

Emotion regulation difficulties and problematic mukbang watching: The mediating role of psychological distress and impulsivity

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ARTICLE INFO

Handling Editor: Dr. Leonardo Fontenelle

Keywords:

Mukbang
Problematic mukbang watching
Emotion regulation
Impulsivity
Depression
Anxiety

ABSTRACT

There is accumulating evidence that mukbang (i.e., eating broadcasts) watching may be another emerging online behaviour that has the potential to become uncontrolled and harmful among a small number of individuals. However, there is still a large gap in the literature regarding the psychological and mental health predictors of problematic mukbang watching. Due to the paucity of research, the present study investigated the emotional and psychological correlates of problematic mukbang watching (PMW) including emotion regulation difficulties (ERDs), impulsivity facets (i.e., negative urgency, positive urgency, sensation seeking, lack of premeditation, lack of perseverance), and psychological distress (i.e., depression, anxiety, stress). A total of 513 adults (54% female; $M_{age} = 32.05$ years, $SD = 11.14$) who watched mukbang in the past seven days completed a survey including psychometric assessment tools for the aforementioned variables. ERDs were directly and indirectly related to PMW via anxiety and positive urgency. Daily time spent watching mukbang was also moderately positively associated with PMW. Consequently, the present study suggests that individuals with emotional and psychological impairments may use PMW as a maladaptive coping strategy.

1. Introduction

Advances in smartphone and internet technologies have increasingly made participating in virtual activities (e.g., online gaming, online social networking, online shopping, watching of online videos and media) an integral part of everyday life (Stein and Yeo, 2021). One such activity is watching mukbang (online eating broadcasts). Mukbang watching can be described as watching of eating shows in which individuals in the shows consume a large portion of food while interacting with the audience (Kircaburun et al., 2021a). Mukbang is derived from the South Korean words ‘eating’ and ‘broadcast’, and is an emerging leisure activity across the world (Anjani et al., 2020). Several beneficial uses of recreational mukbang watching have been recently identified in different scholarly fields including having the sense of communal eating, decreased feelings of loneliness and alienation, obtaining virtual satiation for harmful food consumption without going through the physical health consequences, and getting entertainment and relaxation (Anjani et al., 2020; Bruno and Chung, 2017; Choe, 2019).

Mukbang videos can be entertaining and serve as a form of relaxation for viewers. The social aspect of watching someone eat and chat can be comforting for some, similar to sharing a meal with friends (Kircaburun

et al., 2021a). A study with 372 university students indicated that those who eat lunch alone involuntarily display higher levels of depressive feelings (Jang et al., 2021), which can be prevented by watching mukbang while eating and feeling belongingness to the mukbang community (Grevet et al., 2012). Mukbang videos often feature a variety of foods from different cultures. Watching these videos can be a way for viewers to explore and learn about diverse cuisines and eating habits from around the world (James et al., 2022). Some people find satisfaction in the sounds and visual aspects associated with eating, known as ASMR (autonomous sensory meridian response). Mukbang videos often include close-up shots and amplified eating sounds, providing sensory stimulation for those who enjoy ASMR (Choe, 2019). Watching mukbang can also be a way for individuals dealing with eating disorders or food anxiety to desensitize and overcome negative feelings associated with food. It may serve as a form of exposure therapy in a controlled environment (Kircaburun et al., 2022).

However, mukbang viewers may also be at more risk for obesity, disordered eating, and exacerbation in bad table and eating manners when compared to those who do not watch mukbang (Donnar, 2017; Hong and Park, 2018; Kircaburun et al., 2021a). In fact, regular mukbang watching may also transform into an unregulated and excessive

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<https://doi.org/10.1016/j.psycom.2023.100152>

Received 20 July 2023; Received in revised form 13 December 2023; Accepted 17 December 2023

Available online 22 December 2023

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online behaviour resulting in problematic mukbang watching (PMW; Kircaburun et al., 2021a). A study with 236 Turkish emerging adult mukbang watchers developed and validated the Mukbang Addiction Scale using symptoms outlined in the components model of addiction including salience, withdrawal, relapse, tolerance, mood modification, and conflict (Griffiths, 2005). As a result, 19% of the participants were reported as a 'high endorsement' group that had a high risk for PMW (Kircaburun et al., 2021b). A smaller study with 140 Turkish university students who watched mukbang in the past month reported PMW was positively associated with both internet addiction and disordered eating (Kircaburun et al., 2021c). However, the aforementioned studies recruited a relatively small number of participants from a less diversified participant pool (e.g., narrow age difference, same ethnicity/nationality). Nevertheless, extant evidence suggests studies that take PMW into consideration as an emerging problematic online behaviour and investigate its correlates are warranted.

To date, very few attempts have been made to understand the underlying mechanisms and correlates of PMW. A preliminary study with 217 Turkish university students who watched mukbang in the past year reported that PMW was positively related to daily time spent watching mukbang, loneliness, and problematic *YouTube* use, but not to depression (Kircaburun et al., 2021d). The authors argued that PMW might have been used as a maladaptive coping strategy in attempts to diminish the feeling of loneliness and escape the unpleasant reality where individuals feel alienated and less socially connected. A pilot study with 170 Turkish university students explored the uses and gratifications of PMW and concluded that PMW may be an extension of real-life food addiction and/or disordered eating (Kircaburun et al., 2022).

Despite the aforementioned attempts, emotional and psychological components associated with PMW have yet to be explored. Therefore, the present study investigated the role of emotion regulation difficulties and impulsivity in individuals' potential problematic use of mukbang watching. Examining the aforementioned role would contribute to the literature by demonstrating if PMW is another online addictive behaviour used to cope with emotional and psychological problems among individuals. Furthermore, the present study could also clarify the similarities and distinct characteristics of PMW when compared to other addictive online behaviors, given that the aforementioned independent factors have been shown to exacerbate other technology-related addictive behaviors.

1.1. Emotion regulation difficulties and problematic mukbang watching

The Interaction of Person-Affect-Cognition-Execution (I-PACE) model (Brand et al., 2019) posits that emotional and psychological factors are among the general predisposing variables that influence vulnerability to development and maintenance of general and specific types of internet use disorders. More specifically, the present study focused on the interrelated constructs that comprise the core characteristics stage of the I-PACE model including emotion regulation (i.e., emotion regulation difficulties), psychological distress (e.g., depression, anxiety, stress), and impulsivity. Some individuals have a higher ability to regulate their emotions whereas others suffer from elevated emotion regulation difficulties (ERDs). High ERDs increase the possibility of engaging in erratic behaviours in attempts to escape from negative emotional situations and cope with distress (Gratz and Roemer, 2004). ERDs overlap with psychological distress and often coexist with elevated psychological distress (Castella et al., 2013). Individuals with ERDs and psychological distress may be at greater risk of regulating unpleasant emotions using activities that provide immediate pleasure (Cashwell et al., 2017). ERDs and psychological distress have been demonstrated to be common predictors of various online and offline problematic behaviours including disordered eating (Lavender and Anderson, 2010), food addiction (Tatsi et al., 2019), sex addiction (Cashwell et al., 2017), internet addiction (Evren et al., 2018), and internet gaming disorder (Wu et al., 2020). Consequently, problematic behaviours are used as a

maladaptive coping strategy to avoid negative feelings that arise from more ERDs and psychological distress including sadness, boredom, and irritation (Evren et al., 2018).

Depression is characterised by disordered emotion regulation. Cognitive biases and deficits in cognitive control that are present in depressed individuals arise from emotion dysregulation (Joormann and Stanton, 2016). Similarly, emotion regulation can augment or diminish fear, depending on the emotion regulation strategy employed. Emotion regulation problems explain incremental variance in anxiety disorder symptoms (Cisler et al., 2010). Furthermore, individuals vary in their ability to regulate emotions and cope with stress. It has been well established that those with higher ability to regulate emotions can deal with stress and suffer stress-related health problems (Wang and Saudino, 2011). Moreover, high levels of emotion dysregulation are associated with higher self-reported and cognitive impulsivity, and individuals with poorer emotion regulation report more impulsive behaviours (Schreiber et al., 2012). Emotion dysregulation has been related to different facets of impulsivity including positive urgency, negative urgency, lack of perseverance, and sensation seeking (d'Acremont and Van der Linden, 2007; Deng and Zhang, 2020; King et al., 2018; Pepe et al., 2022). Consequently, it appears that individuals' poor ability to regulate their emotions can lead to psychological distress and impulsive behaviours.

Individuals high in ERDs and psychological distress often use social networking sites (SNSs) for mood alteration which can, in turn, transform into SNS addiction (Brand et al., 2019; Liu and Ma, 2019). Although it has never been empirically shown, the same pattern may apply for mukbang watching, another popular SNS activity. Mukbang watching is perceived as an entertaining pastime activity that gives pleasure with auditory and visual stimuli produced as a result of the act of food eating (Anjani et al., 2020). Some viewers have successfully achieved positive mood alteration by watching mukbang (Kircaburun et al., 2021b), making mukbang a potential candidate to deal with ERDs and psychological distress. Furthermore, PMW overlaps with disordered eating, SNS addiction, and internet addiction (Kircaburun et al., 2021c, 2021d) which are also positively correlated with ERDs and psychological distress (Brand et al., 2019; Evren et al., 2018; Lavender and Anderson, 2010; Liu and Ma, 2019). It has previously been argued that PMW is an extension of real-life disordered eating and food addiction (Kircaburun et al., 2022), which might suggest that some food addicts and disordered eaters may also use PMW as a way to deal with ERDs and psychological distress. Therefore, there is some evidence suggesting that PMW may be another activity that promotes immediate pleasure, and used as a maladaptive coping strategy to deal with ERDs and psychological distress.

1.2. Impulsivity and problematic mukbang watching

Another important indicator of problematic behaviours is impulsivity. Some scholars have examined impulsivity by highlighting the cognitive components of impulse control including attentional impulsiveness, motor impulsiveness, and non-planning impulsiveness (Patton et al., 1995). Impulsivity has recently been conceptualised as having five distinct facets. These are positive urgency (acting without thinking with positive emotions), negative urgency (acting without thinking with negative emotions), lack of premeditation (acting out without giving a thorough consideration), lack of perseverance (having problems with demonstrating consistent behaviours), and sensation seeking (Cyders et al., 2014). Impulsive individuals tend to think less and make fewer conscious judgments when reacting to outside stimuli, act without thinking enough about the consequences, and feel urgency and engage in behaviour that may be harmful to them when faced with emotional difficulties (Arce and Santisteban, 2006).

Similar to those with elevated ERDs and psychological distress, impulsive individuals are also more vulnerable to developing and maintaining problematic behaviours both in online platforms (e.g.,

general and specific types of internet-related problematic behaviours) and the real world (Brand et al., 2019). Global impulsivity, positive urgency, and negative urgency facets of impulsivity have all been positively associated with food addiction (VanderBroek-Stice et al., 2017). In a study with 151 adults from a community sample, positive urgency, negative urgency, lack of premeditation, and lack of perseverance were positively related to eating disorder symptoms in binge eating disorder (Kenny et al., 2019). Furthermore, positive urgency, negative urgency, and lack of perseverance were positively associated with problematic Facebook use among 676 Facebook users (Rothen et al., 2018), and with problematic pornography use among 13,778 Hungarian adults (Bóthe et al., 2019). Among 4039 television series viewers, positive urgency, negative urgency, lack of premeditation, and lack of perseverance were associated with problematic binge-watching (Flayelle et al., 2019a,b).

Despite the emphasised role of impulsivity and its distinct facets on problematic (i.e., addiction-related) behaviours (Thomsen et al., 2018), their role on PMW has yet to be investigated. Those with low impulse control may engage in PMW in attempts to deal with their adverse emotions by watching pleasurable visuals of someone eating food with excitement just as they use compulsive eating to cope with strong positive and negative emotions and urges to act rashly (VanderBroek-Stice et al., 2017). Mukbang watching might replace using of other types of problematic behaviours (e.g., food addiction, problematic internet use, problematic pornography use) to obtain the desired emotion reinforcement for impulsive individuals with its social, sexual, entertainment, virtual eating, and relaxation features (Kircaburun et al., 2021a). Consequently, individuals with poor impulse control may be at more risk to become problematic mukbang watchers, given their diminished self-regulation abilities (Thomsen et al., 2018).

1.3. The present study

The present study is important because, as the I-PACE model posits (Brand et al., 2019), each specific behaviour should be taken into consideration with their unique features and characteristics. Even though the core components (i.e., ERDs, psychological distress, impulsivity) used to predict PMW in the present study have already been examined for other problematic online behaviours, they may have different and unprecedented associations with PMW. Based on the theoretical model of I-PACE and the existing empirical evidence, the present study investigated the role of three overlapping constructs (i.e., ERDs, psychological distress, and impulsivity) in predicting PMW. It was hypothesised that all study variables would be directly positively associated with PMW. Furthermore, based on the presented empirical evidence, it was hypothesised that psychological distress dimensions (i.e. depression, anxiety, stress) and impulsivity facets (e.g., positive urgency, negative urgency, lack of perseverance, lack of premeditation, sensation seeking) would play mediating roles between ERDs and PMW. Furthermore, given the important well-established role of activity-specific behaviours in problematic online behaviours (Brand et al., 2019), daily time spent on watching mukbang was included into the study as a control variable.

2. Methods

2.1. Participants and procedure

A total of 572 individuals completed an online survey that was promoted in Prolific.co (i.e., a crowdsourcing platform that allows researchers to recruit participants). Of these, 59 participants indicated that they had not watched mukbang in the past seven days and were not used in the subsequent analysis. Therefore, the total sample comprised 513 adult mukbang watchers (54% female; $M_{age} = 32.05$ years, $SD = 11.14$) whose ages ranged between 18 and 75 years. Participation in the study was voluntary and anonymous, and all individuals were older than

18 years. Each participant was paid £1.68 for their involvement in the study via the Prolific.co platform. Ethical approval for the study was taken from the research team's university's ethics committee and complied with the Helsinki declaration.

2.2. Measures

Demographic variables: Participants first answered a series of questions regarding their demographic characteristics and mukbang watching behaviours including gender, age, race/ethnicity, country of residence, daily time spent watching mukbang, daily number of different mukbang videos watched, and whether they were regular mukbang watchers (i.e., watch mukbang at least a couple of times a week) (see Table 1).

Problematic Mukbang Watching Scale (PMWS): The 15-item PMWS (Kircaburun et al., 2023) was used to assess PMW (e.g., "I sometimes prefer watching mukbang rather than meeting friends or participating in hobbies that I used to enjoy before"). PMWS was developed reviewing the items of Binge-watching Engagement and Symptoms Questionnaire (BWESQ; Flayelle et al., 2019) and Social Media Disorder Scale (SMDS; Van den Eijnden et al., 2016). The unidimensional PMWS (Kircaburun et al., 2023) had robust construct validity as a result of confirmatory factor analysis ($\chi^2 = 213.35$, $df = 85$, $p < .001$, $RMSEA = 0.07$ CI 90% [0.06, 0.09], $SRMR = 0.04$, $CFI = 0.95$, $GFI = 0.91$). Items are scored on a five-point scale (1 = never, 5 = always). Higher scores indicate greater risk of mukbang addiction (Cronbach's $\alpha = 0.92$).

Difficulties in Emotion Regulation Scale (DERS-16): The 16-item DERS-

Table 1
Participants' demographic characteristics and mukbang watching behaviours.

Variable	N	%
<i>Gender</i>		
Females	275	53.6
Males	232	45.2
Other	6	1.2
<i>Age</i>		
18–23 years	129	25.1
24–29 years	132	25.7
30–39 years	152	29.6
40–75 years	100	19.5
<i>Ethnicity</i>		
Caucasian	337	65.7
Black/African	70	13.6
Asian	43	8.4
Mixed	28	5.5
Other	18	3.5
Hispanic/Latino	17	3.3
<i>Country of residence</i>		
United Kingdom	236	46.0
United States of America	156	30.4
Canada	45	8.8
South Africa	45	8.8
Europe ^a	19	3.7
Australia	9	1.8
<i>Consider themselves as regular mukbang watchers</i>		
Yes	367	71.5
No	146	28.5
<i>Daily time spent watching mukbang</i>		
Rarely watch mukbang	101	19.7
Between 1 and 60 min	329	64.1
Between 61 and 120 min	57	11.1
Between 121 and 180 min	18	3.5
Between 181 and 240 min	6	1.2
<i>Daily number of mukbang videos watched</i>		
Rarely watch mukbang	120	23.4
1–2	293	57.1
3–5	83	16.2
6–8	13	2.5

Note. a = Europe comprises Ireland (8 participants), Poland (4 participants), Spain (3 participants), Netherlands (2 participants), Portugal (1 participant), Italy (1 participant).

16 (Bjureberg et al., 2016) was used to assess emotion regulation difficulties (ERDs). The DERS-16 comprises items (e.g., “I am confused about how I feel”) that assess lack of emotional clarity, difficulties engaging in goal-directed behaviour, impulse control difficulties, limited access to effective emotion regulation strategies, and nonacceptance of emotional responses. Items are scored on a 5-point scale (1 = never, 5 = always). Higher scores indicate greater ERDs ($\alpha = 0.95$).

Depression Anxiety Stress Scale (DASS-21): The 21-item DASS-21 (Henry and Crawford, 2005) was used to assess psychological distress dimensions including depression (e.g., “I could not seem to experience any positive feeling at all”), anxiety (e.g., “I was worried about situations in which I might panic and make a fool of myself”), and stress (e.g., “I found it difficult to relax”) in the past seven days. Items are scored on a 4-point scale (1 = never, 4 = almost always). Higher scores indicate greater psychological distress. The internal consistency coefficients were high in the present study (0.85 for anxiety, 0.88 for stress, and 0.93 for depression).

Short UPPS-P Impulsive Behaviour Scale (SUPPS-P): The 20-item SUPPS-P (Cyders et al., 2014; Lynam, 2013) was used to assess impulsivity facets including negative urgency (e.g., “When I am upset, I often act without thinking”), positive urgency (e.g., “I tend to act without thinking when I am really excited”), sensation seeking (e.g., “I quite enjoy taking risks”), lack of premeditation (e.g., “I usually think carefully before doing anything [reverse coded]”), and lack of perseverance (e.g., “I finish what I start [reverse coded]”). Items are scored on a 4-point scale (1 = strongly disagree, 4 = strongly agree). Higher scores indicate greater impulsivity. Cronbach’s alpha values of impulsivity facets ranged between 0.72 (sensation seeking) to 0.87 (positive urgency) from lowest to the highest respectively.

2.3. Statistical analysis

SPSS 23 software was used to analyse the data. The internal consistency coefficients were determined using reliability analysis. Frequency and descriptive statistics were run to identify demographic features of the participants, and t-tests were used to examine gender differences among study variables. Pearson’s correlation was used to calculate the correlation coefficients among study variables. AMOS software was used to test the hypothesised model by conducting path analysis. In order to indicate good fit, Root Mean Square Error of Approximation (RMSEA) and Standardised Root Mean Square Residuals (SRMR) should be below 0.05, and Goodness of Fit Index (GFI) and Comparative Fit Index (CFI) should be higher than 0.95. Also, RMSEA and SRMR <0.08 is acceptable, and GFI and CFI >0.90 is acceptable (Kline, 2011). Bootstrapping was performed using 5000 bootstrap samples and 95% bias-corrected confidence intervals.

Table 2
Comparison of the scores of study variables between females and males.

	Females (N = 275)	Males (N = 232)	t-test	Cohen’s d
Problematic mukbang watching	2.12	2.07	.77	.06
Emotion regulation difficulties	2.58	2.35	2.81**	.25
Depression	2.00	2.00	.08	.00
Anxiety	1.77	1.65	2.22*	.20
Stress	2.08	1.95	2.38*	.20
Negative urgency	2.54	2.43	1.79	.16
Lack of perseverance	1.89	1.88	.14	.02
Lack of premeditation	1.90	1.83	1.52	.14
Sensation seeking	2.32	2.55	-3.79***	.34
Positive urgency	1.88	1.93	-.85	.06

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

3. Results

The results of t-tests are presented in Table 2. Females scored higher on ERDs ($t[513] = 2.81, p = .01$), anxiety ($t[513] = 2.22, p = .05$), and stress ($t[513] = 2.38, p = .05$), whereas males had higher scores for sensation seeking ($t[513] = -3.79, p = .001$). There were no differences between genders in terms of PMW ($t[513] = 0.77, p = .44$), negative urgency ($t[513] = 1.79, p = .08$), lack of perseverance ($t[513] = 0.14, p = .89$), lack of premeditation ($t[513] = 1.52, p = .13$), positive urgency ($t[513] = -0.85, p = .39$), and depression ($t[513] = 0.80, p = .94$).

Mean scores, standard deviations, skewness values, kurtosis values, and correlation coefficients are presented in Table 3. According to skewness and kurtosis values (ranging between -1 and 1), data met the assumption of normality. PMW was positively moderately correlated with ERDs ($r = 0.31, p < .001$), positive urgency ($r = 0.32, p < .001$), anxiety ($r = 0.34, p < .001$), daily time spent watching mukbang ($r = 0.47, p < .001$), and daily number of mukbang videos watched ($r = 0.43, p < .001$), and weakly positively correlated with negative urgency ($r = 0.28, p < .001$), lack of perseverance ($r = 0.09, p < .05$), lack of premeditation ($r = 0.17, p < .001$), sensation seeking ($r = 0.14, p < .01$), depression ($r = 0.24, p < .001$), and stress ($r = 0.27, p < .001$). Age was negatively weakly correlated with PMW ($r = -0.17, p < .001$).

The hypothesised model (Fig. 1) was tested using path analysis. Path analysis results are given in Fig. 2. The model had acceptable fit indices ($\chi^2/df = 5.66$, RMSEA = 0.09 [CI 90% (0.08, 0.11)], SRMR = 0.06, CFI = 0.94, GFI = 0.95). ERD was directly ($\beta = 0.14, p < .05$) and indirectly ($\beta = 0.17, p < .01$) related to PMW via positive urgency and anxiety. Stress ($\beta = -0.08, p = .23$), depression ($\beta = -0.01, p = .88$), negative urgency ($\beta = 0.07, p = .17$), lack of perseverance ($\beta = *.04, p = .42$), lack of premeditation ($\beta = 0.01, p = .79$), and sensation seeking ($\beta = 0.04, p = .26$) were not significantly related to PMW. Daily time spent watching mukbang was also included into the model as a control variable and it was moderately positively associated with PMW ($\beta = 0.45, p < .001$). The tested model explained 36% of the variance in PMW.

4. Discussion

The purpose of the present study was to investigate the relationship of problematic mukbang watching (PMW) with emotion regulation difficulties (ERDs), psychological distress, and impulsivity facets while controlling for demographics and mukbang watching behaviours. ERDs, anxiety, positive urgency, daily time spent watching mukbang, and daily number of mukbang videos watched were predictors of greater PMW. On the other hand, depression, stress, negative urgency, lack of perseverance, lack of premeditation, and sensation seeking were non-significantly related to PMW in the model.

In line with the hypothesis and expectations, ERDs were positively related to PMW. Those who reported more difficulties in regulating their emotions indicated more problematic watching of mukbang. This is in line with the previous studies indicating a consistent relationship between ERDs and other problematic online behaviours including general problematic internet use, internet gaming disorder, problematic pornography use, and problematic social media use (Evren et al., 2018; Liu and Ma, 2019; Musetti et al., 2022; Wu et al., 2020). This is also consistent with a previous study associating ERDs with elevated binge-watching (Rubenking and Bracken, 2018). Individuals with poor emotion regulation appear to use online activities to control and regulate their emotional experiences, and mukbang watching may be one of these activities. Mukbang’s features including entertainment, social connection, and virtual eating satisfaction might result in successful attempts to deal with negative thoughts and emotions by watching mukbang, and this may lead to regular mukbang watching becoming PMW for some individuals with increased ERDs. However, it should be noted that the relationship between ERDs and PMW was weak.

Partially in line with expectations, only anxiety was related to elevated PMW. Despite the positive correlation of depression and stress

Table 3
Mean scores, standard deviations, and Pearson’s correlations of the study variables (N = 513).

	1	2	3	4	5	6	7	8	9	10
1. Problematic mukbang watching	-									
2. Emotion regulation difficulties	.31***	-								
3. Depression	.24***	.71***	-							
4. Anxiety	.34***	.60***	.64***	-						
5. Stress	.27***	.72***	.72***	.73***	-					
6. Negative urgency	.28***	.69***	.51***	.43***	.58***	-				
7. Lack of perseverance	.09*	.23***	.26***	.20***	.12*	.22***	-			
8. Lack of premeditation	.17***	.28***	.25***	.22***	.19***	.32***	.54***	-		
9. Sensation seeking	.14**	-.09*	-.03	.01	.01	.01	-.10*	.03	-	
10. Positive urgency	.32***	.39***	.30***	.30***	.32***	.50***	.32***	.42***	.28***	-
11. Daily time spent	.47***	.00	-.01	.09*	-.09*	-.03	-.03	.02	.12*	.02
Mean score	2.09	2.48	2.00	1.72	2.03	2.49	1.88	1.86	2.42	1.90
Standard deviation	.73	.93	.80	.60	.64	.67	.56	.51	.68	.64
Skewness	.52	.38	.61	.90	.44	-.26	.36	.37	.08	.52
Kurtosis	-.48	-.66	-.54	.39	-.20	-.23	-.03	.50	-.48	.10

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

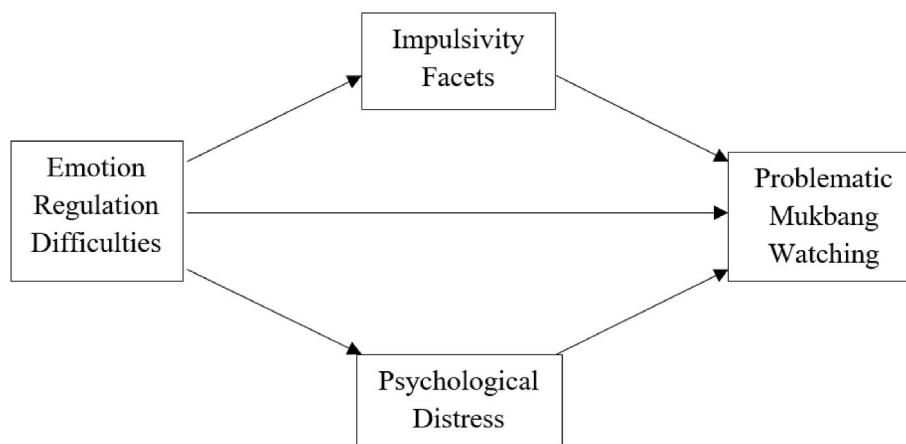


Fig. 1. Hypothesised model.

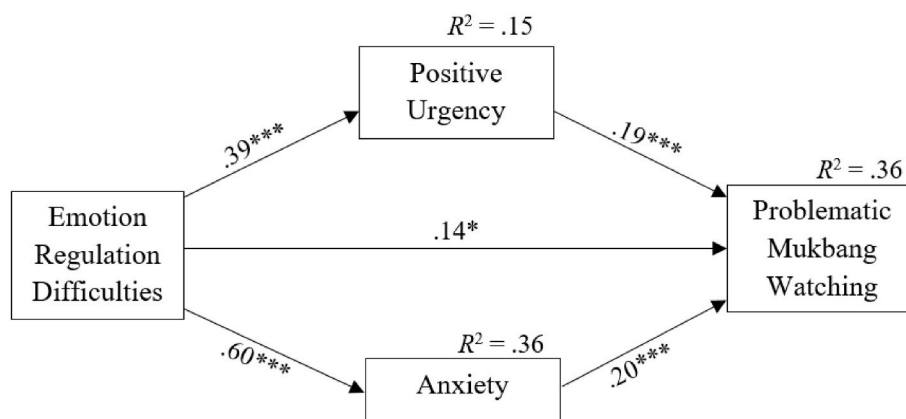


Fig. 2. Standardised path coefficients among variables. *Note.* Non-significant standardised coefficients were not depicted in figure for clarity. ERD was positively related to stress ($\beta = 0.73, p < .001$), depression ($\beta = 0.71, p < .001$), negative urgency ($\beta = 0.69, p < .001$), lack of perseverance ($\beta = 0.23, p < .001$), and lack of premeditation ($\beta = 0.28, p < .001$), and non-significantly to sensation seeking ($\beta = -0.09, p = .05$). Stress ($\beta = -0.08, p = .23$), depression ($\beta = -0.01, p = .88$), negative urgency ($\beta = 0.07, p = .17$), lack of perseverance ($\beta = .04, p = .42$), lack of premeditation ($\beta = 0.01, p = .79$), and sensation seeking ($\beta = 0.04, p = .26$) were not significantly related to PMW. Daily time spent watching mukbang was also included into the model as a control variable and it was moderately positively associated with PMW ($\beta = 0.45, p < .001$). * $p < .05$, ** $p < .01$, *** $p < .001$.

with PMW in the correlation analysis, they were non-significant in the model regressed with other variables. Anxiety had a more robust association with PMW when compared to depression and stress. This may be because participants used PMW to cope with and/or avoid their anxious thoughts and feelings rather than depressive and stressful thoughts and

feelings. Mukbang watching is a social and relaxing activity where an individual in the video produces satisfactory and relaxing sounds and visuals while eating food with great enthusiasm and communicating with the viewers (Kircaburun et al., 2021a). Therefore, watching mukbang has the potential to become a problematic online behaviour for

those with anxiety in attempts to relieve and/or avoid their anxiety for real-life problems (e.g., work-related problems and/or being lonely and/or alienated from social community). However, contrary to anxious individuals, those with elevated depression and stress might have tried to alleviate their negative feelings by engaging in compulsive eating themselves rather than watching others eat, trying to obtain immediate pleasure from consumption of high caloric food instead of having the virtual satisfaction of eating. Nevertheless, the present preliminary results should be replicated using larger study groups from different ethnic groups and countries.

Partially in line with the hypothesis, only the positive urgency facet of impulsivity was positively associated with PMW. All facets of impulsivity were positively correlated with PMW in the correlation analysis but only positive urgency remained significant when put into the regression model with other variables. Positive urgency being positively associated with PMW is consistent with previous studies associating positive urgency with other problematic behaviours including food addiction, binge eating disorder symptoms, problematic Facebook use, problematic pornography use, and problematic binge-watching (Bóthe et al., 2019; Flayelle et al., 2019a,b; Kenny et al., 2019; Rothen et al., 2018; VanderBroek-Stice et al., 2017). It appears that participants in the study engaged in PMW as a negative reinforcer particularly to modulate their strong positive emotions, rather than using PMW as a positive reinforcer to cope with their strong negative emotions. Further studies are needed to understand the unique role of impulsivity facets in PMW and the underlying mechanisms of the associations between the latter and former.

Partially consistent with expectations, some dimensions of psychological distress and impulsivity partially mediated the relationship between ERDs and PMW. More specifically, anxiety and positive urgency played a mediator role between ERDs and PMW. More ERDs were associated with elevated anxiety and positive urgency, and more anxiety and positive urgency were related to exacerbated PMW engagement. This is in line with the studies reporting that individuals who struggle to regulate their emotions are susceptible to be more vulnerable for developing psychological and behavioural problems (Cisler et al., 2010; Deng and Zhang, 2020; Joormann and Stanton, 2016; King et al., 2018; Pepe et al., 2022; Wang and Saudino, 2011). Developing and using adaptive coping and emotion regulation strategies with difficulties in life instead of coping with problems by using maladaptive strategies seems to be an important preventive factor to avoid mental health and behavioural problems including psychological distress and impulsivity (Berking and Wupperman, 2012).

Consistent with the previous studies (Kircaburun et al., 2021b, 2021d), mukbang watching behaviours were positively related to more PMW. More specifically, daily time spent watching mukbang was significantly associated with PMW. This finding supports the notion that use of specific online activities are consistent indicators of specific problematic online behaviours (Bryant et al., 2007). There were no gender differences in PMW scores. This contradicts previous studies that reported higher involvement in PMW among male participants (Kircaburun et al., 2021d). However, these studies that reported higher PMW for males were conducted using a sample that comprised only Turkish university students from a single university. Therefore, future studies are needed to establish the role of gender in the development of PMW. Age was negatively correlated with PMW in the correlation analysis but it was non-significant in the model with other variables.

Consequently, the present study offers a significant contribution because investigating ERDs and impulsivity can deepen the understanding of the psychological factors associated with PMW. This knowledge is crucial for comprehending the underlying mechanisms of problematic media consumption. The findings of the present study may aid in identifying individuals at a higher risk of developing PMW habits due to specific emotion regulation difficulties or impulsivity traits, providing valuable insights for early intervention and targeted prevention strategies. Furthermore, understanding whether mukbang watching

is employed as a coping mechanism for emotional and psychological issues provides further insight to how individuals may seek solace or distraction through this online behaviour. By exploring these specific psychological factors, the present study contributes to clarifying the unique characteristics of mukbang watching compared to other online addictive behaviors. This differentiation helps provide a more nuanced understanding of the factors influencing its addictive potential.

5. Limitations and conclusion

The present study had some limitations that should be taken into account when interpreting the results. First, the majority of the sample was Caucasian while other ethnicities were in minority, which decreased the generalizability of the study findings. There are significant cultural differences (e.g., between Caucasians and Asians) reported in the literature in terms of attitude towards mukbang watching and mukbang watching motivations (Pereira et al., 2019). The present results should be replicated using more diversified and equally distributed samples across the world. Second, data were collected using self-report questionnaires, which is susceptible to a number of methodological biases including memory recall and social desirability. Future studies should investigate the aforementioned relationships found in the study using more in-depth data collection methods (e.g., qualitative interviews). Third, the directions of the relationships cannot be determined based on the present results due to the cross-sectional nature of the study. Future studies should test causal associations among the present study's variables using longitudinal designs.

Despite the aforementioned limitations, the present study is the first to examine the emotional and psychological correlates of PMW using an international adult sample. PMW was positively related to ERDs, positive urgency, anxiety, and daily time spent watching mukbang. These findings suggest that mukbang watching may become a problematic behaviour among some individuals with emotion regulation and mental health problems. It may be further argued that PMW may be like other problematic online behaviours (i.e., problematic online gaming, problematic social media use, problematic online gambling, problematic cybersex) where the behaviour is used as a maladaptive coping strategy to deal with emotional and psychological problems. Emerging evidence suggests that PMW should be taken as seriously alongside other problematic online behaviours. The present findings warrant further exploration of possible correlates and consequences of PMW. Moreover, the present results contribute to the theoretical model of I-PACE by reporting specific associations among predisposing factors and an emerging problematic online behaviour. The present findings support the notion of I-PACE model which suggests that each problematic online behaviour has unique characteristics that should be explored.

Funding sources

No financial support was received for the present study.

Data availability statement

Data will be made available upon reasonable request.

CRediT authorship contribution statement

Kagan Kircaburun: Data curation, Formal analysis, Investigation, Writing – original draft. **Andrew Harris:** Conceptualization, Supervision, Writing – review & editing. **Filipa Calado:** Conceptualization, Supervision, Writing – review & editing. **Mark D. Griffiths:** Conceptualization, Project administration, Supervision, Writing – review & editing.

Declaration of competing interest

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

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