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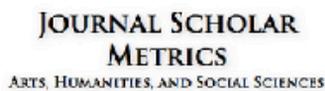
Portuguese Version of the Watching TV Series Motives Questionnaire: What does this have to do with Loneliness? A Bidirectional Relationship

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ABSTRACT

The objective of this study was twofold: to validate the Watching TV Series Motives Questionnaire (WTSMQ) for the Portuguese population and to understand its relationship with loneliness. WTSMQ was validated through an exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA). Besides, multi-group CFAs according to gender were conducted having been tested four levels of measurement invariance: configural, metric, scalar, and error variance. Several multiple linear regressions were carried out to estimate the relationship between sociodemographics, series preferences, loneliness and watching TV series motives. Results showed that the Portuguese version of WTSMQ presents good psychometric properties and that configural and metric were achieved, but not scalar and error variance invariance providing some evidence that the WTSMQ operates similarly in males and females. Results also showed that gender, age, TV series preferences, and loneliness contribute to explain different dimensions of Watching TV Series Motives. Also, sociodemographic variables, TV series preferences and WTSMQ subscales explain loneliness. The relationship between the motives for binge-watching and loneliness is bidirectional; sociodemographic variables and series preferences that explain those motives and loneliness overlap. Implications for tracking problematic Binge-watching situations are discusst.
Key words: Binge-watching, Loneliness, TV series preferences, WTSMQ.

Novelty and Significance

What is already known about the topic?

- The WTSMQ is a valuable tool for exploring the motivations behind binge-watching behaviors across several populations.
- Many adult victims report that there are a wide variety of barriers to their reporting or continuing with the investigation/prosecution.

What this paper adds?

- A suitable model for understanding binge-watching behaviors within the Portuguese population was found.
- A robust association was found between loneliness and binge-watching, with those experiencing higher levels of loneliness, based on marital status, registering elevated scores on the questionnaire.

The practice of consecutively watching multiple episodes of a series or a film series is known as a "marathon" or binge-watching (Vaterlaus, Spruance, Frantz, & Kruger, 2019). This behavior is characterized by a repetitive pattern, involving the uninterrupted consumption of available audiovisual content (Schweidel & Moel, 2016). Mikos (2016) quantifies this habit as viewing two or more episodes of a series in a single session. The rise of digital platforms, downloads, and streaming services has contributed to the resurgence of the "series marathon" behavior, closely associated with series (Pittman & Steiner, 2015). The accessibility of watching television series anywhere, using devices like cell phones, laptops, or tablets, has further facilitated this compulsive viewing habit (Vaterlaus *et alii*, 2019). Additionally, binge-watching experienced a significant boost with the introduction of the Netflix streaming platform, which releases entire seasons at once (Burroughs, 2019). The Uses and Gratification Theory (UGT) is employed to explain how individuals use various media, such as the internet, television, and social

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media, to fulfill their needs (Rubin, 1983). UGT addresses the question of why people use media and what purposes they serve. It posits that audience members are not passive consumers but actively engage with and interpret media, shaping their integration into their lives (Katz, Blumler, & Gurevitch, 1973).

The habit of compulsively watching TV series is not a recent phenomenon and is not limited to internet usage. As far back as the 1970s, the significance of video cassettes and DVDs emerged, enabling viewers to systematically watch films and series (Shim & Kim, 2018). Traditional television has also long offered marathons of diverse programs, including reality shows, series, or film sagas, allowing users to record content for later viewing based on their availability (Walton-Pattison, Dombrowski, & Presseau, 2018) Binge-watching is not limited to the younger population; middle-aged and elderly Europeans also engage in this excessive consumption. 2018 data reveal that 63% of US viewers and 51% of European viewers frequently indulge in compulsive television watching (Rubenking & Bracken, 2018). In the United States, approximately 70% of TV viewers excessively watch TV series, averaging five episodes per day (Rubenking & Bracken, 2018). Preferences in television program viewing vary between men and women, with men generally preferring fantasy or science fiction series, while women opt for comedies and dramas (Ahmed, 2017). Recent studies indicate that women are more likely to watch cable television than men, whereas men are more inclined to consume online content (Exelmans & Van den Bulck, 2017). Netflix research reveals a user distribution of 49% men and 51% women (Starosta, Izydorczyk, & Lizińczyk, 2019). Recently there has been an increasing research focus on the compulsive watching of TV series due to its potentially addictive nature and harmful effects. The concept of addiction linked to binge-watching raises significant concerns, as it is associated with mental health issues that can lead to social isolation, hinder the development of social networks and functional skills, and contribute to various mental and physical problems. Additionally, it may be correlated with other forms of excessive consumption, such as video games, cellphone use, or internet use (Hartmann *et alii*, 2019).

Individuals tend to binge watch television series alone, and over 70% of these individuals lose control in terms of the number of episodes they watch in a session (Riddle, Peebles, Davis, Xu, & Schroeder, 2018). Most people binge watch in solitude; this can be conditioned by specific personality traits, consequently, excessive or problematic compulsion can lead to greater isolation and a feeling of loneliness (Merill & Rubenking, 2019). Also, people are more motivated to watch a television series excessively if it is recommended by others (Granow, Reinecke, & Ziegele, 2018). People frequently binge-watch TV series alone, with more than 70% struggling to control the number of episodes watched in a single session (Riddle *et alii*, 2018). This solo binge-watching tendency can be linked to specific personality traits, potentially leading to heightened isolation and feelings of loneliness due to excessive or problematic compulsion (Merill & Rubenking, 2019). Moreover, recommendations from others strongly influence individuals to engage in excessive TV series watching (Granow *et alii*, 2018).

People who compulsively watch TV series typically engage in exchanging ideas and opinions about the series' narrative with others (Jenner, 2015). This phenomenon goes beyond simply consuming episodes; it involves the time users spend seeking information in online discussion groups, conversing with friends, and participating in social networks where references to series and films are shared (Erickson, Dal Cin, & Byl, 2019). According to Steiner and Xu (2020), viewers watch TV series mainly for catching up, entertainment control, relaxation, a sense of conclusion, cultural inclusion,

and an enhanced viewing experience. Binge-watching provides viewers with a sense of cognitive and emotional engagement, making them feel active and immersed in the story world (Tukachinsky & Eyal, 2018).

For some individuals, watching TV serves as an escape from reality and a way to alleviate loneliness. They become so engrossed in the fictional world that they momentarily forget about their loneliness until the film or series concludes (Merceron & Atkin, 2020). Television acts as a companion, filling the void in a person's home with images, voices, and familiar characters that create a fictional community, temporarily easing the sense of emptiness and allowing the person to disconnect from the outside world by assuming the roles of the characters they are watching (Muneer & Munir, 2020). People watch television for various individual motivations, influenced by social factors at home. It serves as a means of relaxation, passing time, entertainment, routine, escape from life complexities, learning about specific subjects, and staying informed about local and global events (Lüders & Sundet, 2021).The motivations for watching television can be diverse. Some engage in it for the communal experience, like watching sports with family, friends, or fellow enthusiasts (Hwang & Lim, 2015). With the rise of the Internet, solo viewing has become more prevalent, especially for online TV series and entertainment programs (Lin, Sung, & Chen, 2016; Krämer, Winter, Benninghoff, & Gallus, 2015). However, the motivation to watch TV programs carries potential drawbacks. It can be detrimental to general well-being, leading to addictive behavior, social isolation, depressive conditions, obesity, lethargy, and loneliness (Ahmed, Seid, & Kemal, 2020). Loneliness as defined by Cacioppo & Cacioppo (2014), is a subjective, negative emotional response influenced by external factors, such as environmental triggers and personality traits, leading to compromised executive functioning, sleep, and long-term mental and physical health. It is characterized by enduring emotional distress arising from feeling lonely, misunderstood, or rejected, lacking adequate social partners for desired activities, and is linked to the absence or loss of social and intimate relationships (Schoenmakers, van Tilburg, & Fokkema, 2015; Saygin, Akdeniz, & Deniz, 2015).

Loneliness is shaped by intrinsic and extrinsic factors, involving the recognition of insufficient or low-quality social relationships based on personal preferences for social involvement (Ang, 2016). It has diverse manifestations, including active isolation, where individuals prefer spending more time alone, and passive isolation, prevalent in introverted people experiencing a discrepancy between personal preferences and their social network (Ang, 2016). Bhagchandani (2017) described additional forms of loneliness, such as cultural, intellectual, psychological, and existential.

Loneliness is associated with various variables, including age, marital status, gender, and personality traits (Richardson, Elliott, & Roberts, 2017). It is not limited to a specific age group, with women generally experiencing more loneliness than men (Dong & Chen, 2017). Prevalence varies across religions, societies, and cultures (Alaviani, Parvan, Karimi, Safiri, & Mahdavi, 2017). While loneliness is a universal experience, it can serve as a motivator for renewing social interactions (Holt-Lunstad, Smith, Baker, Harris, & Stephenson, 2015). Loneliness can contribute to individuals watching television programs regularly. Smith, Leonis, and Anandavalli (2021) found a positive correlation between loneliness and excessive TV watching, as individuals tend to watch more episodes to cope with this emotion. Television addiction has social consequences, affecting relationships, work, and home functioning, reducing time spent with others and participation in community activities (Dandamudi & Sathiyaseelan, 2018). Viewers often feel guilty and dissatisfied for not using that time more productively or

engaging in other recreational activities (Walton-Pattison *et alii*, 2016). Particularly among young people, binge-watching sessions may lead to feelings of loneliness, stress, anxiety, and emptiness, associated with addictive behavior (Panda & Pandey, 2017). Young people entering university face challenges in adapting to a new environment, including interpersonal difficulties and loneliness. For these students, television serves as a means to fulfill the need for social interaction, providing a sense of belonging and creating parasocial relationships with characters and actors. This phenomenon, known as parasocial relationships, involves developing a sense of imagined friendship with characters and feeling a special connection with them (Conlin, Billings, & Averset, 2016).

The evidence supports the concept of "social surrogacy," where watching favorite television programs helps young individuals feel a sense of belonging, with loneliness being a significant predictor of developing parasocial relationships. When experiencing loneliness, students turn to their favorite programs, reporting a reduction in these feelings (Panda & Pandey, 2017). Additionally, increased viewing hours contribute to greater parasocial involvement, with relationships established during prolonged television binge sessions. Individuals with this compulsion continue watching to maintain these relationships and spend more time with their favorite characters (Rafiee & Chehreii, 2016). Television introduces characters that viewers can either like or dislike, leading to the formation of parasocial relationships. While Jennings and Alper (2016) explored how children, young adults, and adults develop negative parasocial relationships with unpleasant characters, there is a need for more focused research on older adults. Given that adults aged 65 and older watch over four hours of television daily, double the time of adolescents and adults aged 15 to 44 (Hunsaker & Hargittai, 2018), investigating the dynamics of parasocial relationships in this age group is warranted. Bond and Calvert (2014) argued that parasocial relationships, linked to individual differences and interpersonal relationships, may contribute to mental health problems. Building on this, Seo, Erba, Altschwager, and Geana (2019) explored the conditions under which parasocial relationships offer companionship or exacerbate loneliness and mental health issues in older adults. They emphasized the significance of psychological, social, and individual characteristics in shaping older adults' experiences with the media.

Furthermore, parasocial relationships with unlikable characters can evoke negative emotions, leading viewers to psychologically distance themselves, resembling how individuals separate from disliked partners in real life (Rosaen & Dibble, 2017). Despite attempts to distance, complete separation from negative parasocial relationships may not always be possible. It is essential to consider whether the disliked television characters actually exist in real life (Rosaen & Dibble, 2017). Extended television watching significantly impacts cognition, emotion, and mental health. Viewers who engage in intensive television watching report lower levels of alertness and concentration difficulties compared to non-intensive periods (Zhao, Song, Chen, Li, Wang, & Kong, 2018). A prospective study with adults found that high levels of television consumption during early adulthood are associated with lower cognitive functioning, particularly at the executive level, and slower processing speed (Hoang *et alii*, 2016).

Binge watchers also face emotional consequences, with reports of their mood being the same or worse after prolonged television sessions. The experience of intensive watching is less pleasant, and individuals may feel a sense of emptiness after completing a program or a season of a series (Mikos, 2016). Similar emotional experiences are noted when viewers encounter parasocial disruptions with characters, such as character removals or show endings, leading to feelings of loneliness and reduced life satisfaction (Chang, 2018).

The objective of this study is twofold: to validate the Watching TV Series Motives Questionnaire (WTSMQ) for the Portuguese population and to understand its relationship with loneliness. Loneliness can lead to binge-watching behavior (Merill & Rubenking, 2019); however, this behavior also causes loneliness (Panda & Pandey, 2017). Is this relationship really bidirectional?

METHOD

Participants

The sample was made up of 633 participants, of which 335 (52.9%) are female. The mean age of the sample was 40.44 (*SD*= 15.15; range= 18-80) and the median age was 40. Most of the participants (270, 42.7%) were married or in a de facto union, followed by singles not in a relationship (172, 27.2%), singles in a relationship (109, 17.2%), divorced (65, 10.3%) and widowed (17, 2.7%). Regarding professional status, most of the sample works (400, 63.2%), followed by students (140, 22.1%), pensioners (47, 4.7%) and unemployed participants (46, 7.3%).

Instruments

Sociodemographic Questionnaire. The sociodemographic questionnaire consists of four closed questions: gender (0= Male, 1= Female), age (18-28= 0; 29-39= 1; 40-50= 2; 50-60= 3, and >60= 4), professional status (student= 0, active worker= 1; unemployed= 2; retired= 3) and marital status (single, no dating relationship= 0; single, but in a dating relationship= 1; married or in a *de facto* relationship= 2; divorced/separated= 3; widowed= 4).

Questionnaire about Television Series Preferences. This questionnaire included a question assessing the participants' series general preferences in relation to the series watched; response options consisted of (a) Tranquilizing (calm, relaxing) and (b) Stimulating (active and/or violent). Besides, participants were invited to mention the type of series most watched: action, drama, horror, comedy, science fiction and fantasy, romance and documentaries.

Watching TV Series Motives Questionnaire (WTSMQ; Flayelle, Canale, Vögele, Karila, Maurage, & Billieux, 2019). Through an exploratory factor analysis, the WTSMQ, in its initial version, consisted of 25 items and the results suggested a five-factor solution. However, after analyzing each item, three of them were excluded due to having a low factor loading (less than 0.30). Thus, the final version of the WTSMQ scale is composed of 22 items and four factors that explain 45% of the total variance. It is a Likert-type scale with four response modes (Not at all= 1; Very little= 2; A little= 3; To a great extent= 4). The scale presents good psychometric property. It is subdivided into four subscales: Coping/Escape covers the items: 4,6,9,11,16,17,20,22; Enrichment: 3,7,12,14,19; Emotional Improvement: 2,5,8,15,18; and Social: 1,10,13,21. For the Coping/Escape subscale, the Cronbach alpha value is 0.79; for Enrichment is 0.70; for Emotional Improvement, is 0.64; and for the Social subscale is 0.67. The Cronbach alpha value for the WTSMQ scale is slightly below the recommended limit, i.e. equal to 0.70. Higher scores on the scale mean higher motivational levels for watching series on TV.

Revised UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980). This instrument was designed to assess loneliness. Initially, this scale consisted of 75 items, but it was revised removing extreme statements. From this scale, 25 items were selected, and assess the extent to which persons feel lonely on a five-point Likert scale. Finally, 20 items were selected, with the aim of measuring loneliness and social isolation, chosen based on item-total score correlations. The scale uses the cognitive discrepancy theory of loneliness: loneliness occurs when there is a gap between the quantity and quality of connections we have and want. The scale showed a high internal consistency (*α*= 0.96). The adaptation for the Portuguese population of the UCLA Loneliness Scale was conceived by Neto (1989). This is a relatively short and simple-to-apply scale that sees loneliness as a psychological state. The final version included 20 items; 10 items were written in a positive way and 10 items in a negative way, evaluated on a Likert-type scale, with four response options: Never= 1, Rarely= 2, Sometimes= 3, Often= 4. Items 4 and 12 of the Russell, Peplau and Cutrona (1964) version are not part of the Portuguese version, thus, the Portuguese version consists of 18 items, with good internal consistency and good validity, confirmed by the correlations between loneliness and the different emotional states related to loneliness that the participants evaluated. The total score is obtained through the sum of the 18 items; the sum of the negative items is carried out according to the scale, while the sum of the positive items is

achieved by inverting the scale. Thus, a higher score translates to higher loneliness. Loneliness is apprehended in a unidimensional way. The Cronbach's alpha coefficient of this Scale is 0.87.

Procedure

All procedures carried out throughout this investigation followed the recommendations of the Declaration of Helsinki. This investigation was submitted and approved by the Scientific Council of the Portuguese Catholic University, Faculty of Philosophy and Social Sciences. Authorization was requested from the authors of the instruments used in this study. The translation of the WTSMQ was carried out according to the International Test Commission (ITC) guidelines for translating and adapting tests (Gregoire, 2018) and the translation back-translation procedure (Brislin, 1980). The original version of the instrument was translated from English to Portuguese by two bilingual translators, one psychologist and another from the social sciences field. A third bilingual translator (psychologist) carried out a reconciliation of the two translations. The first translator compared the back-translated version with the original English versions to achieve linguistic and cultural equivalence consistency. No differences were found between the back-translated and the original versions. The Portuguese version of the scale can be found in the Appendix.

The modality used for data collection was carried out online through the Google Forms platform. This study was based on the non-probabilistic sampling method, namely network sampling, also called "snowball" sampling (Peters *et alii*, 2020). The inclusion criteria in this study were having Portuguese nationality and being aged 18 years or more.

At the beginning of the protocol, the participants will be informed about the objectives of the study, as well as about the guarantee of anonymity and confidentiality of the collected data and will fill in the informed consent form for this purpose. The data collection start date was January 2022.

Data Analysis

The data was analysed by SPSS version 28 and AMOS version 28. Descriptive and inferential statistical analysis were used. Concerning descriptive statistics, the sample was described using frequencies and percentages, as well as mean, standard deviation, minimum and maximum. Parametric tests will be used since the variables are normally distributed, being evaluated through the values of kurtosis (<11) and skeweness (<3) (Marôco, 2014) and multicollinearity was assessed by tolerance (>0.100) and variance inflation factor (*VIF*) (<10) (Tabachnick & Fidell, 2013). The total sample was divided into two (317+316) to carry out, respectively, the exploratory factorial analysis and the confirmatory factorial analysis.

An Exploratoy Fatorial Analysis (EFA) (maximum likelihood) with principal component analysis was conducted by running an orthogonal (i.e., Varimax) rotated analysis to achieve a factor structure for the variables. Sample adequacy was assessed using the Kaiser-Meyer-Olkin (*KMO*) value (Kaiser, 1974) and Bartlett's Test of Sphericity (Bartlett, 1950). Factors were assessed using eigenvalues greater than 1 (Kaiser, 1960) and a minimum of 3 items per factor (Carpenter, 2018). Items could be removed based on communalities (<0.30), factorial weights (<0.50), matrix correlation (<0.30) and if Cronbach's alpha increased if item deleted. Confirmatory factor analyses (CFAs) were carried out for the Portuguese sample, to assess the adequacy of fit of the seven-factor model derived from the origial WTSMQ validation (Flayelle, Maurage, Karila, Vögele,

& Billieuxi, 2019). The goodness of fit for the CFA models was assessed through the Root Mean Square Error of Approximation (*RMSEA*), the Comparative and Incremental Fit Indices (*CFI* and *IFI*, respectively), and the Standardized Root Mean square Residual (*SRMR*). An excellent model fit was identified when the *CFI* and the *IFI* were ≥.95, the *RMSEA* ≤0.05, and the *SRMR* ≤0.05 (Hu & Bentler, 1999). The goodness of fit for the CFA models was assessed through the Root Mean Square Error of Approximation (RMSEA), and its p-value (PCLOSE), the Comparative and Incremental Fit Indices (CFI and IFI, respectively), the goodness of fit (GFI) the and the Standardized Root Mean square Residual (SRMR). An excellent model fit was identified when the CFI and the IFI were ≥.95, the RMSEA ≤0.05, and the SRMR ≤0.05 (Hu & Bentler, 1999). Values ≥0.90 for the CFI and the IFI, ≤0.08 for the RMSEA, and ≤.10 for the SRMR were considered acceptable (Hooper, Coughlan, & Mullen, 2008). The CFA models were also assessed through the Akaike information criterion (AIC). Satorra-Bentler chi-square (χ^2), general model significance (*p*), and relative chi-square (χ^2/df) were reported; however, χ^2 is very sensitive to sample size (Jöreskog & Sörbom, 1993); thus, this value must be interpreted with caution.

To assess whether the factor structure of the WTSMQ was valid for its use across genders, multi-group CFAs according to gender were conducted. Four levels of measurement invariance were tested: configural (whether items load on the same factor across groups); metric (whether item factorial loadings are equal across groups); scalar (whether item intercepts are equal across groups) and error variance (whether items measurement error equal across groups). The progressive constrained models were assessed through the difference between pairs of nested models (Δ) in the *RMSEA*, *CFI* and *SRMR*. A change ≥0.01 in the *CFI*, ≥0.015 in the *RMSEA*, and ≥0.03 in the *SRMR* indicates a significant decrease in the model fit when assessing for measurement invariance (Chen, 2007).

Pearson correlations were established for continuous variables and Spearman correlations when at least one of the variables was ordinal or nominal. Correlations between 0 and 0.3 are weak, between 0.3 and 0.5 are moderate, between 0.5 and 0.7 are strong, and between 0.7 and 1 are very strongh either positive or negative (Benesty, Chen, Huang, & Cohen, 2009). To assess the model reliability, convergent and discriminant validity, Cronbach's alpha coefficients, Composite Reliability (*CR*, 0.70 or higher suggests good model reliability), Average Variance Extracted (*AVE*, 0.50 or higher suggests adequate convergence) and Square Root of *AVE* (higher than the highest correlation with any other latent variable) were used; if *AVE* is less than 0.50 and *CR* higher than 0.60, the convergent validity of the model is adequate (Fornell & Larcker, 1981).

Several multiple linear regressions were carried out to estimate the relationship between sociodemographics, series preferences, personality traits and Binge-watching dimensions. The assumptions of multiple linear regression (homogeneity of variance, independence of observations, normality, and linearity) were meet. The regression coefficients (R^2 and ΔR^2), the *t* value from a two-sided *t* test, the *p* value and the value of F change were reported. The statistical significance level was set at .05

RESULTS

No statistically significant differences were found between the two parts of the total sample concerning gender, age, education, marital and professional status.

Concerning participants' series general preferences, they are quite balanced,

although the tranquilizing ones are the most prefered. Besides, the most viewed type of series is action, followed by documentary series and drama series. The least viewed type of series are horror ones (see Table 1). There are statistically significant differences with regard to series preferences in relation to gender: men prefer stimulating series and women reassuring series [χ^2(1)= 122.523; p <.001; Φ= -0.440]: men prefer more action series [χ^2(1)= 61.851; p <.001 ; Φ= 0.313], science fiction and fantasy [χ^2(1)= 42.507; p <.001; Φ= 0.259], and horror series [χ^2(1)= 68.902; p <.001; Φ= 0.330]; women prefer dramatic [χ^2(1)= 18.168; p <.001; Φ= -0.169], romantic [χ^2(1)= 163.573; p <.001; Φ= -0.508], comic [χ^2(1)= 61.919; p <.001; Φ= -0.313] and documental series [χ^2(1)= 5-113; p= .024; Φ= -0.090].

Table 1. Questionnaire about television series preferences (N = 633).

	Series preferences	n %
Participants' series general preferences	Tranquilizing	326 (51.5)
	Stimulating	307 (48.5)
Viewed series	Action	456 (72)
	Drama	399 (63)
	Horror	166 (26.2)
	Comedy	383 (60.5)
	Science Fiction and Fantasy	380 (60)
	Romance	338 (53.4)
	Documentaries	407 (64.3)

Notes: *n*= frequencies; %= percentages of the total.

A confirmatory factor analysis of the Watching TV Series Motives Questionnaire (with total sample) was carried out in an attempt to confirm the model proposed by the authors of the original version (four factors and 22 items); however, the model found was not a good one [χ^2(203)= 5.201; *CFI*= 0.941; *TLI*= 0.932; *IFI*= 0.941; *GFI*= 0.861; *RMSEA*= 0.082; *p*close= .000; *SRMR*= 0.040; *AIC*= 1155.81]. It was decided to carry out an exploratory factorial analysis (with half sample), without determining the number of factors. However, the solution presented was quite unbalanced, with most of the items saturating in one factor and only four items saturating in a second factor, without being possible to delimit the subject of the factors from an analysis of the items' content. It was decided to carry out another exploratory factorial analysis with the determination of four factors (the number of factors suggested by the authors of the original version). Several items loaded in a non-discriminatory way in different factors, namely items 2, 9, 16, 19, and 20. Thus, these items were removed, and another exploratory factor analysis was carried out again. Items 8 and 18 also proved to be non-discriminatory from a factorial point of view and were therefore removed. After repeated exploratory factor analysis, a parsimonious solution was found with four factors including fifteen items (see Table 2). This solution explains 82.26% of the variance. The model found were confirmed through a confirmatory factorial analysis (with the other half of the sample) and a good model fit was found [χ^2(82)= 2.173; *CFI*= 0.973; *TLI*= 0.965; *IFI*= 0.973; *GFI*= 0.930; *RMSEA*= 0.061; *p*close= .068; *SRMR*= 0.040; *AIC*= 254.22] (see Figure 1).

Results from measurement invariance of the WTSMQ across gender are displayed in Table 3. Configural invariance according to gender was confirmed during the first step of the multi-group CFAs. The small changes in the fit indices at the next steps also supported metric invariance according to gender. Besides, the increase in the level of measurement constraints at the subsequent steps presents a significant deterioration of the models' fit; also, error invariance across genders was not achieved, providing some evidence that the WTSMQ operates similarly in males and females (see Table 3).

Table 2. Watching TV Series Motives Questionnaire: Exploratory Factorial Analysis (*N*= 317) (22 items).

	h^2	F1 Social	F2 Enrichment	F3 Emotional Enhancement	F4 Coping/ Escapism
1. I watch TV series not to be out of touch, because most of my friends do it.	0.77	0.776	0.197	0.326	0.138
2. I watch TV series to feel strong emotions like the excitement or the thrill they give me.	0.76	0.329	0.311	0.482	0.577
3. I watch TV series to discover whole new worlds and to increase my knowledge on a number of subjects.	0.74	0.127	0.771	0.209	0.339
4. I watch TV series to pass the time and escape from boredom.	0.79	0.231	0.317	0.284	0.782
5. I watch TV series because I know I'll have a good time if I get carried away by the story.	0.81	0.152	0.467	0.207	0.755
6. I watch TV series to relieve stress, anxiety, or negative emotions.	0.78	0.227	0.291	0.441	0.710
7. I watch TV series to learn or familiarize myself with a new language	0.68	0.313	0.692	0.204	0.390
8 I watch TV series to get attached to characters and feel joy watching them in each episode	0.80	0.352	0.613	0.467	0.320
9. I watch TV series in order to feel like I am floating in a secondary state for a while.	0.79	0.334	0.304	0.493	0.594
10. I watch TV series to relate to others more easily, because TV series give me something to discuss.	0.80	0.751	0.269	0.356	0.228
11. I watch TV series to get away from the daily hassles.	0.82	0.384	0.298	0.720	0.323
12. I watch TV series because they give me food for thought on a number of subjects.	0.76	0.194	0.689	0.372	0.371
13. I watch TV series because I bow to my close circle's pressure when they advise me to watch a given series.	0.82	0.862	0.174	0.133	0.146
14. I watch TV series to extend my audiovisual knowledge.	0.79	0.355	0.760	0.272	0.154
15. I watch TV series in the hopes of feeling again the elation I felt watching another TV series previously.	0.82	0.358	0.400	0.668	0.319
16. I watch TV series to escape the routine.	0.69	0.312	0.341	0.424	0.564
17. I watch TV series to overcome loneliness.	0.81	0.446	0.290	0.710	0.296
18. I watch TV series to be captivated and experience extraordinary adventures by proxy.	0.82	0.656	0.338	0.498	0.250
19. I watch TV series to develop my personality and broaden my views.	0.80	0.310	0.642	0.225	0.532
20. I watch TV series to escape several responsibilities.	0.87	0.557	0.296	0.282	0.620
21. I watch TV series to feel valued in others' eyes thanks of the extent of my knowledge on the subject.	0.79	0.821	0.196	0.31	0.158
22. I watch TV series to escape reality and seek shelter in fictionary worlds.	0.85	0.405	0.285	0.737	0.301
Eigenvalues		9.57	1.55	0.71	0.51
Total variance explained (82.26%)		63.80	10.31	4.74	3.42
Cronbach's alfa (α)	0.959	0.951	0.895	0.947	0.898
Correlation matrix range [0.30-0.90]		0.33-0.85			
Determinant score [above 0.00001]		4.772E-7			
Bartlett's Test of Sphericity (*df*); *p* < .05		4514.57 (105); <.001			
Kaiser-Meyer-Olkin Measure (KMO) (above 0.50)		0.959			
Diagonal element anti-correlation matrix (above 0.50)		0.93-0.96			

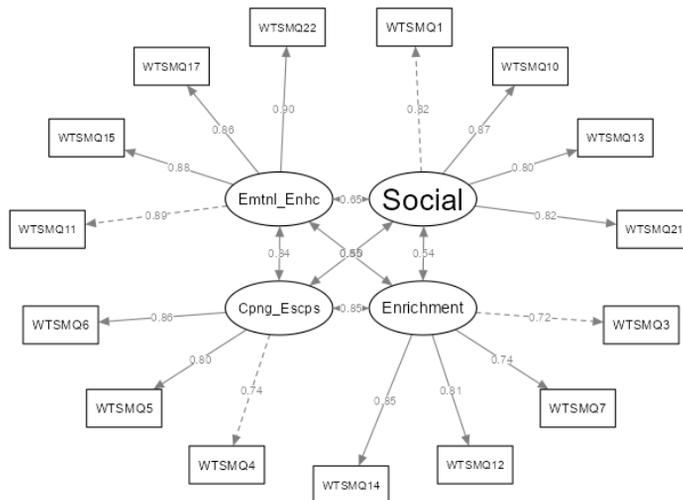*Notes*: h^2 = communalities; *F*= factor; grey= items (crossloadings) removed.

Figure 1. Watching TV Series Motives Questionnaire, Confirmatory Factorial Analysis. (Notes: Socil= Social; Emtni_Ench= Emotional enhacement; Cpng_Escps= Coping/Escapism; Enrichment= Enrichment; WTMSQ= Watching Tv Motives Series Questionnaire; 1-22= item numbers.)

Table 3. Multigroup CFAs of Watching TV Series Motives Questionnaire according to gender (N= 633).

	χ²	df	χ²/df	RMSEA (CI)	CFI	IFI	SRMR	Comparisons	Δ RMSEA	Δ CFI	Δ SRMR
Configural invariance	438.430	164	2.673	0.051 (0.046-0.057)	0.966	0.966	0.043	NA	NA	NA	NA
Metric invariance	463.529	175	2.649	0.051 (0.045-0.057)	0.964	0.964	0.050	Configural vs Metric	0.000	0.002	0.007
Scalar invariance	568.329	185	3.072	0.057 (0.052-0.063)	0.952	0.952	0.064	Metric vs Scalar	0.006	0.012	0.014
Error variance invariance	806.820	202	3.994	0.069 (0.064-0.074)	0.925	0.925	0.086	Scalar vs Error Variance	0.012	0.027	0.022

Notes: CFI= Comparative Fit Index; Δ CFI= change in CFI compared with the previous model (expressed in absolute values); CI= Confidence Interval; DF= Default Freedom; IFI= Incremental Fit Index; NA= Not applicable; RMSEA= Root Mean Square Error of Approximation; Δ RMSEA= change in RMSEA compared with the previous model (expressed in absolute values); SRMS= Standard Root Mean Square; Δ SRMR= change in SRMR compared with the previous model (expressed in absolute values); χ²= Chi-squared. All models are significant at *p* <.001.

Cronbach's alpha, composite reliability and average variance extracted (AVE) of the Portuguese version of Watching TV Series Motives Questionnaire are above the recommended values, but not AVE square roots for Enrichment, Emotional Enhancement and Coping/Escapism (see Table 3). Coping/Escapism is the most important motive in our study, followed by Enrichment, Emotional Enhacement and, at last, social motives (see Table 4).

Table 4. Correlations, Cronbach's alpha, Composite Reliability, Average Variance Extracted, AVE square roots, Mean and Standard Deviation of the Watching TV Series Motives Questionnaire (N= 633).

	1	2	3	4	α	CR	AVE	M	SD
1. Social	**0.80**				0.95	0.88	0.65	1.71	0.89
2. Enrichment	0.543**	**0.73**			0.90	0.82	0.53	2.72	0.89
3. Emotional Enhancement	0.684**	0.758**	**0.71**		0.95	0.80	0.50	2.20	1.09
4. Coping/Escapism	0.497**	0.768**	0.758**	**0.75**	0.90	0.83	0.56	2.90	0.91

Notes: AVE= Average Variance Extracted; Bold diagonal= Square Root of the Average Variance Extracted; CR= Composite Reliability; M= Mean; SD= Standard Deviation; **p <.001; α= Cronbach's alpha.

To assess the fit of the unifactorial model of the UCLA Loneliness Scale to the study sample, a confirmatory factor analysis was carried out; however, the model found was not a good one [$\chi^2(135)$= 15.82; *CFI*= 0.781; *TLI*= 0.752; *IFI*= 0.782; *GFI*= 0.604; *RMSEA*= 0.153; *p*close= .000; *SRMR*= 0.084; *AIC*= 2208.05]. Some studies that used this instrument found a bifactorial model. Therefore, it was decided to carry out an exploratory factor analysis to verify if the items were grouped in more than one factor. This was carried out without the determination of factors and a parsimonious solution was found with two factors each with nine items (see Table 5), explaining 62% of the variance. The model found were assessed through a confirmatory factorial analysis and, although some correlations between errors of the same factor were established, a good model fit was found [$\chi^2(127)$= 2.118; *CFI*= 0.973; *TLI*= 0.968; *IFI*= 0.973; *GFI*= 0.915; *RMSEA*= 0.060; *p*close= .056; *SRMR*= 0.037; *AIC*=357.02] (see Figure 2).

Cronbach's alpha, composite reliability and average variance extracted (AVE) of the Portuguese version of Loneliness Scale are above the recommended values but not AVE square roots for Total Loneliness (see Table 6).

All of the Watching TV Series Motives subscales correlate positively and significantly with the UCLA Loneliness Scale total and both factors. The highest correlation occurs between the Emotional Enhancement subscale and the UCLA Loneliness Scale Isolation and the lowest between the Social subscale and UCLA Loneliness Scale Proximity (see Table 7). Age is negatively and significantly correlated with all subscales of the Watching TV Series Motives Questionnaire: Social (*r*= -0.202; *p* <.001); Enrichment (r= -0.319; *p* <.001); Emotional enhancement (*r*= -0.255; *p* <.001); and Coping/Escapism (*r*= -0.319; *p* <.001).

There are statistically significant differences in relation to all Watching TV Series Motives subscales according to gender: Social [*t*(631)= 5.326; *p* <.001; *d*= 0.869]; Enrichment [*t*(631)= 5.400; *p* <.001; *d*= 0.871]; Emotional enhancement [*t*(631)= 26.690;

Table 5. UCLA Loneliness Scale: Exploratory Factorial Analysis.

	(n= 317) (18 items)		
	h^2	*F1*	*F2*
1. I feel in tune with the people around me	0.558	0.305	0.682
2. I lack companionship	0.533	0.691	0.238
3. There is no one I can turn to	0.692	0.699	0.452
4. I feel part of a group of friends	0.562	0.318	0.679
5. I have a lot in common with the people around me	0.624	0.258	0.747
6. I am no longer close to anyone	0.693	0.768	0.321
7. My interests and ideas are not shared by those around me	0.536	0.726	0.097
8. I am an outgoing person	0.407	-0.092	0.632
9. There are people I feel close to	0.692	0.341	0.759
10. I feel left out	0.722	0.787	0.32
11. No one really knows me well	0.528	0.691	0.224
12. I feel isolated from others	0.769	0.833	0.276
13. I can find companionship when I want it	0.534	0.287	0.672
14. There are people who really understand me	0.632	0.304	0.734
15. I am unhappy being so withdrawn	0.695	0.806	0.215
16. People are around me but not with me	0.697	0.788	0.277
17. There are people I can talk to	0.651	0.351	0.726
18. There are people I can turn to	0.689	0.392	0.732
Eigenvalues		9.23	2.00
Total variance explained (62.32%)		51.26	11.06
Cronbach's alfa (α)	0.952	0.940	0.927
Correlation matrix range [0.30-0.90]	0.20-0.85		
Determinant score [above 0.00001]	2.274E-6		
Bartlett's Test of Sphericity (*df*); *p* < 0.05	4017.35 (153); <.001		
Kaiser-Meyer-Olkin Measure (KMO) (above 0.50)	0.934		
Diagonal element anti-correlation matrix (above 0.50)	0.90-0.96		

Notes: h^2= communalities; *F*= factor
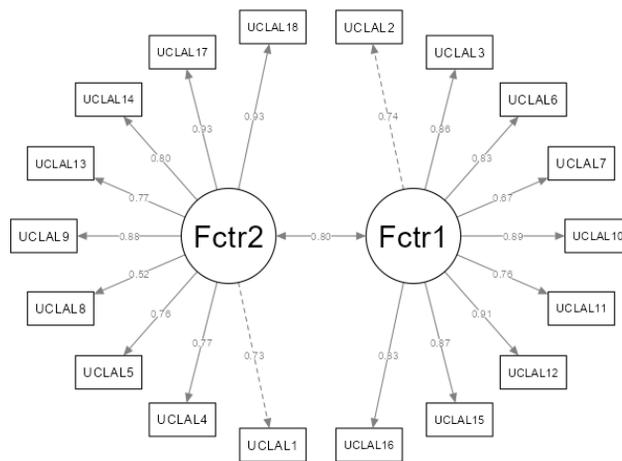
Figure 2. UCLA Loneliness Scale Confirmatory Factorial Analysis. (*Notes*: UCLA= UCLA Loneliness Scale; Fctr1= Factor 1; Fctr2= Factor 2; 1-18= item numbers.)

Table 6. Correlations, Cronbach's alpha, composite reliability, Average Variance Extracted, AVE square roots, Mean and Standard Deviation of the UCLA Loneliness Scale (*N*= 633).

	1	*2*	*3*	*α*	*CR*	*AVE*	*M*	*SD*
1. Total	**0.73**			0.95	0.95	0.54	2.07	0.70
2. Isolation	0.933**	**0.75**		0.94	0.92	0.57	2.21	0.81
3. Proximity	0.906**	0.692**	**0.71**	0.93	0.90	0.50	1.92	0.70

Notes: AVE= Average Variance Extracted; Bold diagonal= Square Root of the Average Variance Extracted; CR= Composite Reliability; M= Mean; SD= Standard Deviation; ***p* <*.001*; *α*= Cronbach's alpha.

Table 7. Correlations between Watching TV Series Motives
Subscales and UCLA Loneliness Scale Total and Subscales (*N*= 633)

	UCLA Total	UCLA Factor1	UCLA Factor2
1. Social	0.346**	0.432**	0.186**
2. Enrichment	0.512**	0.515**	0.420**
3. Emotional Enhancement	0.716**	0.725**	0.582**
4. Coping/Escapism	0.471**	0.464**	0.397**

Note: **= *p* <.001

p <.001; *d*= 1.039]; and Coping/Escapism [$t(631)$= 26.690; *p* <.001; *d*= 0.896]. Men present higher values than women in all subscales.

There are statistically significant differences in relation to all Watching TV Series Motives subscales according to marital status: Social [$F(4, 628)$= 26.690; *p* <.001; η^2= 0.145]; Enrichment [$F(4, 628)$= 35.505; *p* <.001; η^2= 0.184]; Emotional enhacement [$F(4, 628)$= 7.837; *p* <.001; η^2= 0.234]; and Coping/Escapism [$F(4, 628)$= 4.134; *p* <.001; η^2= 0.172]. Globally, the group with the highest value is that of singles who do not have a romantic relationship, followed by singles with a romantic relationship, as well as participants who are single (widowed and divorced) and those with the lowest score are those who are married or living in a de facto union.

There are statistically significant differences in relation to all Watching TV Series Motives subscales according to professional status: Social [$F(3, 269)$= 18.470; *p* <.001; η^2= 0.081]; Enrichment [$F(3, 269)$= 24.027; *p* <.001; η^2= 0.103]; Emotional enhacement [$F(3, 269)$ = 26.994; *p* <.001; η^2= 0.114]; and Coping/Escapism [$F(3, 269)$= 20.427; *p* <.001; η^2= 0.118]. Overall, the group with the highest score is the unemployed and the one with the lowest score is the workers.

Participants who prefer more stimulating series (than tranquilizing ones) have higher values in all studied dimensions (Watching TV Series Motives Subscales and UCLA Loneliness Scale Total and Subscales) (see Table 8). Participants who watch action series (compared to those who don't watch) show higher values in the dimensions Enrichment [$t(631)$= 3.821; *p* <.001; *d*= 0.880]; Emotional enhacement [$t(631)$= 2.226; *p* <.001; *d*= 1.084]; and Coping/Escapism [$t(631)$= 3.663; *p* <.001; *d*= 0.899]. Participants who watch horror series (compared to those who don't watch) show higher values in the dimensions Social [$t(631)$= 7.052; *p* <.001; *d*= 0.847]; Enrichment [$t(631)$= 9.045; *p* <.001; *d*= 0.838]; Emotional enhancement [$t(631)$= 11.074; *p* <.001; d= 0.996]; and

Table 8. Differences in Watching TV Series Motives Subscales and UCLA Loneliness Scale
Total and Subscales concerning questionnaire about television series preferences (*N*= 633).

		n	*M*	*SD*	*t* (631)	*p*	*d*
Social	Tranquilizing	326	1.52	0.77	-5.481	<.001	0.87
	Stimulating	307	1.91	0.96			
Enrichment	Tranquilizing	326	2.43	0.83	-8.991	<.001	0.84
	Stimulating	307	3.03	0.85			
Emotional Enhancement	Tranquilizing	326	1.83	0.90	-7.900	<.001	1.02
	Stimulating	307	2.60	1.13			
Coping/Escapism	Tranquilizing	326	2.64	0.92	-7.836	<.001	0.87
	Stimulating	307	3.18	0.81			
UCLA Total	Tranquilizing	326	1.86	0.49	-6.766	<.001	0.66
	Stimulating	307	2.28	0.81			
UCLA Isolation	Tranquilizing	326	2.00	0.66	-7.626	<.001	0.79
	Stimulating	307	2.43	0.90			
UCLA Proximity	Tranquilizing	326	1.73	0.49	-9.418	<.001	0.67
	Stimulating	307	2.13	0.81			

Notes: *d*= Cohen's d; M= Mean; SD= Standard Deviation; *t*= t test.

Coping/Escapism [$t(631)$= 8.175; $p <$.001; d= 0.871]. Participants who watch scientific fiction and fantasy series (compared to those who don't watch) show higher values in the dimensions Social [$t(631)$= 4.757; $p <$.001; d= 0.875]; Enrichment [$t(631)$= 8.563; $p <$.001; d= 0.843]; Emotional enhancement [$t(631)$= 8.910; $p <$.001; d= 1.031]; and Coping/Escapism [$t(631)$= 7.498; $p <$.001; d= 0.869].

Participants who do not watch comedy series (compared to those who watch) show higher values in the dimensions Social [$t(631)$= -3.816; $p <$.001; d= 0.879]; Enrichment [$t(631)$= -5.502; $p <$.001; d= 0.870]; Emotional enhancement [$t(631)$= -7.812; $p <$.001; d= 1.035]; and Coping/Escapism [$t(631)$= -4.413; $p <$.001; d= 0.895]. Also, participants who do not watch romantic series (compared to those who watch) show higher values in the dimensions Social [$t(631)$= -2.776; $p=$ .006; d= 0.884]; Enrichment [$t(631)$= -4.569; $p <$.001; d= 0.876]; Emotional enhancement [$t(631)$= -6.103; $p <$.001; d= 1.057]; and Coping/Escapism [$t(631)$= -3.325; $p <$.001; d= 0.901]. At last, participants who do not watch documental series (compared to those who watch) show higher values in the dimensions Social [$t(631)$= -4.781; $p <$.001; d= 0.867]; Enrichment [$t(631)$= -4.602; $p <$.001; d= 0.875]; Emotional enhancement [t(631)= -8.721; $p <$.001; d= 1.023]; and Coping/Escapism [$t(631)$= -5.735; $p <$.001; d= 0.887].

Being male, single, not watching horror series, high values in the Loneliness Isolation subscale and low in the Loneliness Proximity subscale contribute to explaining 27.3% of the variance of the WTSMQ Social subscale. Being younger, preferring stimulating series, not watching scientific fiction and high values of the Loneliness Isolation subscale explain 37.4% of the variance of the WTSMQ Enrichment subscale. Being younger, preferring stimulating series, watching action and comic series, not watching scientific fiction and high values of the Loneliness Isolation and the Loneliness Proximity subscales explain 59% of the variance of WTSMQ Emotional Enhancement subscale. At last, being younger, preferring stimulating series, not watching scientific fiction and dramatic series, and presenting high values on the Loneliness Isolation and Loneliness Proximity subscales explain 32% of the variance of WTSMQ Coping/ Escapism subscale (see Table 9).

Table 9. Variables that contribute to Watching TV Series Motives Subscales.

Variables	Social			Enrichment			Emotional Enhancement			Coping / Escapism		
	B	*EP B*	*β*	*B*	*EP B*	*β*	*B*	*EP B*	*β*	*B*	*EP B*	*β*
Gender	-0.160	0.066	-0.090									
Age				-0.013	0.002	-0.226	-0.011	0.002	-0.157	-0.014	0.002	-0.230
Marital status	-0.148	0.029	-0.179									
Tranquilizing/ Stimulating				0.256	0.060	0.144	0.283	0.070	0.130	0.196	0.064	0.108
Horror series	-0.280	0.078	-0.139									
Scientific fiction and fantasy series				-0.255	0.061	-0.141	-0.204	0.061	-0.092	-0.228	0.065	-0.123
Action series							0.190	0.072	0.079			
Comedy series							0.158	0.064	0.071			
Drama series										-0.141	0.062	-0.075
UCLA Loneliness Isolation	0.557	0.052	0.511	0.450	0.037	0.412	0.737	0.049	0.552	0.340	0.051	0.306
UCLA Loneliness Proximity	-0.349	0.062	-0.273				0.175	0.057	0.112	0.143	0.060	0.110
R^2 (R^2 *Adj.*)	0.279 (0.273)			0.378 (0.374)			0.596 (0.592)			0.331 (0.324)		
F for change in R^2	57.472**			149.526**			246.991**			60.300**		

Notes: B= unstandardized regression coeficients; EP B= Unstandardized Error of B; β= standardized regression coefficients; R^2 = R squared; R^2 Adj.= R squared Adjusted; **= $p <$.001.

Being male, older, single, watching romantic and documentary series and not watching horror series, presenting low values in WTSMQ Social and in WTSMQ Escapism/Coping and high values in Emotional Enhancement contributes to explain 61% of the Loneliness (total) scale. Being older, single, unemployed or retired, preferring

tranquilizing series, watching romantic and documentary series and not watching horror and scientific fiction and fantasy series, presenting low values in WTSMQ Social and in WTSMQ Escapism/Coping and high values in Emotional Enhancement contributes to explain 58% of the Loneliness Isolation subscale. Being male, watching documentary, dramatic and comic series, not watching horror series, presenting low values in WTSMQ Social and high values in Emotional Enhancement contributes to explain 48% of the Loneliness Proximity subscale (see Table 10).

Table 10. Variables that contribute to Loneliness (total and subscales.)

Variables	Loneliness (total)			Loneliness (Isolation)			Loneliness (Proximity)		
	B	*EP B*	*β*	*B*	*EP B*	*β*	*B*	*EP B*	*β*
Gender	-0.110	0.043	-0.079				-0.174	0.045	-0.125
Age	0.006	0.002	0.137	0.005	0.002	0.101			
Marital status	-0 068	0.024	-0.105	-0.087	0.030	-0.115			
Professional status				0.078	0.035	0.074			
Tranquilizing/ Stimulating	-0.096	0.045	-0.069	-0.124	0.053	-0.076			
Horror series	-0.194	0.048	-0.123	-0.163	0.060	-0.088	-0.197	0.053	-0.125
Romantic series	0.115	0.043	0.083	0.142	0.049	0.087			
Documentary series	0.121	0.040	0.083	0.112	0.049	0.066	0.114	0.046	0.078
Scientific fiction and fantasy series				-0.104	0.047	-0.062			
Drama series							0.107	0.042	0.074
Comedy series							0.100	0.045	0.071
WTSMQ Social	-0.226	0.027	-0.289	-0.123	0.033	-0.134	-0.307	0.031	-0.392
WTSMQ Emotional Enhancement	0.589	0.031	0.922	0.658	0.038	0.878	0.456	0.028	0.713
WTSMQ Coping/ Escapism	-0.097	0.030	-0.127	-0.156	0.037	-0.174			
R^2 (R^2 *Adj.*)	0.615 (0.609)			0.588 (0.580)			0.488 (0.482)		
F for change in R^2	180.434**			161.167**			137.757**		

Notes: B= unstandardized regression coeficients; EP B= Unstandardized Error of B; β= standardized regression coefficients; R^2 = R squared; R^2 Adj.= R squared Adjusted; **= p <.001.

DISCUSSION

The Portuguese version of the Watching TV Series Motives Questionnaire includes four factors and fifteen items, explaining 82.26% of the variance; and a good model fit was found. The authors of the original version (Flayelle *et alii*, 2019) showed that 22 items resulting from the exploratory factorial analysis explained 45% of the variance. Also, these authors, through the CFA, found that a four-factor model produced an acceptable fit being that Δ*CFI*s showed that the model allowing covariances among the four latent factors fit the data better than a model treating the latent factors as independent and a one-dimensional model (Flayelle *et alii*, 2019). Also, in our study, Cronbach's alpha, composite reliability and average variance extracted of the Portuguese version of Watching TV Series Motives Questionnaire are above the recommended values, except *AVE* square roots for Enrichment, Emotional Enhancement and Coping/Escapism. Flayelle *et alii* (2019) also considered that internal consistency and composite reliability indices were adequate. In our study, the subscales of the Watching TV Series Motives Questionnaire correlate between them (*r*= 0.497-0.768); the original authors also found correlations between these subscales, although weaker than ours (*r*= 0.180-0.440). Flayelle *et alii* (2020) validated the Watching TV Series Motives Questionnaire in nine languages (English, French, Spanish, Italian, German, Hungarian, Persian, Arabic, Chinese) and found good psychometric properties and fit in each language.

In this study, configural and metric invariance was achieved, but not scalar, and error variance, providing some evidence that the WTSMQ operates similarly in males and females. These results are not in line with those of Flayelle, Maurage, Di Lorenzo, Vögele, Gainsbury, & Billieux (2020b), who reported measurement invariance according to (language and) gender, meaning that male and female TV series viewers interpreted the WTSMQ items in a conceptually similar manner.

Coping/Escapism is the most important motive in our study, followed by Enrichment, Emotional Enhacement and, at last, Social Motives. These results are not totally in line with the literature; for example, Steiner and Xu (2018) considered that the principal motivations for binge watching are the entertainment control, relaxation, the feeling of conclusion and enhanced viewing experience, as viewers feel cognitively and emotionally active, involved and immersed in the series (Tukachinsky & Eyal, 2018). Also, Lüders and Sundet (2021) considered that the principal motivations to watch television are individual, although influenced by social factors, functioning as relaxation, as a routine, learning about certain subjects, and keeping in touch with reality. However, more close to our results, Lüders and Sundet (2021) and Merceron and Atkin (2020) showed that some individuals watch television as a way to escape reality and alleviate feelings of loneliness, becoming absorbed in a fictional world and forgetting reality. However, according to Muneer and Munir (2020), television may be a companion with familiar characters, functioning as a fictional community, forgetting that the person is alone. Besides, it has become more common for people to watch television programs alone (Krämer *et alii*, 2015; Lin *et alii*, 2016).

Age is negatively and significantly correlated with all subscales of the Watching TV Series Motives Questionnaire, being that older participants present lower values than younger participants. These results are not in line with Rubenking and Bracken (2018) who stated that the Binge-watching phenomenon is not exclusive to the young population only; middle-aged and elderly also practice this mode of excessive consumption. Also, Hunsaker and Hargittai (2018) considered that greater attention to older adults is needed, as adults aged 65 years and older watch an average of more than four hours of television per day, compared to two hours per day for adolescents and adults. Men present higher values than women in all subscales. These results do not agree with Exelmans and Van den Bulck (2017), who reported that women are more likely to watch cable television than men, but men are more inclined to view online content. Our results are also not in agreement with Starosta *et alii* (2019), who reported that 49% of Netflix's users are men and 51% are women.

The group with the highest value in the subscales of the Watching TV Series Motives Questionnaire is that of singles who do not have a romantic relationship, followed by singles with a romantic relationship, as well as participants who are alone (widowed and divorced) and those with the lowest score are those who are married or living in a de facto union. This result can be explained by studies on loneliness that report that people who feel lonely tend to watch more television and, therefore, have behaviors compatible with binge-watching, acquiring a sense of belonging when watching their favorite programs (Panda & Pandey, 2017). Also, the group with the highest score in the subscales of the Watching TV Series Motives Questionnaire is the unemployed, and the one with the lowest score is the employed group; these results corroborate those of Yenğin and Kınay (2016), who found higher rates of binge watching in unemployees.

Concerning participants' series general preferences, the tranquilizing ones are the most prefered. Besides, the most viewed type of series is action, followed by documentary

series and drama series. The least viewed type of series is horror ones. Also, men prefer stimulating series and women tranquilizing series: men prefer more action series, science fiction and fantasy, and horror series; women prefer dramatic, romantic, comic, and documentary series. Ahmed (2017) found that men tend to opt for fantasy or science fiction series, while women choose to watch comedies and dramas. According to Arnold (2016), Netflix's 'algorithmic determinism' reproduces stereotypical identity categories based on reductive assumptions about race, gender and viewing preference, which makes it difficult to understand whether this fact affects the options of men and women.

   Participants who prefer more stimulating series, who watch action series, horror series, and scientific fiction and fantasy series (compared to those who don't watch); and participants who do not watch comedy series, romantic series, and documental series (compared to those who watch) show higher values in all the dimensions of the Portuguese version of the Watching TV Series Motives Questionnaire. In the Flayelle *et alii* (2019) study participants who present the highest values are in cluster one (avid binge-watchers, presenting elevated but non-problematic involvement), which seems to suggest that our subsample devoted to action series, horror series and scientific fiction and fantasy series, globally, does not have a problematic behavior. This cluster one of Flayelle *et alii* (2019) study also prefers action series, followed by science fiction series.

   All of the Watching TV Series Motives subscales correlate positively and significantly with the UCLA Loneliness Scale total and both factors. This positive association may be explained because viewers tend to watch an increasing number of episodes to cope with loneliness (Sun & Chang, 2021). These results are in line with our goal of understanding whether loneliness was related to motivation for binge-watching. Also, these results corroborate the literature on the subject: when young people enter university and face various adversities (namely interpersonal difficulties and loneliness), television becomes a path to satisfy social interaction needs, acquiring a sense of belonging, replacing real-life company (Conlin *et alii*, 2016). In turn, according to Panda and Pandey (2017), young people feel loneliness, stress, anxiety and emptiness after completing a binge-watching session.

   Being male, single, not watching horror series, high values in the Loneliness Isolation subscale and low in the Loneliness Proximity subscale contribute to explaining the WTSMQ Social subscale. Social motives for TV series watching predicted a decrease in negative affect levels and emerged as a protective factor (Sigre-Leirós *et alii*, 2022). According to Rafiee and Chehreii (2016), greater parasocial involvement with favorite characters was predicted by the increase in time spent in ninge-watching.

   Being younger, preferring stimulating series, not watching scientific fiction and high values of the Loneliness Isolation subscale explain the WTSMQ Enrichment subscale. Concerning the phenomenon of parasocial relationships, the hypothesis of a "social surrogacy" is pertinent, as young people acquire a sense of belonging when watching their favorite television programs; besides, loneliness is the most important predictor of the development of parasocial relationships as when they feel lonely, they resort to their favorite programs and report a reduction in these feelings (Panda & Pandey, 2017). Also, problematic Binge-watching was associated with increased depression, social interaction anxiety, and loneliness risks among young adults (Sun & Chang, 2021).

   Being younger, preferring stimulating series, watching action and comic series, not watching scientific fiction and high values of the Loneliness Isolation and Loneliness Proximity subscales explain the WTSMQ Emotional Enhancement subscale (desire to watch TV series to experience intense affective states). This result seems to suggest that action and comedy series and loneliness help to achieve Emotional Enhancement; this

desire for emotional improvement is related to desire/savoring engagement, an exploratory behavior, related to non-problematic binge-watching behaviors (Flayelle *et alii*, 2019).

Being younger, preferring stimulating series, not watching scientific fiction and dramatic series, and presenting high values of the Loneliness Isolation and Loneliness Proximity subscales explain the WTSMQ Coping/Escapism subscale. Alfonsi *et alii* (2023) found that feelings of loneliness (and emotional dysregulation) contribute significantly to explaining the extent of binge-watching behaviour and the escapism/coping motives. Also, Gabbiadini, Baldissarri, Valtorta, Durante, and Mari (2021) found that escapism predicted participants' stronger identification with media characters, which in turn promoted greater Binge-watching tendencies. Furthermore, Gabbiadini *et alii* (2021) suggested that "Binge-watching could be interpreted as a coping strategy for media escapists, who enjoy TV series as a privileged online space in which the need to escape finds its fulfillment, allowing them to manage loneliness by identifying with a fictitious character" (p. 1).

Being male, older, single, unemployed, or retired, preferring tranquilizing series, watching romantic and documentary series, and not watching horror and scientific fiction and fantasy series, presenting low values in WTSMQ Social and in WTSMQ Escapism/Coping and high values in Emotional Enhancement contributes to explain Loneliness. Borys and Perlman (1985) found that men present higher scores than women in loneliness, although women report feeling lonely more easily than men. Luhmann and Hawkley (2016) found that loneliness is not restricted to old age but can occur at any life stage, following a complex non-linear trajectory, with elevated loneliness levels among young adults and among the oldest old. The authors think that the late-life increase in loneliness is explained by lower income levels, a higher prevalence of functional limitations, and a higher proportion of singles in this age group. In our study, lonely people prefer tranquilizing series; this can be explained by Dahlberg's study The enigmatic phenomenon of Loneliness, which found that one is lonely when important others are not there, and one can reject others in favor of another kind of connectedness; such loneliness is restful and pleasant. In line with our results, Tolba and Zoghaib (2022) found a correlation between coping escapism and loneliness.

The relationship between the motives for binge-watching and loneliness is bidirectional corroborating those who found that loneliness contributes to binge-watching (Merill & Rubenking, 2019; Smith, Leonis, and Anandavalli, 2021) and those who found that Binge-watching contributes to loneliness (Dandamuti *et alii*, 2018; Panda & Pandey, 2017). Interestingly, the sociodemographic variables and series preferences that explain Binge-watching motives and loneliness overlap.

The results of this study, where a good model for the Portuguese population was achieved, point to the importance of WTSMQ for future exploration of binge-watching behaviors, by giving emphasis to possible discriminatory variables (mainly, series preferences and loneliness) in distinguishing several behaviors related to Binge-watching. Responding to the question in the title of this study, loneliness has everything to do with Binge-watching as the loneliest people (assessed by marital status) score higher on the questionnaire that assesses it. Furthermore, there is a strong correlation between loneliness and Binge-watching. In fact, the relationship between the motives for binge-watching and loneliness is bidirectional; sociodemographic variables and series preferences that explain those motives and loneliness overlap. This superimposition seems to suggest that the two concepts (binge-watching and loneliness) are parallel, they go hand in hand, and where we find one, the probability of finding the other is very high. This has

implications for tracking problematic binge-watching situations. Taking into account the most common profile of those who practice Binge-watching (man, younger, single) it is important to assess how alone they feel to prevent problematic binge-watching behavior.

The present study has some limitations. Data were collected through self-reported scales and exclusively online, preventing participants from asking questions about completing the questionnaire. Future research on Binge-watching behaviors should include other variables, namely, personality assessment, that may be important to understanding this phenomenon.

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Appendix. Portuguese version of Watching TV Series Motives Questionnaire

Instrução: Nesta secção irá ser alvo de uma série de declarações. Para cada afirmação, escolha o quanto se relaciona com as mesmas. (1= De modo nenhum, 2= Muito pouco, 3= De parte, 4= Em grande medida).

1. Vejo séries televisivas para não perder o contacto, porque a essência das mesmas amigos o faz.
2. Vejo séries televisivas para sentir emoções fortes como a elevação ou euforia que elas me proporcionam.
3. Vejo séries televisivas para descobrir novos mundos e para aumentar o meu conhecimento acerca de alguns assuntos.
4. Vejo séries televisivas para passar o tempo e escapar ao tédio.
5. Vejo séries televisivas porque sei que me vou divertir ao me deixar levar pela história.
6. Vejo séries televisivas para aliviar o stress, acionado ou emoções negativas.
7. Vejo séries televisivas para aprender ou para me familiarizar com um novo idioma.
8. Vejo séries televisivas para me afeiçoar às personagens e sentir alegria ao vê-las em cada episódio.
9. Vejo séries televisivas para sentir que estou numa dimensão diferente durante algum tempo.
10. Vejo séries televisivas para me relacionar com os outros mais facilmente, porque as séries dão-me algo sobre o que falar ou discutir.
11. Vejo séries televisivas para me livrar dos problemas diários.
12. Vejo séries televisivas porque elas me dão o que procuro sobre alguns assuntos.
13. Vejo séries televisivas porque cedo à pressão de me manter ático quando me aconselham a ver uma determinada série.
14. Vejo séries televisivas para ampliar o meu conhecimento audiovisual.
15. Vejo séries televisivas na esperança de sentir, novamente, a euforia que senti a ver uma série anterior.