP = depression; LO = loneliness; RE = regret; SP = social problems; EN = enjoyment; PT = passing time; SR = stress relief; ES = escape; SO = social interaction; AT = attitude; SC = self-control; TE = tendency of BW.

Table A2
Common method bias analysis

Indicator	Substantive factor loading (R1)	$R1^2$	Method factor loading	$R2^2$	Indicator	Substantive factor loading (R1)	$R1^2$	Method factor loading	$R2^2$
DP1	0.959	0.919	-0.011	0	**PT1**	0.885	0.783	-0.02	0
DP2	0.96	0.921	0.021	0	**PT2**	0.864	0.747	-0.006	0
DP3	0.955	0.913	0.023	0.001	**PT3**	0.877	0.769	0.032	0.001
DP4	0.958	0.918	-0.02	0	**SR1**	0.831	0.69	-0.045	0.002
DP5	0.958	0.917	-0.003	0	**SR2**	0.788	0.621	-0.006	0
DP6	0.962	0.925	0.004	0	**SR3**	0.836	0.7	0.013	0
DP7	0.956	0.914	0.037	0.001	**SR4**	0.838	0.702	-0.035	0.001
LO1	0.956	0.914	-0.003	0	**ES1**	0.873	0.761	0.013	0
LO2	0.951	0.905	-0.034	0.001	**ES2**	0.86	0.739	-0.051	0.003
LO3	0.947	0.897	0.014	0	**ES3**	0.863	0.745	0.073	0.005
LO4	0.944	0.891	-0.013	0	**SO1**	0.847	0.717	0.068	0.005
LO5	0.947	0.897	0.015	0	**SO2**	0.844	0.713	-0.01	0
LO6	0.957	0.916	-0.046	0.002	**SO3**	0.819	0.671	0	0
LO7	0.951	0.904	0.023	0.001	**SO4**	0.867	0.751	-0.011	0
RE1	0.946	0.896	-0.023	0.001	**AT1**	0.935	0.874	-0.005	0
RE2	0.943	0.89	-0.004	0	**AT2**	0.939	0.881	-0.008	0
RE3	0.939	0.883	0.027	0.001	**AT3**	0.945	0.893	0.01	0
RE4	0.94	0.883	-0.01	0	**SC1**	0.943	0.89	-0.002	0
RE5	0.942	0.887	-0.006	0	**SC2**	0.929	0.863	0.053	0.003
RE6	0.944	0.891	0.016	0	**SC3**	0.945	0.893	-0.117	0.014
SP1	0.946	0.894	0.025	0.001	**SC4**	0.938	0.879	-0.041	0.002
SP2	0.946	0.895	0.009	0	**SC5**	0.945	0.892	0.064	0.004
SP3	0.94	0.884	-0.009	0	**TE1**	0.888	0.788	0.026	0.001
EN1	0.864	0.747	0	0	**TE2**	0.918	0.843	0.001	0
EN2	0.829	0.688	0.089	0.008	**TE3**	0.901	0.812	0.036	0.001
EN3	0.865	0.749	-0.062	0.004	**Average**	0.943	0.890	0.004	0.001

Table A3
Collinearity diagnostics

Variable	Tolerance	VIF
Depression	0.452	2.212
Loneliness	0.489	2.045
Regret	0.689	1.451
Social problems	0.667	1.499
Enjoyment	0.314	3.187
Passing time	0.275	3.638
Stress relief	0.246	4.062
Escape	0.268	3.734
Social interaction	0.436	2.292
Attitude	0.218	4.597
Self-control	0.987	1.013

Table A4
Construct cross-validated redundancy

Variable	SSO	SSE	1-SSE/SSO
Depression	181.801	60.130	0.669
Loneliness	174.635	56.785	0.674
Regret	205.226	58.185	0.716
Social problems	204.108	62.067	0.695
Enjoyment	210.109	66.175	0.685
Passing time	181.552	62.782	0.654
Stress relief	181.552	62.782	0.654
Escape	204.564	63.972	0.687
Social interaction	181. 665	62.156	0.667
Attitude	1362.011	430.099	0.683

Table A5
Construct cross-validated communality

Variable	SSO	SSE	1-SSE/SSO
Depression	3178.001	260.312	0.918
Loneliness	3178.000	307.762	0.903
Regret	2724.000	304.362	0.888
Social problems	1362.000	148.595	0.890
Enjoyment	1362.000	371.231	0.727
Passing time	1460.000	361.476	0.752
Stress relief	1816.000	584.603	0.678
Escape	1362.000	342.645	0.748
Social interaction	1816.000	522.156	0.712
Attitude	1362.000	184.365	0.864

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