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Psychometric Evaluation of the Italian Mukbang Addiction Scale

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Abstract
Problematic mukbang use is a new area of research, and psychometric instruments are needed for cross-cultural comparisons. The Mukbang Addiction Scale (MAS) is a psychometric instrument that was developed to assess problematic mukbang watching. Therefore, the present study evaluated the psychometric properties of the Italian Mukbang Addiction Scale (MAS) among Italian adults from the general population who had engaged in mukbang watching. The study (i) assessed the factorial structure of the MAS using confirmatory factor analysis (CFA), (ii) determined the composite reliability through Cronbach alpha and McDonald's omega, and (iii) tested convergent and discriminant validity. A total of 201 mukbang watchers with a mean age of 29.90 years (SD ± 10.10) participated in an online survey. The survey items included demographic variables, as well as psychometric instruments assessing problematic mukbang use (MAS), problematic social media use (Bergen Social Media Addiction Scale), loneliness (Three-Item UCLA Loneliness Scale), mental well-being (Warwick-Edinburgh Mental Well-Being Scale), and psychological distress (Depression Anxiety Stress Scale-21). The results demonstrated that the Italian MAS exhibited good internal consistency (McDonald's $\omega = 0.89$, Cronbach's $\alpha = 0.89$). The CFA provided evidence to support the one-factor structure of the scale. There was a significant and positive correlation between MAS scores and scores for (i) psychological distress, (ii) loneliness, and (iii) problematic social media use. There was a significant and negative correlation between MAS scores for mental well-being. These findings indicated adequate convergent and discriminant validity and supported the construct validity of the Italian MAS. The present study provides evidence supporting the reliability and validity of the Italian MAS for assessing problematic mukbang watching. Although further validation is required to corroborate the present findings, the MAS can be utilized by researchers and practitioners from different health fields to understand this growing phenomenon.

Keywords Psychometric evaluation · Italian validation · Mukbang Addiction Scale · Problematic mukbang watching · Problematic social media use

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Introduction

Over the past two decades, there has been a rapid development of internet technologies and smartphones, with more individuals globally engaging in online activities such as shopping, gaming, and social networking on a daily basis. Mukbang watching is another activity that has recently gained popularity. Mukbangers are viewers who interact with online broadcasts of individuals consuming large amounts of food (Kircaburun et al., 2018; 2021; 2024). The term mukbang arises from a fusion of the South Korean words "eating" ("meokneun") and "broadcasting" ("bangsong"). It is a phenomenon which consists of online videos where a "mukbanger" consumes large amounts of food in front of the camera, while simultaneously interacting with viewers (McCarthy, 2017). The practice of mukbang watching has become increasingly prevalent in many countries (including Italy, where the present study was carried out), with hundreds of thousands of individuals watching mukbang every day on online platforms such as *YouTube* and *Instagram* (Kang et al., 2020; Kircaburun et al., 2021, 2024).

Evidence suggests that individuals have different motivations for watching mukbang. For example, qualitative studies have reported that individuals fulfill a desire to share meals together through an emotional bond with the mukbanger and other viewers (Choe, 2019; Kircaburun et al., 2021). Watching mukbang may offer a way to overcome or reduce loneliness and create a sense of community. As a form of sexual fantasy, some viewers turn to watching mukbang to observe attractive young women while consuming food (Donnar, 2017; Kircaburun et al., 2021, 2024), while others simply seek entertainment (Choe, 2019; Kircaburun et al., 2021, 2024). It has also been reported that some viewers find pleasure in listening to chewing and cooking sounds, experiencing a sense of happiness and relief (Kircaburun et al., 2018, 2021; Woo, 2018). Watching mukbang may also provide an escape from an unpleasant reality for bored or stressed individuals (Bruno & Chung, 2017). Finally, evidence suggests that individuals who are dieting or unable to access specific foods may watch mukbang to experience vicarious binge eating satisfaction of desired foods (Bruno & Chung, 2017; Donnar, 2017; Gillespie, 2019; Kircaburun et al., 2021, 2024).

Because there is a growing popularity of mukbang watching, researchers have investigated the possible physical, psychological, and behavioral consequences (Kircaburun et al., 2021, 2024). Several studies have suggested that mukbang watching could have negative consequences for viewers, including (i) an increase in food consumption due to social comparison or imitation; (ii) the alteration of perceptions of food consumption and thinness, nutrition, health, table manners, and eating habits due to the modeling of bad behavior; and (iii) obesity and various eating disorders due to the glorification of binge eating (Bruno & Chung, 2017; Donnar, 2017; Hong & Park, 2018; Park, 2018; Spence et al., 2019). Moreover, it has been argued that mukbang watching may become problematic for some individuals who watch mukbang for social compensation (Malm, 2014). Other studies (e.g., Kircaburun et al., 2024) have also found an association between problematic mukbang watching with psychological distress (i.e., anxiety, stress, and depression), similar to other problematic technology use (e.g., Soraci et al., 2020). Among some individuals, this may lead to poorer mental health and well-being. Problematic mukbang use has been estimated to be as high as 19% using convenience samples (e.g., Kircaburun et al., 2020), but there are relatively few studies.

The Compensatory Internet Use Model and Problematic Mukbang Watching

According to the Compensatory Internet Use Model (CIUM), satisfying unmet needs in offline life through specific online activities can lead to the development and maintenance of dependent use of such activities (Kardefelt-Winther, 2014). For example, compensating for social needs through social media use and online gaming has been positively associated with problematic use of these online applications (Kircaburun et al., 2018; Kuss & Griffiths, 2012). Compensating for real needs in online contexts may also lead to problematic overuse of online activities (Wéry & Billieux, 2016). Moreover, those who engage in social networking for leisure tend to report more problematic use of social media, compared to those who use it for work purposes (Kircaburun et al., 2021, 2024). Because activities such as gambling, gaming, and pornography use can result in positive mood-modifying experiences, escapism is a key factor that may turn such activities into problematic behaviors (Király et al., 2015; Kor et al., 2014; Wood & Griffiths, 2007).

The CIUM (Kardefelt-Winther, 2014) posits that some individuals may develop problematic behavior when watching mukbang because it helps to compensate for various unmet needs in offline life, such as social interactions, sexual fantasies, entertainment, escapism, and vicarious food consumption (Bruno & Chung, 2017; Choe, 2019; Donnar, 2017). In extreme cases, mukbang watching may be addictive (Kircaburun et al., 2021).

Mukbang Addiction Scale

In order to adequately investigate the phenomenon of addictive mukbang watching, having a sound psychometric

instrument that assesses this behavior effectively has become a necessity. This led to the development of the Mukbang Addiction Scale (MAS; Kircaburun et al., 2021), which has subsequently been translated into Arabic (Saeed et al., 2024) as well as being used in other studies (e.g., von Ash et al., 2023). The MAS is based on the Bergen Facebook Addiction Scale (BFAS; Andreassen et al., 2012) and assesses problematic mukbang watching. To create the MAS, the word "Facebook" in BFAS items was replaced with "watching mukbang." The BFAS has been widely used and validated in several languages (Andreassen et al., 2013; Phanasathit et al., 2015; Pontes et al., 2016; Wang et al., 2015; Yurdagül et al., 2021). Moreover, its brevity and solid theoretical basis reflect the main components of behavioral addiction (Griffiths, 2005).

The items in the MAS assess six core components of addiction (Griffiths, 2005). More specifically, these are salience (an individual constantly thinks about mukbang watching, interfering with their daily activities), mood modification (an individual watches mukbang to improve their mood or cope with stress), tolerance (an individual increases the amount of mukbang watching over time to obtain the same mood modifying experiences), withdrawal symptoms (when unable to watch mukbang, an individual becomes irritable, anxious, and moody), conflict (mukbang watching causes conflict in personal relationships, occupation, and/or education), and relapse (after a period of abstinence, an individual returns to excessive mukbang watching). This process of adaptation from the BFAS allowed for the development of a reliable and valid scale to assess problematic mukbang watching, ensuring that the MAS accurately reflects the core components of behavioral addiction.

In the original validation study, the MAS showed good psychometric properties. Exploratory and confirmatory factor analyses confirmed the scale's one-dimensional structure. Cronbach's alpha coefficient ($\alpha = 0.95$) and composite reliability (CR = 0.92) of the MAS suggested excellent internal consistency.

The Present Study

Psychometrically sound instruments are required to examine problematic mukbang watching. To the best of the authors' knowledge, no previous study in the Italian context has examined problematic mukbang watching. This may be due to the lack of valid and reliable Italian instruments to assess problematic mukbang watching. To address this gap, the present study aimed to validate the MAS in the Italian context and to conduct reliability testing and validity testing (i.e., construct validity, convergent validity).

Adequate scale validity ensures that instruments are accurate and sensitive in detecting the presence of problematic mukbang watching, enabling clinicians to intervene early and provide targeted and effective treatments. Therefore, adaptation and validation of the MAS in the Italian context would be helpful in advancing the understanding of problematic mukbang watching and providing valid empirical support for both research and clinical practice. A validated scale can improve the quality of research and guide more effective clinical interventions, therefore contributing to individual well-being and public health. Based on the limited empirical literature, it was hypothesized that the Italian adaptation of the MAS would (i) have a unidimensional structure (H_1); (ii) have adequate reliability (H_2); (iii) be positively associated with loneliness, problematic social media use (PSMU), and psychological distress (i.e., anxiety, stress, and depression) (H_3); and (iv) be negatively correlated with good mental well-being (H_4).

Methods

Translation and Cross-Cultural Adaptation of the Mukbang Addiction Scale

The translation and adaptation of the MAS into Italian comprised several steps. In the first step, two Italian experts in the field of psychology independently translated the MAS from English to Italian. Subsequently, another independent translator back-translated the Italian version into English. This two-step translation process aimed to confirm the accuracy and consistency of the translation, ensuring that the intended meaning of the items remained intact (Beaton et al., 2000).

Following this, the scale was administered to a sample of ten individuals to further evaluate the comprehensibility of the translated MAS. These participants were not included in the formal analysis but provided valuable feedback on the clarity and understandability of the items. The objective was to identify any potential issues or ambiguities stemming from cultural or linguistic differences. Based on this pilot testing, no adjustments were deemed necessary, indicating that the translated MAS retained its clarity and relevance for the target population. See the Appendix for the Italian version of the scale.

Participants

Data were collected between January 1 and April 30, 2024. The requirements for participation were (i) being at least 18 years old, (ii) being an Italian-speaking citizen, (iii) having an active account on any social media platform (e.g., *YouTube*, *X*, *Facebook*), and (iv) having watched at least one mukbang video in the past month. A total of 201 participants (143 females; 71%), aged between 18 and 68 years (mean = 29.9 years, SD ± 10.1), voluntarily participated.

An online survey was disseminated on Italian forums and social networking communities such as *Facebook* and *WhatsApp*. Two-fifths of the participants were in a relationship ($n = 79$; 40%), and approximately two-thirds were simultaneously both working and studying ($n = 125$; 63%). The average time spent watching mukbang videos was 2.03 h daily (SD ± 0.30), and the average time spent daily using social media was 3.01 h (SD ± 1.52) (see Tables S1 to S5 in the Supplementary Materials, for other descriptive statistics concerning the sample). The survey took approximately 15–20 min to complete. Missing data were below the recommended thresholds (< 5%) and were missing completely at random (Little, 1988). Missing data were handled using the pairwise technique (Katsikatsou et al., 2021).

Ethical Approval

The research was conducted according to the Declaration of Helsinki for medical research involving human participants and was approved by the Ethical Committee of Niccolò Cusano University, in Rome, Italy. All participants completed the survey anonymously and provided their informed consent. The data were stored in an encrypted online archive, accessible only to the authors of the present study.

Sample Size

A power analysis was performed using Soper's (2024) a priori sample size calculator for structural equation models. The results indicated that a minimum sample size of 199 participants was required to obtain a statistical power of 0.90 ($p = 0.05$, effect size = 0.3).

Measures

Demographics and Mukbang Use In the survey, participants' demographic characteristics were collected for gender, age, highest school level, and daily frequency of both mukbang viewing and social media use.

Mukbang Addiction Scale (MAS) The six-item MAS (Kircaburun et al., 2021) was used to assess the risk of problematic mukbang use. The items (e.g., *"How often in the past year have you experienced an overwhelming urge to watch more and more mukbang?"*) were rated on a 5-point Likert scale (1 = *very rarely*, 5 = *very often*). Scores range from 6 to 30, and higher scores indicate a higher risk of problematic mukbang use.

Depression Anxiety Stress Scale-21 (DASS-21) The DASS-21 (Henry & Crawford, 2005, Italian version: Bottesi et al., 2015) was used to assess general psychological distress across its three subscales; anxiety, stress, and depression. Items (e.g., *"I felt as if I had nothing to look forward to"* and *"I found it difficult to relax"*) are rated from 0 (*not at all*) to 3 (*very much*). Scores for each construct range from 0 to 21. An overall score can be obtained by summing the three subscales, which provides an overall measure of psychological distress and specific scores for each subscale. Higher scores on each subscale indicate higher levels of anxiety, stress, and depression. In the present study, Cronbach's alpha was excellent for all subscales and the total scale (min = 0.94, max = 0.95).

Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) The 14-item WEMWBS (Tennant et al., 2007; 12-item Italian version: Gremigni & Stewart-Brown, 2011) was used to assess mental well-being. The items (e.g., *"I've been feeling optimistic about the future"* and *"I felt cheerful"*) are rated on a 5-point scale, ranging from 1 (*never*) to 5 (*always*). The scores range from 14 to 70, and higher scores indicate better mental well-being. In the present study, Cronbach's alpha showed excellent internal consistency ($\alpha = 0.92$).

Bergen Social Media Addiction Scale (BSMAS) The six-item BSMAS (Andreassen et al., 2016; Italian version: Monacis et al., 2017) was used to assess the risk of problematic social media use. Items (e.g., "You spend a lot of time thinking about social media or planning how to use it") are rated on a scale from 1 (*never*) to 5 (*very often*). The total score, which ranges from 6 to 30, is obtained by summing the six items, and higher scores indicate a greater risk of problematic social media use. In the present study, Cronbach's alpha showed very good internal consistency ($\alpha = 0.83$).

Three-Item UCLA Loneliness Scale The three-item UCLA Loneliness Scale (Russel, 1996; Italian version: Bottaro et al., 2023) was used to assess loneliness. Items (e.g., *"How often do you feel isolated from others?"*) are rated on a 3-point scale (1 = *Hardly Ever*; 2 = *Some of the Time*; 3 = *Often*). Scores range from 3 to 9, and higher scores indicate greater loneliness. In the present study, Cronbach's alpha showed very good internal consistency ($\alpha = 0.81$).

Data Analysis

The first step of the analysis focused on the distribution of the items, following the recommendations of Muthén and Kaplan (1985) and Kim (2013) to ensure the normality of the data, with a focus on limiting for skewness (± 2) and for kurtosis (± 8). Subsequently, the main descriptive statistical parameters such as means and standard deviations were calculated. In order to assess the reliability of the instruments used, various statistical indices were employed, including Cronbach's alpha, McDonald's omega, and composite

reliability (CR), all of which were above 0.70 as recommended in the literature (Cheung et al., 2023; McDonald, 1999).

To evaluate the factorial structure of the MAS, the most recent and established psychometric practices were applied (e.g., Cheung et al., 2023; Kline, 2016). Model fit was assessed using several indices, including NNFI (non-normed fit index ≥ 0.95), CFI (comparative fit index ≥ 0.95), GFI (goodness of fit index ≥ 0.95), AGFI (adjusted goodness of fit index ≥ 0.95), RMSEA (root mean square error of approximation ≤ 0.08), and RMSR (root mean square residual ≤ 0.08). The χ^2/df ratio was kept below 3 to confirm the adequacy of the model fit to the data (Kline, 2016). All items showed significant saturations (λij ≥ 0.50; Ferguson & Cox, 1993).

Different forms of validity were also examined (Cheung et al., 2023). For convergent and discriminant validity, strict criteria were applied, including a construct reliability greater than 0.70, standard item saturations greater than 0.50, and an average variance extract (AVE) greater than 0.50. In addition, the item-total correlation was analyzed and calculated for each item in the scale to evaluate the degree to which the assessment items indicated the underlying trait. A correlation value > 0.2 indicates that the corresponding item correlates well with the entire measure (e.g., Henrysson, 1963). For discriminant validity, specific guidelines were adhered to avoid overlap between constructs, limiting the maximum shared variance (MSV) below the AVE (Cheung et al., 2023). Finally, the correlations between the main instruments were examined using Pearson's correlation coefficient (r). Data analyses were performed utilizing (R Core Studio, 2021) and JASP version 0.17 (JASP Team, 2020).

Results

Descriptive Statistics (Total Scale Scores)

The mean scores of the psychometric scales used were 9.37 out of 30 for the MAS (SD = ± 4.77), 11.30 out of 30 for the BSMAS (SD = ± 4.91), 28.21 out of 63 for the DASS-21 (SD = ± 15.17), 42.28 out of 70 for the WEMWBS (SD = ± 9.11), and 5.66 out of 9 for the three-item UCLA Loneliness Scale (SD = ± 3.28). See Table S6 in the Supplementary Materials for more details.

Confirmatory Factor Analysis of the Mukbang Addiction Scale

In the present study, a one-dimensional factorial distribution of the six-item MAS was analyzed. Normality testing showed that skewness values ranged from 1.2 to 2.0, and kurtosis values ranged from 0.7 to 3.8. Therefore, the data were normally distributed (i.e., the item values did not exceed a maximum of ± 3 for skewness and ± 8 for kurtosis, Kim, 2013). In the absence of a defined academic consensus on the indicators for evaluating the reliability of the model (e.g., Boomsma, 2000; Cheung et al., 2023), the fit of the model was investigated utilizing multi-criteria (see 'Data Analysis' section). The results of the CFA for a unidimensional factorial model (maximum likelihood estimator) were as follows: chi-square test (χ^2) = 21.282 (df = 9, n = 201, p = 0.011; with χ^2/df = 2.36 (with the ratio of χ^2 to degrees of freedom [df] < 3 to consider the model fit to the data as acceptable [Kline, 2016])), CFI = 0.98, NNFI = 0.97, RMSEA = 0.082, 90% CI (0.037, 0.012), p = 0.107 (p > 0.05), SRMR = 0.022, GFI = 0.98, and ECVI = 0.28 (see Tables S7 to S9 [Supplementary Materials] for details). The indices obtained indicated that the factor loadings were high and statistically significant on all items (min = 0.75, max = 0. 0.87; i.e., λij ≥ 0.50, see Table 1 and Fig. 1 for details). The item-total correlation was also significant and positive on all items (min = 0.80, max = 0.88, all for p < 0.001), as well as the correlation between the items in the MAS (min = 0.58, max = 0.75, all p-values < 0.001). These results of the CFA indicated that the unidimensional factor solution fitted the data well. See Tables S7 to S9 (Supplementary Materials) for details. More specifically, Tables S7 and S8 summarize the results of the main CFA indices, while Table S9 reports the results of the item-rest correlation.

Table 1 Italian Mukbang Addiction Scale (MAS) items' factor loadings

Factor	Item	Estimate	SE	z-value	p	95% confidence interval		
						Lower	Upper	Std. Est. (all)
Mukbang	MAS1	0.72	0.05	12.88	< 0.001	0.57	0.85	0.78
	MAS2	0.67	0.05	13.56	< 0.001	0.54	0.79	0.81
	MAS3	0.71	0.05	12.17	< 0.001	0.56	0.85	0.75
	MAS4	0.96	0.07	13.65	< 0.001	0.82	1.09	0.81
	MAS5	0.67	0.04	13.95	< 0.001	0.55	0.79	0.82
	MAS6	0.80	0.05	15.30	< 0.001	0.64	0.96	0.87

Estimate = MAS items factor loadings; Std. Est. (all) = standardized MAS items factor loadings

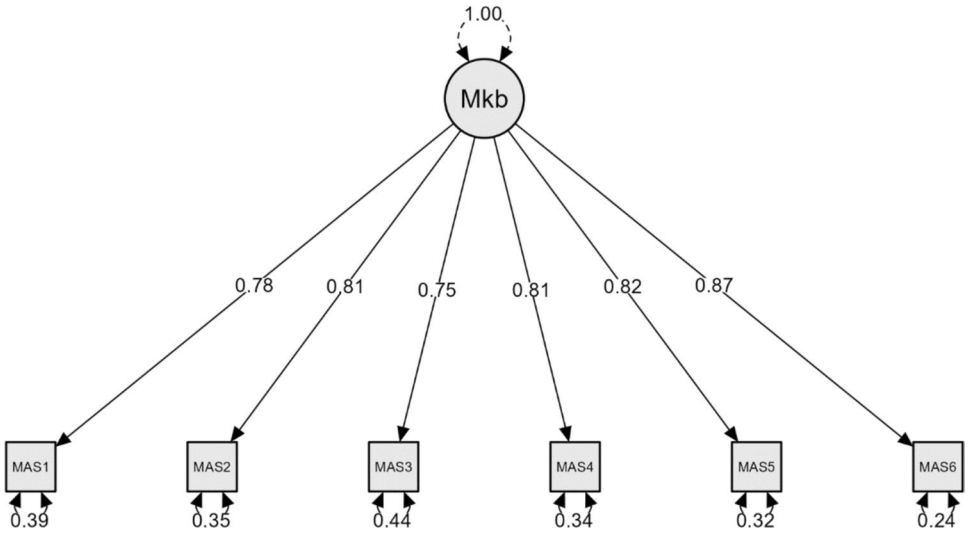

Fig. 1 Model plot of Italian Mukbang Addiction Scale confirmatory factor analysis standardized factor loading

Convergent/Discriminant Validity and Analysis of Correlations

The MAS scores showed a significantly positive correlation with the scores related to PSMU, general psychological distress (anxiety, depression, and stress), and loneliness (see Table 2 for details). In contrast, MAS scores showed a significantly negative correlation with mental well-being scores (see Table 2 for details). Convergent and discriminant validity were explored using R's *measureQ* function by constructing a model that included the main psychometric scales used (MAS, DASS-21, UCLA Loneliness Scale, BSMAS, WEMWBS). The model showed adequate fit indices: CFI = 0.93, NNFI = 0.94, and RMSEA = 0.07. No item showed a standardized factorial loading significantly lower than 0.7 in convergent validity, with a construct reliability of 0.91, and an AVE of 0.655 (65.5%). Discriminant validity indicated that no items showed secondary factorial loading, and the maximum shared variance (MSV) was below the AVE. Therefore, both convergent and discriminant validity were adequate (see Tables S10-S12 in the Supplementary Materials for details). Table S10 reports the factor loading of the model, while Tables S11 and S12 report the results of the AVE, construct reliability, correlation coefficient of the model, and the latent and observed constructs, respectively.

Internal Consistency

To assess the internal consistency of MAS, several indices were used: Cronbach's alpha, McDonald's omega, and the composite reliability (CR) coefficient. The Cronbach's alpha was 0.91 (95% confidence interval, 0.89–0.93), while McDonald's omega was 0.91 (95% confidence interval, 0.89–0.93). Finally, the CR coefficient was 0.92. These results indicate excellent internal consistency of the MAS. See Table 3 for details.

Table 2 Correlation matrix of the main study variables

	1	2	3	4	5	6	7	8
1. MAS	—							
2. PSMU	0.15*	—						
3. General distress	0.22**	0.29***	—					
4. Mental well-being	−0.19**	−0.21**	−0.48***	—				
5. Stress	0.18*	0.26***	0.92***	−0.43***	—			
6. Anxiety	0.19**	0.21**	0.90***	−0.38***	0.74***	—		
7. Depression	0.19**	0.32***	0.91***	−0.49***	0.79***	0.70***	—	
8. Loneliness	0.40***	0.26***	0.45***	−0.34***	0.39***	0.36***	0.46***	—

PSMU problematic social media use; *MAS* Mukbang Addiction Scale

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 3 Mukbang Addiction Scale reliability statistics

Estimate	ω	A	AVC
Point estimate	0.917	0.914	0.653
95% CI lower bound	0.899	0.895	0.600
95% CI upper bound	0.935	0.931	0.705

McDonald's ω, Cronbach's α, and AVC (average inter-item correlation)

Discussion

The main objective of the present study was to examine the psychometric properties of the Italian version of the Mukbang Addiction Scale (MAS), through confirmatory factor analysis (CFA), convergent and discriminant validity testing, and reliability (internal consistency) testing. The results of the analysis indicated that the Italian version of MAS possessed adequate validity and reliability to appropriately capture the construct of problematic mukbang among Italian participants. More specifically, the CFA showed that the MAS's one-factor solution (i.e., unidimensional) possessed excellent indices of good model fit (Hu & Bentler 1999), and all items had a high and significant factor loading (> 0.50). Therefore, H_1 was supported. Moreover, the MAS had excellent internal consistency (supporting H_2), because Cronbach's alpha, McDonald's omega, and composite reliability were all above 0.90, in line with the original validity study (Kircaburun et al., 2021).

In terms of comparison with the mean reference values (Table S6), the original version of the MAS (Kircaburun et al., 2021) reported a mean of 9.08 out of 30 (SD ± 4.76), while the Italian version showed a slightly higher mean score of 9.37 (SD = ± 4.77), suggesting a slightly larger tendency towards problematic mukbang watching. With regard to problematic social media use (using the BSMAS), the original Italian validation (Monacis et al., 2017) had a mean score of 14.20 out of 30 (SD ± 5.89). However, the present study's results indicated a mean score of 11.30 (SD = ± 4.91), indicating that the level of problematic social media use was lower than in the original Italian validation study. In comparison to a mean score of 12.3 out of 63 (SD ± 8.3) found in the original Italian DASS-21 validation study (Bottesi et al., 2015), participants in the present study had a higher mean score for psychological distress (28.21; SD ± 15.17), indicating a higher presence of depression, anxiety, and stress. The mean score on the WEMWBS among participants in the present study (42.28 out of 70; SD ± 9.11) was similar to that of the original Italian validation study (42.14, SD ± 6.43) (Gremigni & Stewart-Brown, 2011) indicating that the levels of mental well-being were approximately the same across samples. Finally, the results relating to loneliness showed that participants in the present study had a higher mean score (5.66 out of 9; SD ± 3.28) than in the original Italian validation (2.25, SD ± 0.89) (Bottaro et al., 2023), indicating that levels of loneliness were lower in the original Italian validation study.

The results obtained from the confirmatory factor analysis (CFA) and the reliability analysis of the Italian version of the MAS were comparable to those of the original version of the scale (Kircaburun et al., 2021) and slightly better than the results obtained in the Arabic validation (Saeed et al., 2024). In order to obtain adequate fit indices in the Arabic version, it was necessary to include modification indices. Moreover, the Italian version of the MAS was found to be more reliable than in other studies where it was used (e.g., Kircaburun et al., 2024). These results suggest that the Italian version of the MAS has solid factorial validity and high reliability, making it a valid instrument to assess the specific construct of problematic mukbang among Italian mukbang watchers.

Using the most recent psychometric analyses (Cheung et al., 2023), the average variance extracted (AVE) scores for the one-dimensional factor MAS exceeded the ideal threshold of 0.50. This result indicated that the items within each factor adequately captured the core essence of that particular factor, therefore demonstrating robust convergent validity (and supporting H_3). Higher AVE scores imply a higher correlation between the items of the same construct. Furthermore, no item showed a standardized factorial loading significantly lower than 0.7, leading to a construct reliability of 0.91. The presence of standardized factorial loadings (λ) of 0.5 or higher, the absence of cross-loading of indicators on other constructs, and the MSV being lower than the AVE indicated adequate convergent and discriminant validity (supporting both H_3 and H_4). Overall, the results confirmed that the model had a robust and well-defined structure (Cheung et al., 2023).

The convergent and discriminant validity of the MAS were reinforced by the relationships identified in the correlation analysis. The correlation analysis showed several significant relationships between the MAS scores and other psychological measures (Kircaburun et al., 2021). Consistent with previous findings (Kircaburun et al., 2021, 2024), the positive and significant correlation between the MAS and problematic social media use (PSMU) suggests that individuals who engage in problematic social media use exhibit greater vulnerability to problematic mukbang video consumption. However, this association is not surprising given that watching online mukbang videos is a sub-type of social media use. Moreover, the MAS scores exhibited a

positive and significant correlation with general psychological distress, encompassing anxiety, depression, and stress (supporting H_3). This indicates that among individuals in the present study, a higher level of problematic mukbang viewing was associated with greater levels of psychological distress, supporting findings from the original validation study (Kircaburun et al., 2021). Similarly, the significant negative correlation between MAS and mental well-being indicated that among participants, greater problematic mukbang use was associated with poorer mental well-being (supporting H_4).

These findings suggest that excessive consumption of mukbang content may have a negative impact on overall mental health, in line with previous research (Kircaburun et al., 2021, 2024). The findings show that the potential psychological impact of excessive and problematic mukbang consumption requires consideration, because such behaviors appear to be associated with various aspects of psychological distress.

Another noteworthy finding was the positive and significant relationship between MAS and loneliness. This is one of the strongest correlations identified in the present study, suggesting that individuals who consume more mukbang content tend to experience greater loneliness (supporting H_3). This correlation could indicate that individuals use mukbang videos as a means to cope with loneliness (Bruno & Chung, 2017; Choe, 2019; Donnar, 2017). However, prolonged/excessive use of mukbang watching could also exacerbate individuals' feelings of isolation.

The Compensatory Internet Use Model (CIUM, Kardefelt-Winther, 2014) proposes that the satisfaction of unmet needs in offline life through specific online activities can result in the development and maintenance of problematic and excessive use of such activities. Therefore, this model would posit that individuals may utilize mukbang content to compensate for various unmet needs, including social interaction, sexual fantasy, entertainment, distraction, and vicarious food consumption (Bruno & Chung, 2017; Choe, 2019; Donnar, 2017). The correlations in the present study provide support for this theory, indicating that excessive and problematic consumption of mukbang videos may serve as a compensatory mechanism for unmet offline needs. Consequently, the CIUM provides a useful explanation for the relationships between problematic mukbang watching and various aspects of psychological distress. It demonstrates how this behavior may emerge as a response to unmet needs in offline life (Kardefelt-Winther, 2014).

In summary, the observed correlations indicate that problematic mukbang use was associated with various negative aspects of mental health, including stress, anxiety, depression, and loneliness. Moreover, problematic social media use more generally is also closely associated with these same negative aspects (Soraci et al., 2023a), underlying the importance of considering the interaction between various online behaviors and their impact on mental health. The present study's findings highlight the necessity for further research to delineate the interrelationships between problematic mukbang use, social media use more generally, and psychological well-being.

Validating the Italian version of the MAS is important for several reasons, both in the context of research and clinical practice. Firstly, the validity and reliability of psychometric instruments are important to ensure that assessments are accurate and consistent. Without psychometrically robust instruments, studies could be undermined by a lack of accuracy and reliability in measurement, compromising the validity of results and their interpretation. Moreover, the validity of the MAS is also crucial for clinical practice. Once validated, the MAS can be used as a screening tool to identify individuals who may be problematically watching mukbang. This is of particular importance for mental health professionals and clinicians working with individuals who exhibit addictive or problematic behavior related to food and/or internet use.

Limitations and Future Directions

The present study has a number of specific limitations. Firstly, convenience sampling was used, with a small total number of participants, which may limit the generalizability and representativeness of the results. Moreover, it is possible that the responses of the participants may have been influenced by social desirability. Secondly, the participants did not have formal diagnoses of depression, anxiety, or stress disorders, which means that the findings may not accurately reflect the experiences and behaviors of individuals who are clinically diagnosed with these conditions. This lack of formal diagnoses could lead to an underestimation or overestimation of the relationship between the variables studied and the actual mental health status of individuals with clinical conditions. Thirdly, the sample was predominantly female, which may have influenced the results and limits the generalizability of the findings to the broader population. Moreover, the largely female sample also meant (i) that it was not possible to perform an adequate confirmatory factor analysis on gender invariance and (ii) that the results may largely reflect experiences and responses typical of female participants, potentially overlooking nuances or trends that might be more prevalent among males. Future research should aim to recruit more balanced samples to ensure adequate representation of both genders and to explore potential gender differences in problematic mukbang consumption. More gender-balanced samples would not only enhance generalizability but also allow researchers to examine and compare potential gender-specific differences, thereby providing a more nuanced understanding of the phenomenon. Fourthly,

no test–retest reliability analysis was carried out. Finally, the study was of a cross-sectional nature, which inherently limits the ability to ascertain causal relationships between the variables under investigation.

Future studies are needed to replicate and extend the analysis of the present study, as well as perform test–retest analysis over time with the same samples with a more representative sample. In addition, to fully evaluate the psychometric properties and sensitivity of the instrument along the entire severity continuum, further studies with more diverse samples, including individuals with more pronounced symptomatology, such as participants who have a clinical diagnosis of anxiety, stress, and depression, are needed. One potential avenue for future research would be to include additional variables, such as personality traits. Future studies should assess gender measurement invariance. It would also be beneficial to conduct further studies to compare the results of the present study with other countries and cultures.

Conclusion

The present study showed that the Italian version of the MAS has robust psychometric properties and is an appropriate instrument for assessing problematic mukbang consumption among Italian adults. The translation and adaptation process supported the reliability and validity of the MAS in the Italian context, ensuring that the scale effectively captured the intended construct (i.e., problematic mukbang use). In light of the growing prevalence of the mukbang phenomenon, in Italy and other countries, and the established relationship between problematic mukbang watching and potential psychological issues such as stress, anxiety, and depression, the Italian version of the MAS may be employed in research or clinical settings within the Italian-speaking population to facilitate a more comprehensive in-depth study of the phenomenon.

Appendix

Italian Version of the Mukbang Addiction Scale (MAS)

In parentesi tonda la versione originale in inglese.

MAS 1) Lei trascorre molto tempo pensando ai video di mukbang o a programmare quando vederli nuovamente? (Spent a lot of time thinking about watching mukbang or planned watching mukbang?).

MAS 2) Lei sente il bisogno di vedere video di mukbang sempre più spesso? (Felt an urge to watch mukbang more and more?).

MAS 3) Lei guarda video di mukbang per non pensare ai suoi problemi personali? (Watched mukbang in order to forget about personal problems?).

MAS 4) Ha provato a non guardare più video di mukbang senza riuscirci? (Tried to cut down on the mukbang watching without success?).

MAS 5) Si sente irrequieto/ansioso o turbato se non può guardare video di mukbang? (Become restless or troubled if you have been prohibited from watching mukbang?).

MAS 6) Il suo guardare video di mukbang ha avuto un impatto negativo sul suo lavoro o sui suoi studi? (Watched mukbang so much that it has had a negative impact on your job/studies?).

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R.P.: Writing—review and editing.
N.B.: Writing—review and editing.
R. S.: Supervision, project administration.
K.K.: Supervision, review.
All authors reviewed the manuscript.

Data Availability Research data are available upon reasonable request to the first author.

Declarations

Ethics Approval The study was approved by the University Niccolò Cusano,

Consent to Participate Informed consent was obtained from all participants involved in the study.

Competing Interests The authors declare no competing interests.

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