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One More Episode Won't Hurt! How Stress, Social Interaction Anxiety, and Loneliness Relate to Binge-Watching Behaviours among University Students

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Abstract
Evidence on the relationship between binge-watching and stress, social interaction anxiety, and loneliness among university students is still scarce and limited to a few countries; thus, the findings remain largely inconclusive. This study fills this gap by examining whether binge-watching is associated with and predicted by stress, social interaction anxiety, and loneliness. Television series viewing patterns, binge-watching behaviour, and psychological states of 149 Malaysian undergraduate students (Male = 48; Female = 101) aged 18 to 25 years were assessed through the Binge-Watching Addiction Questionnaire, the Perceived Stress Scale, the Social Interaction Anxiety Scale, and the UCLA Loneliness Scale Version 3 in a cross-sectional online survey. The results show that most participants are moderately stressed, have high social interaction anxiety, and have high levels of loneliness. Although both genders report moderate binge-watching behaviour, female students have a higher frequency of binge-watching than males. Pearson correlational analyses show that binge-watching is significantly correlated with social interaction anxiety and loneliness but not with perceived stress. In multiple regression analysis, social interaction anxiety is the single predictor of binge-watching. These findings suggest that social interaction anxiety contributes significantly to explaining the extent of binge-watching behaviour. Watching television series consecutively seems to act as a strategy to satisfy certain needs and provide gratification to the viewers, confirming the applicability of the Uses and Gratification Theory. As such, higher learning institutions may consider designing and implementing interventions that address social interaction needs in relation to excessive consumption of television shows among students.

Keywords: binge-watching; loneliness; social interaction anxiety; stress; university students
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Introduction

Global streaming services, video-on-demand, and over-the-top platforms have witnessed an explosion in subscriptions over the past five years. Just in the first quarter of 2023, Netflix had 232.5 million subscribers (Ruby, 2023), while Amazon Prime Video had over 200 million subscribers (Georgiev, 2023[a]), followed by Disney+ with over 164.2 million subscribers (Georgiev, 2023[b]) worldwide. The release-all-at-once and catch-up service business models, along with Internet accessibility, have shifted television viewing patterns from watching one episode per sitting to several episodes continuously. This shift creates binge-watching, a phenomenon around 2011 (Starosta & Izydorczyk, 2020) and has since become normalised as part of television viewing culture.

Studies by Arend et al. (2021) and Rubenking and Bracken (2021) found that binge-watching is more apparent among young people, particularly university students. It has been reported that 89.4% of university students who participated in Merrill Jr. and Rubenking's (2019) study deemed binge-watching to be a norm. This finding is of grave concern as treating binge-watching as a norm could make students neglect other tasks and, consequently, may justify binge-watching as a way to take a break. The obsessive nature of this behaviour may also indirectly hinder students from getting on track with their studies, which can have a greater impact on academic performance (Vaterlaus et al., 2019).

University settings have been reported to be one of the factors that promote binge-watching. For example, Vaterlaus et al. (2019) found that because students do not live with their parents, they have the freedom to marathon any shows as no one will stop them. Other motives for binge-watching include stress (Tefertiller & Maxwell, 2018), seeking to escape from academic tasks (Chan et al., 2022; Halfmann & Reinecke, 2021), fear of missing out (Susanno et al., 2019), impulsivity (Starosta et al., 2021), and enjoyment (Granow et al., 2018). Evidence has also shown that social anxiety (Sun & Chang, 2021) and the need to relax or unwind encourage students to binge-watch (Dixit et al., 2020; Tefertiller & Maxwell, 2018). Unfortunately, along with these determinants come negative consequences for university students. Such consequences range from disruption in sleep patterns and eating habits (Vaterlaus et al., 2019) to emptiness and feelings of guilt (Tefertiller & Maxwell, 2018). However, the most consistent impact is represented by symptoms of addiction, including loss of control and dependency (Flayelle et al., 2019).

Since binge-watching is associated with symptoms of addiction and is influenced by various factors, it demonstrates the importance of conducting further research to understand this phenomenon. However, the majority of the available literature has looked at binge-watching using samples from university students in Australia (Horvath et al., 2017), Germany (Steinbach, 2018), the United States (Vaterlaus et al., 2019), Pakistan (Ilyas & Qureshi, 2020), Poland (Starosta et al., 2021), and Taiwan (Sun & Chang, 2021). Little research is available on samples from Malaysia, making the generalisation of past findings inappropriate for the Malaysian population as binge-watching patterns might differ across countries. Except for studies by Chan et al. (2022), Mahmoud and Abdul Wahab (2021), Ramayan et al. (2018), and Tengku Mohd Azzman and Abdul Manaf (2022), there is almost no other research on binge-watching available. Even then, the scope of these studies either covers motives such as entertainment, social interaction, escapism, boredom or consequences, such as interpersonal communication or parasocial interaction. Therefore, this population has not fully explored determinants like stress, social interaction anxiety, and loneliness, warranting a study to examine the binge-watching phenomenon using a sample of undergraduate university students in Malaysia. Accordingly, the following sections elaborate on the justifications for selecting these variables in this study.

Binge-Watching: Conceptualisation, Motivations, And Consequences

What constitutes binge-watching is contentious (Flayelle et al., 2020). However, the common thread in most of its definitions tends to revolve around three criteria: (i) the quantity or number of episodes or programmes watched, (ii) the nature of the content, either of the same series or miscellaneous programmes involved, and (iii) the viewing time pattern (Flayelle et al., 2020). Based on these three criteria, there is consensus to broadly define binge-watching as the practice of seeing, viewing, or consuming multiple episodes of television series consecutively at one point in time or in rapid succession (Flayelle et al., 2020; Merrill Jr & Rubenking, 2019).

From this broad definition, Forte et al. (2021) divided it into four components covering the affective, behavioural, and cognitive aspects. The first component is craving, which addresses the affective aspect and refers to the degree of pleasure and mood during binge-watching. Meanwhile, dependency describes the inability to control binge-watching behaviour, and avoidance is a coping style characterised by the lack of awareness about binge-watching behaviour and the tendency to minimise it. Both dependency and avoidance manifest the behavioural aspect. Finally, anticipation is considered a component of the cognitive aspect of binge-watching, which relates to the implicit cognitions and executive functions that people do to search for cues related to the contents of the television series.

Starosta et al. (2021) argued that because binge-watching behaviour is highly immersive, it has the potential risk of addiction, which could lead to loss of control. The behaviour is also associated with negative psychosocial and health consequences, including stress, social isolation, and disrupted sleep patterns (Sun & Chang, 2021; Vaterlaus et al., 2019). In addition, feelings of guilt and regret have been found to be an immediate experience due to the time wasted on binge-watching (Lehmkühler, 2020). Regret and guilt arise because the time was not spent doing something worthwhile. The literature on binge-watching is also inundated with its association with psychological aspects, such as depressive symptoms and impulsivity (Steins-Loeber et al., 2020), emotion (Tefertiller & Maxwell, 2018), and cognitive function (Ilyas & Qureshi, 2020). Vaterlaus et al. (2019) also reported that binge-watching is used as a distraction from academic responsibilities and mental health problems and contributes to an unhealthy diet, where students consume more junk food when they binge-watch.

To understand binge-watching and its consequences, the motivations or determinants that can lead to this behaviour must be examined. Studies have established that the motivations to binge-watch are driven by a multitude of factors, including entertainment, relaxation, fandom, the need to pass the time, and staying updated (Dixit et al., 2020; Panda & Pandey, 2017; Pittman & Sheehan, 2015; Susanno et al., 2019). People may also behave this way to seek gratification, cognitive challenges, or high-sensation experiences (Castro et al., 2021; Nanda & Banerjee, 2020; Panda & Pandey, 2017). Similarly, people may be driven by the need to connect socially with others and relieve stress and loneliness (Dixit et al., 2020). Another common motive for binge-watching is using it as a coping strategy to deal with negative emotions or escape from reality or boredom (Dixit et al., 2020; Pittman & Sheehan, 2015; Starosta et al., 2019).

Given that stress, social connection or interaction, and loneliness have been identified in the literature as among the motives for binge-watching, one might hypothesise that they can significantly predict behaviour. Therefore, the roles of these variables are discussed in the following sections.

Stress As A Trigger For Binge-Watching

Stress refers to an individual's response to his or her surroundings that signal threat, followed by negative affect and physiological arousal (Folkman, 2020). This phenomenon is unavoidable for university students, especially when dealing with academic demands. In their study involving 388 university students in Malaysia, Wong et al. (2023) reported that 26.3% of the participants experienced severe and extremely severe stress. These results echo Kumaran et al.'s (2022) study, which found that 21.5% of their 384 participants had moderate to extremely severe stress. Hence, it is not surprising that Malaysian university students have higher scores for mental health problems and negative mental health attitudes when compared to their counterparts in the United Kingdom (Kotera et al., 2021).

Studies have shown that the root cause of stress among university students may stem from academic stress, financial issues, and poor sleep patterns (Anjali et al., 2019; Montagni et al., 2020; Norazlan et al., 2020). When students try to cope with these issues, binge-watching serves as an avoidance coping mechanism to release stress, such as by distracting them from academic tasks and having affordable, convenient, and easily accessed entertainment (Vaterlaus et al., 2019). Watching several episodes of shows has also been reported as being able to clear students' minds and offer an escape from dealing with stress (Tefertiller & Maxwell, 2018). Accordingly, Halfmann and Reinecke (2021) suggested that binge-watching may be an effective source of relaxation in stressful situations, thus becoming a means to cope with negative emotional states. Granted that university students' psychological well-being is of concern due to various stressors and that binge-watching is the dominant method of coping with them, it is crucial to examine stress as a determinant of binge-watching behaviour. In line with the results of the above studies, we hypothesise that stress would predict binge-watching behaviours.

Social Interaction Anxiety And Binge-Watching

Social interaction anxiety is another factor associated with binge-watching (Sun & Chang, 2021). Individuals with such anxiety are characterised by avoidance of interaction and meetings and a tendency to evaluate social situations as negative, such as perceiving friendliness as being sarcastic (Vassilopoulos & Banerjee, 2010). For this reason, they withdraw from social interaction. In the university population, one of the maladaptive coping strategies that students employ to combat social interaction anxiety is attaching themselves to their mobile phones. For example, Kaur et al. (2021) found that students with social interaction anxiety have a high level of nomophobia, which makes them afraid of mobile phone detachment. The fear of physical socialisation makes students glued to their mobile phones, which fosters virtual interaction.

A more recent study by Sun and Chang (2021) also found that those who feel anxious about physical interaction seek virtual social interaction via binge-watching. Wheeler (2015) asserted that binge-watching is one avenue that promotes virtual interaction, especially when people feel a connection or affiliation with fictional characters. Steiner and Xu (2020) reported that people marathon television and video-on-demand shows to catch up with and be a part of their social circle, knowing that new releases of popular shows will be the talk of the town. It has also been suggested that the need to fit in with social circles drives people to binge-watch (Panda & Pandey, 2017). Therefore, it is reasonable to conclude that people may binge-watch to establish virtual interaction as a substitute for physical interaction, to seek social engagement, or due to the fear of being excluded. This reasoning motivates our second hypothesis - that social interaction anxiety is associated with binge-watching.

Loneliness and Binge-Watching

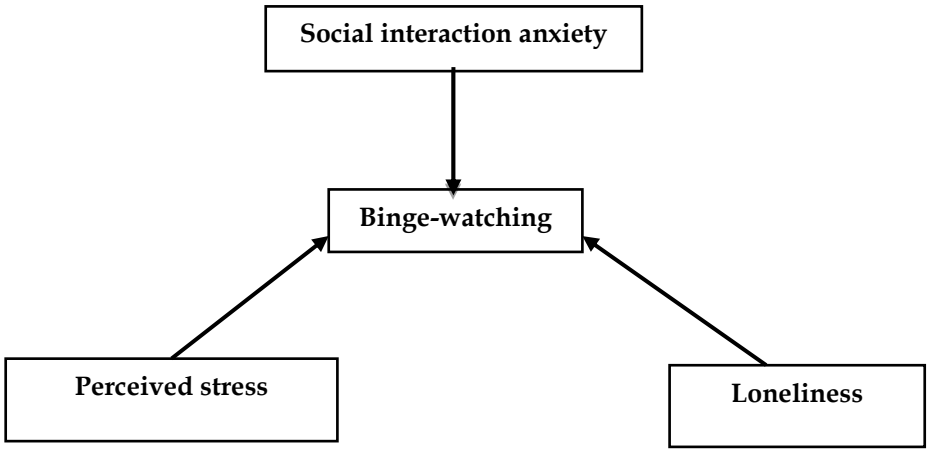
There is consistent evidence linking loneliness to binge-watching, particularly among young people. Defined as a negative psychological state, such as feelings of emptiness, helplessness, and boredom that people experience when their interpersonal relationship does not reach the expected level (Kim, 2018), loneliness is a common problem among university students (Diehl et al., 2018). Some factors contributing to loneliness in this population include social anxiety, negative self-image, and homesickness (Pijpers, 2017). Digital technologies also play a role in coping with loneliness. Students who feel lonely tend to use social platforms to communicate, resulting in increased Internet usage and, eventually, addiction (Stankovska et al., 2016). Like social interaction anxiety, binge-watching also offers an escape to its viewers as a coping strategy to compensate for the lack of desired social relationships with fictional characters (Gabbiadini et al., 2021).

Several studies have investigated the association between binge-watching and loneliness. For example, in their study on the role of binge-watching as a mediator between Type D personality and loneliness, Batik and Demir (2021) found that increased binge-watching decreases loneliness among individuals with Type D personality. This finding may explain why people binge-watch to cope with loneliness. Notably, this coping with loneliness through binge-watching strategy is more apparent in females than males (Starosta et al., 2019). Hence, our third hypothesis suggests that loneliness increases binge-watching behaviours.

Based on the studies discussed above, there is little doubt that stress, social interaction anxiety, and loneliness are associated with binge-watching behaviour among university students. Therefore, it is worth investigating whether or not these relationships would also hold for Malaysian undergraduate university students. The Uses and Gratification Theory (Katz et al., 1973) suggests that people consume media, like television and the Internet, to satisfy their affective, cognitive, personal-integrative, social-integrative, and tension-release needs. If the users' needs are fulfilled, gratification will be obtained from using the preferred media. Drawing from this theory, we argue that binge-watching is used as an avenue to gratify certain needs of the viewers, especially those who experience stress, social interaction anxiety, and loneliness. In sum, we hypothesised that determinants, such as stress, social interaction anxiety, and loneliness, may predict binge-watching behaviour among undergraduate students in order for them to obtain gratification. See Figure 1 for the conceptual framework of the study.

Figure 1

Conceptual framework for linking perceived stress, social interaction anxiety, loneliness, and binge-watching in Malaysian undergraduate students



Method

Research Design

This study used a cross-sectional survey design with an online questionnaire to collect data. The survey was self-administered, anonymous, and completed on a voluntary basis. This design was chosen for two reasons: first, it can provide large amounts of data in an efficient and reliable way, and second, it allows participants to respond to the survey at their convenience (DeCarlo et al., 2021). The study received ethical approval from the Department of Psychology, International Islamic University Malaysia. Permission was also obtained from the respective scale developers for survey items that are not open access.

Participants And Procedure

The online survey was disseminated to undergraduate students aged between 18 and 25 (M = 22.52; SD = 1.31) in Malaysia from April to May 2022. The sample was purposive in that the participants must fulfil the following inclusion criteria: aged between 18 and 25 years old, a Malaysian undergraduate student, and binge-watched three or more episodes of a television series in one sitting (Merril Jr & Rubenking, 2019). Potential participants were targeted through advertisement posters and messages placed in various student groups, associations, and communities on social media platforms such as WhatsApp and Instagram. Individuals who responded to the posters or messages received a web link to the online survey, which described the study, the participants' expected role, and the survey questionnaire. They were also informed about the study's aims and obtained consent before starting the survey. This approach, i.e., self-select to opt-in to the study, is used because of its low cost and ability to reach the target population (Fricker, 2016).

Measures

The online survey included questions that assessed participants' demographic characteristics, devices used to binge-watch, and time spent to binge-watch, along with four scales that measured binge-watching, stress, social interaction anxiety, and loneliness as follows:

Binge-watching: The Binge-Watching Addiction Questionnaire (Forte et al., 2021) was used to measure participants' binge-watching behaviour. This scale has 20 items divided into four domains (i.e., craving, dependency, anticipation, and avoidance), each with a five-point Likert-response scale of 0 = never, 1 = rarely, 2 = sometimes, 3 = often, and 4 = always. Total possible scores are 0-80, with 0-26, 27-53, and 54-80 being low, moderate, and high binge-watching engagement, respectively. In this study, Cronbach's alpha for this scale is a = .89, indicating high internal consistency.

Stress: The 10-item Perceived Stress Scale by Cohen et al. (1994) was used to measure stress levels. Participants indicated their responses on a five-point Likert scale (0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often, 4 = very often). Items 4, 5, 7, and 8 were reverse-scored. All items were then summed to create a total score ranging between 0 and 40. Scores ranging from 0-13 are considered low stress, 14-26 moderate stress, and 27-40 high perceived stress. The Cronbach's alpha for this scale is a = .77, demonstrating an acceptable internal consistency.

Social interaction anxiety: The Social Interaction Anxiety Scale (SIAS) by Mattick and Clarke (1998) was used to measure social interaction anxiety. This scale consists of 19 items on a five-point Likert scale (0 = not at all, 1 = slightly, 2 = moderately, 3 = very, 4 = extremely). Items 8 and 10 were reverse-scored. The total possible scores for SIAS range from 0 to 76, with a cut-off score of 34 representing significant social interaction anxiety (Mattick & Clarke, 1998). The Cronbach's alpha for this scale is .93 in this study.

Loneliness: This variable was examined using the UCLA Loneliness Scale (version 3) (Russell, 1996). It has 20 items with a four-point Likert scale of 0 = I never feel this way, 1 = I rarely feel this way, 2 = I sometimes feel this way, and 3 = I often feel this way. Items 1, 5, 6, 9, 10, 15, 16, 19, and 20 were reverse-scored. All scores were then summed, with total scores of less than 28 interpreted as low loneliness, 28 to 43 as moderate, and over 43 as high (Cacioppo & Patrick, 2008). The Cronbach's alpha is .90 in this study.

As Baker (1998) and Polit et al. (2001) recommended, the survey was pre-tested to ensure the clarity and feasibility of the questionnaire. This pre-test on 15 participants who met the inclusion criteria indicated that no changes to the survey items were necessary for the present study. Bradburn et al. (2004) posit that samples for pre-test or pilot tests may range from at least 10 participants to as high as 50 (p. 358). Therefore, the sample size of our pre-test is adequate to obtain useful data. The survey was then administered using Google Forms and distributed on various social media platforms for the primary data collection.

Data Analysis

We analysed the data with IBM SPSS Statistics for Windows version 27. As the first step, preliminary analysis testing statistical assumptions of regression was carried out. Then, descriptive statistics were computed, and Pearson correlation analyses were used to explore the magnitude of the relationships between the study variables. Following these analyses, we performed multiple regression analyses, with stress, social interaction anxiety, and loneliness consecutively set as predictors. Statistical significance is represented by $p < .05$ and a 95% confidence interval (CI) that does not include zero.

Results

Participants' Demographic Characteristics

Table 1 displays information about the participants' characteristics. A total of 149 participants (Male = 48; Female = 101) responded to the survey, passing the minimum required sample size of 74 calculated using Green's (1991) formula of $n > 50 + 8p$, where p is the number of predictors (i.e., in this study, there are three predictors: stress, social interaction anxiety, and loneliness). The vast majority of the participants are in their fourth year of study (38.3%) and come from Selangor (30.2%), Kuala Lumpur (14.1%), and Sabah (10.1%).

Table 1

Participants' demographic characteristics (n = 149)

Demographic Characteristics	Category	Frequency	Percentage (%)
Gender	Male	48	32.20
	Female	101	67.80
	Total	**149**	**149**
Age	18	1	0.70
	19	3	2.00
	20	4	2.70
	21	26	17.40
	22	24	16.10
	23	68	45.60
	24	13	8.70
	25	10	6.70
	Total	**149**	**100**
State	Johor	14	9.40
	Kedah	11	7.40
	Kelantan	8	5.40
	Melaka	4	2.70
	Negeri Sembilan	3	2.00
	Pahang	7	4.70
	Perak	4	2.70
	Penang	6	4.00
	Sabah	15	10.10
	Sarawak	6	4.00
	Selangor	45	30.20
	Terengganu	5	3.40
	Kuala Lumpur	21	14.10
	Total	**149**	**100**
Year of Study	1	19	12.80
	2	35	23.50
	3	38	25.50
	4	57	38.30
	Total	**149**	**100**

Preliminary Analysis

To fulfil the requirements to perform regression analyses, the assumptions regarding normality, multicollinearity, homoscedasticity, and influential outliers were examined. Table 2 shows that the mean, standard deviations, skewness and kurtosis of the measured variables are within the acceptable cut-off values between -3 and 3 for skewness and -10 and 10 for kurtosis, as recommended by Brown (2015). The results of the P-P plot also demonstrate a normal distribution of residuals where the points form a straight line.

Next, the variance inflation factor (VIF) and tolerance values were examined to ensure the variables are not highly intercorrelated or exhibit multicollinearity. Results show that the tolerance values are all above the cut-off value of 0.1 (Hair et al., 2019), and the VIF values are all less than 5 (Hair et al., 2019), indicating no multicollinearity in the data. The results also show that the Durbin-Watson value of 1.611 obtained in this study is close to 2, with the plot of standardised residuals versus standardised predicted values showing no apparent signs of funnelling, as Field (2018) recommended. Therefore, the assumption for homoscedasticity is not violated.

Finally, Cook's distance was examined to ensure that no one case has a disproportionate influence on the regression model. The maximum value of Cook's distance in the data is .152, which is less than the criterion of 1 (Tabachnick & Fidell, 2017), demonstrating that no case has such a significant effect that they might distort the overall results of the regression.

Table 2

Descriptive statistics and correlations for study variables (n = 149)

Variable		1	2	3	4
1	Binge-watching	-	.13	.42**	.31**
2	Perceived stress		-	.29**	.48**
3	Social interaction anxiety			-	.56**
4	Loneliness				-
	Cronbach's alpha (*a*)	.89	.77	.93	.90
	Mean	40.85	21.45	39.02	49.38
	Standard deviation	13.37	5.88	15.09	10.62
	Skewness	-.02	.32	-.18	-.15
	Kurtosis	-.26	1.59	-.42	.03
	Tolerance	-	.77	.69	.58
	Variance inflation factor (VIF)	-	1.30	1.45	1.73

***. Correlation is significant at the 0.01 level (2-tailed).

Patterns of Binge-Watching

From Table 3, it can be seen that although both male and female students display moderate binge-watching behaviour (n = 99; 66.4%), the latter (M = 43.43; SD = 12.69) report considerably higher binge-watching scores than the former (M = 35.42; SD = 13.26). Our results also show that 26 participants (17.4%) have high binge-watching rates. Additionally, binge-watching is more pronounced among students in year four or final year (n = 41.51; 13.4%), followed by year two, year one, and year three students, respectively.

Most participants use handphones or tablets (57.0%) and laptops (30.9%) to binge-watch. The remaining devices used are televisions (10.1%), and 2% of the participants use other devices besides those mentioned above. Moreover, the results indicate that most participants binge-watch during their free time (78.5%) and semester breaks (13.4%). The remaining 2.7% of participants binge-watch during the study period (apart from semester break), and 5.4% binge-watch at other times, such as at night, whenever they are in the mood to binge-watch, or whenever someone accompanies them.

Table 3

Patterns of binge-watching behaviour among Malaysian undergraduate students in this study (n = 149)

Category		Frequency	Percentage (%)	*M*	*SD*
What is the pattern of binge-watching among the participants?					
Gender					
Male	Low	12	25.0		
	Moderate	31	64.6		
	High	5	10.4		
		48	**100**	35.42	13.26
Female	Low	12	11.9		
	Moderate	68	67.3		
	High	21	20.8		
		101	**100**	43.43	12.69
Year of Study					
1	Low	3	15.8		
	Moderate	11	57.9		
	High	5	26.3		
		19	**100**	40.68	14.93
2	Low	6	17.1		
	Moderate	26	74.3		
	High	3	8.6		
		35	**100**	41.09	11.59
3	Low	7	18.4		
	Moderate	24	63.2		
	High	7	18.4		
		38	**100**	39.71	14.45
4	Low	8	14.0		
	Moderate	38	66.7		

High	11	19.3		
	57	**100**	41.51	13.42
What device is used to binge-watch?				
Television	15	10.10		
Handphone/Tablet	85	57.00		
Laptop	46	30.90		
Others	3	2.00		
	149	**100**		
When binge-watch?				
Anytime when I am free	117	78.50		
During study period (apart from the semester break)	4	2.70		
During semester break only	20	13.40		
Others (at night, when in a mood, or when I have someone accompanying me to watch)	8	5.40		
	149	**100**		

Table 4 shows that the overall prevalence of participants reporting moderate binge-watching (*M* = 40.74; *SD* = 6.91) is 66.4% (*n* = 99), while 26 (17.4%) report high binge-watching (*M* = 60.46; *SD* = 5.87). Perceived stress has a similar trend, with over three-quarters of participants (*n* = 119; 79.9%) being moderately stressed (*M* = 20.49; *SD* = 3.21) and 14.1% (*n* = 21) reporting high stress (*M* = 31.76; *SD* = 3.74).

It is of concern that although 59 (39.6%) participants score within the normal range on the Social Interaction Anxiety Scale (*M* = 24.07; *SD* = 8.64), 90 (60.4%) of them meet or exceed the clinical cut-off of 34, which is recommended by Mattick and Clarke (1998). This result indicates that most participants are reporting signs of anxiety in social interaction. Perhaps the most profound result of our study is that a striking 73.8% (*n* = 110) of all participants report high levels of loneliness (*M* = 54.18; *SD* = 7.24), while another 22.8% (*n* = 34) report moderate loneliness, leaving the prevalence of low loneliness at 3.4% (*n* = 5) only. Table 4 summarises these results.

Table 4

Categories of scores for study variables (n = 149)

Scale / Variable	Range of total possible scores	Range of obtained scores	*M*	*SD*	*n (%)*
Binge-Watching Addiction Questionnaire (Forte et al., 2021)	0-80	8-76	40.85	13.73	149 (100)
Binge-watching					
• Low	0-26		20.04	4.84	24 (16.1)
• Moderate	27-53		40.74	6.91	99 (66.4)
• High	54-80		60.46	5.87	26 (17.4)

Perceived Stress Scale (Cohen et al., 1994)	0-40	0-40	21.45	5.88	149 (100)
Perceived stress					
• Low	0-13		10.11	4.01	9 (6.0)
• Moderate	14-26		20.49	3.21	119 (79.9)
• High	27-40		31.76	3.74	21 (14.1)
Social Interaction Anxiety Scale (Mattick & Clarke, 1998)	0-76	0-70	39.02	15.09	149 (100)
Social interaction anxiety					
• No social interaction anxiety			24.07	8.64	59 (39.6)
• 34 - 46	cut-off		40.23	3.26	39 (26.2)
• 47 - 59	score of 34		52.14	3.64	37 (24.8)
• > 60			64.00	3.44	14 (9.4)
UCLA Loneliness Scale (version 3) (Russell et al., 1996)	0-60	23-75	49.38	10.62	149 (100)
Loneliness					
• Low	< 28		24.60	1.52	5 (3.4)
• Moderate	28 - 43		37.50	4.14	34 (22.8)
• High	> 43		54.18	7.24	110 (73.8)

Correlates and Predictors of Binge-Watching

In the Pearson correlational analyses, binge-watching is positively and significantly correlated with social interaction anxiety (r = .42, p < .01) and loneliness (r = .31, p < .01) but not with perceived stress (r = .13, p =.06). Meanwhile, perceived stress is positively and significantly correlated with social interaction anxiety (r = .29, p < .01) and loneliness (r = .48, p < .01). Finally, a statistically significant correlation is found between social interaction anxiety and loneliness (r = .56, p < .01). See Table 2 for these results.

A multiple regression analysis was performed using perceived stress, social interaction anxiety, and loneliness as the predictors and binge-watching as the dependent variable. Results indicate that perceived stress (B = -.07; β = -.03, p = .72) and loneliness (B = .15; β = .12, p = .23) do not significantly predict binge-watching. On the other hand, we find a significant predictive relationship between social interaction anxiety and binge-watching (B = .32; β = .36, p < .001), with $F(3, 145) = 10.64$, p < .001, R^2 = .18. Thus, social interaction anxiety is a significant predictor of binge-watching (see Table 5 and Figure 2).

Table 5

Regression results with binge-watching as the criterion/outcome variable

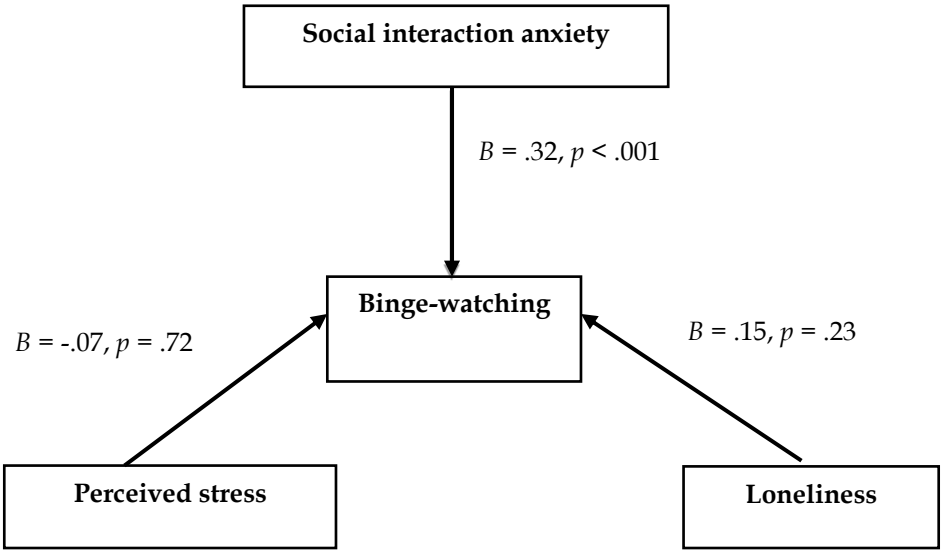
	B	*SE*	*β*	*p*	95% CI	
					Lower	Upper
Perceived stress	-.07	.19	-.03	.72	-.46	.32
Social interaction anxiety	.32	.08	.36	.00	.16	.47

Loneliness	.15	.13	.12	.23	-.09	.39

R^2 = .18, $F(3, 145)$ = 10.64, p < .001

Figure 2

Regression model linking perceived stress, social interaction anxiety, loneliness, and binge-watching in Malaysian undergraduate students



Discussion

This study confirms that binge-watching is a growing social phenomenon that is tantamount to almost a culture practised among undergraduate university students in Malaysia. Specifically, nearly 80% of the participants reported moderate to high binge-watching rates, demonstrating the students' appetite for watching television series and over-the-top media content. This percentage is not uncommon, as studies have shown that young people aged 18–39 years account for 70% of binge-watchers in the general population (Starosta & Izydorczyk, 2020). However, what is more worrying is that the majority of the participants are also moderately stressed, highly anxious about social interactions, and feel lonely most of the time.

Female participants have higher binge-watching scores, consistent with past studies, such as those by Pittman and Sheehan (2015) and Spruance et al. (2017), that have found a positive correlation between the female gender and binge-watching frequency and intensity. We could not perform the respective significance test because there were comparatively fewer male participants than females who took part in the study. Although the survey was not advertised in a way that targeted female participants in particular, it may be expected that the topic of binge-watching appeals more to females than males. Studies by Merrill Jr. and Rubenking (2019) and Starosta and Izydorczyk (2020) find that gender plays a significant role in making females binge-watch more often than males. Another explanation could be that females are more likely to respond to surveys, contributing to their higher sample size in this study. Gender differences in research participation have been well documented in the literature, with females' educational expansion, personality traits, gender roles, and norms around helping to be the most plausible reasons for a higher propensity towards research participation (Becker, 2022; Green, 1996). Therefore, we remain cautious in

interpreting this finding and suggest that researchers achieve a more equal male-to-female ratio in their studies.

Although having more or less similar mean scores, years of the study appear to relate to a greater tendency to binge-watch, with final-year students being more likely to do so. One plausible explanation for this phenomenon may be attributed to academic or performance stressors, time management, personal problems, or the prospect of graduating, which contribute to stress among final-year students (Lavoie-Tremblay et al., 2022; Zumrah & Mohd Nor, 2015). It is likely that under stress, the students just want to binge-watch their favourite shows.

Our results reveal that social interaction anxiety contributes significantly to explaining the extent of binge-watching behaviour. Two contributing factors may underlie this phenomenon. First, studies by Starosta et al. (2021) as well as Sun and Chang (2021) have shown that individuals with high social interaction anxiety struggle to regulate distressing emotions; therefore, they tend to find activities that offer them pleasure and satisfaction that fulfil their emotional needs. This is where the usage of media plays a critical role in assisting people to escape from anxiety during social interaction. More specifically, by engaging in binge-watching, some of the individual's desired needs are satisfied. These needs could be affective needs, where binge-watching is used to seek pleasure to regulate negative emotions, or tension-released needs, where people binge-watch to release anxiety about social interaction. As a result, the enjoyment and pleasure experienced after binge-watching make people want to binge-watch more (Merrill Jr. & Rubenking, 2019), implying that binge-watchers obtain the gratification needed to regulate positive emotions in tandem with the Uses and Gratification Theory.

Second, highly anxious students may binge-watch out of a desire to connect. The need for social inclusion draws people to be included in any form of relationship. To be socially included, people seek to establish relationships, whether physical or virtual. People with social interaction anxiety prefer to seek virtual interaction as the interactive platforms do not require them to be physically present or be negatively evaluated (Hutchins et al., 2021). For this reason, binge-watching is used to establish relationships as a substitute for the absence of physical relationships. The parasocial relationship with fictional characters is strong among binge-watchers, especially when they watch their favourite shows (Erickson et al., 2019). The engagement in watching several episodes provides a sense of connectedness, enabling viewers to establish virtual relationships. In short, the consequences of social interaction anxiety in participants may represent risk factors for the onset of their binge-watching symptoms and motivations. At the same time, social interaction anxiety may worsen binge-watching behaviour, which, in turn, will negatively impact interpersonal and emotional regulation.

Our results also yield evidence that stress does not significantly predict binge-watching, indicating that binge-watching is likely not the only thing that university students spend their screen time on. Previous studies have reported that social media platforms, such as Instagram and Facebook, offer a great interactive medium for people to communicate, allowing people to receive the reassurance needed (Revathy et al., 2018), thus reducing stress (Coates et al., 2019). Furthermore, some students may not view stress as a negative event. Instead, they view it as an experience that is part of their journey as a university student, indicating there are valuable lessons to be learned from stressful events. The differences in how people adapt and perceive stress influence how they manage their stress levels, which could explain why some cope differently.

Even though loneliness is highly prevalent in our sample, it did not significantly predict binge-watching. This finding is interesting, considering that previous studies (e.g., Gangadharbatla et al., 2019; Raza et al., 2021) have reported a significant relationship between binge-watching and isolation or reduced

socialisation. Nevertheless, our result may be best explained by the fact that the participants may have other motives for binge-watching than loneliness - in this case, social interaction anxiety being a more prominent factor. Similar to the association between stress and binge-watching, people utilise social media to escape feelings of loneliness. For instance, using Instagram and Snapchat can enhance social connectedness and create a social presence, thereby reducing loneliness (Pittman & Reich, 2016). Notably, social media usage in Malaysia has increased to approximately 28 million users (Mentek, 2021), reflecting that social media users are expanding and elucidating that binge-watching is not the only media chosen to mitigate loneliness.

Implications, Limitations, and Future Directions

From a theoretical standpoint, the present study's findings support the Uses and Gratification Theory (Katz et al., 1973), specifically on how social interaction anxiety leads to binge-watching behaviour. In particular, we postulate that binge-watching is practised to obtain positive gratification as well as to satisfy affective needs, social interaction and integration needs, and tension release needs. This finding is essential since very little research has examined the relationship between social interaction anxiety and binge-watching, especially in Malaysia.

This study also contributes by exploring the pattern of binge-watching among university students, including what devices are used to binge-watch and what time they prefer to binge-watch. Such information is beneficial for determining the unhealthy binge-watching pattern and, more importantly, for developing intervention programmes to address excessive consumption of television shows and usage of the Internet. Using the results from this study, higher learning institutions may consider designing and implementing interventions that address social interaction needs. These interventions may include cognitive behavioural therapy, acceptance and commitment therapy, digital or virtual therapy, and other technology-assisted modalities (Wolitzky-Taylor & LeBeau, 2023). Service providers and over-the-top industries, too, could benefit from the findings of this study to better understand binge-watchers and binge-watching behaviours and provide insights into developing or providing content that university students could resonate with.

As with all cross-sectional research, this study has three limitations: (i) its inability to draw any causal relationship between the variables studied, (ii) its self-administration nature, which may have introduced a relative bias, and (iii) its restrictive inclusion criteria (i.e., undergraduate students between 18 to 25 years old and Malaysian). Therefore, longitudinal or experimental studies using a combination of objective and subjective measures on more diverse populations deserve to be considered in future studies to produce better insights into binge-watching behaviour and to allow generalisation of the results to other populations.

Thorough attention is essential to explore the impact of the time spent binge-watching on academic performance since more than half of the participants report that they usually binge-watch in their free time, while some binge-watch during the study period. This is important because binge-watching can disrupt sleep patterns (Alfonsi et al., 2023) and distract students from focusing on academic tasks (Vaterlaus et al., 2019). For these reasons, it is necessary for future research to closely examine the relationships between binge-watching, academic performance, and daily routine.

It will also be worthwhile for future research to identify unhealthy binge-watching patterns since this behaviour is potentially addictive. Doing so may provide deeper insights into whether or not binge-watching could be a social problem. Additionally, it is recommended that future researchers identify the

types of shows or genres people prefer to binge-watch, how binge-watch impacts their emotional state, and whether they choose to binge-watch alone or with family or friends to lend further support on whether binge-watching urges interaction or leads to isolation. Exploration of these issues can further expand the understanding of the binge-watching phenomenon on a broader scope.

Conclusion

The growth of video-on-demand platforms and over-the-top media that facilitates people to binge-watch the whole series of a television show regardless of time and place led this study to examine possible predictors of binge-watching, namely, stress, social interaction anxiety, and loneliness among undergraduate university students in Malaysia. The results show that only social interaction anxiety is a determinant of binge-watching behaviour, indicating that anxiety in social interaction increases binge-watching. This study adds to the literature on media psychology and communication by explicating the role of social interaction as linked to binge-watching behaviours in university students' lives. Nevertheless, the search for more robust empirically-tested models and interventions on binge-watching behaviours must continue so that the associated negative consequences of excessive binge-watching can be effectively mitigated.

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