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Binge-Watching in Times of COVID-19: A Longitudinal Examination of Changes in Affect and TV Series Consumption Patterns During Lockdown

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COVID-19 pandemic lockdowns have had major negative effects on individuals' mental health and psychological well-being. Isolated at home, people may engage in recreational activities such as binge-watching (i.e., viewing multiple episodes of a TV series in 1 session) as a strategy to regulate emotional states. This is the first longitudinal study assessing changes in TV series viewing patterns during the first COVID-19 lockdown and examining whether binge-watching was associated with changes in positive and negative affect throughout this period. TV series viewing practices and motivations, binge-watching behaviors, psychopathological symptoms, and affective states were jointly assessed through a 6-week longitudinal online survey at 3 time points (i.e., T1, T2, and T3), in Belgium, France, and Switzerland. Results showed significant increases in individuals' watching habits (e.g., higher daily time spent viewing, expansion of coviewing practices). Results from the longitudinal analyses principally showed that male gender and social motives for TV series watching predicted a decrease in negative affect levels. A problematic binge-watching pattern characterized by loss of control was the single predictor of an increase in negative affect over time. These findings suggest that TV series watching patterns effectively increased during the first COVID-19 lockdown. Watching TV series for social motives emerged as a protective factor, whereas problematic binge-watching seemed to act as a maladaptive emotion regulation strategy throughout these unprecedented circumstances.

Public Policy Relevance Statement

This is the first large-scale longitudinal study specifically designed to explore the impact of TV series viewing practices on individuals' affective states during the first COVID-19 lockdown. TV series consumption patterns significantly increased over this period. Problematic binge-watching characterized by loss of control seemed to act as a maladaptive strategy to regulate emotional states, whereas watching TV series for social motives emerged as a protective factor in the lockdown context.

Keywords: COVID-19, lockdown, binge-watching, TV series, emotion regulation

The coronavirus disease 2019 (COVID-19) pandemic has greatly affected human life worldwide. Lockdown restrictions and social distancing measures generated significant effects on individuals' normal routines, mental health, and well-being (Pfefferbaum & North, 2020; Polizzi et al., 2020; Saladino et al., 2020; Salari et al., 2020; Serafini et al., 2020). A recent meta-analysis of mainly Chinese studies

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reported a high prevalence of stress (36%), poor sleep quality (34%), anxiety (26%), and depression (24%) among the general population during this pandemic period (Krishnamoorthy et al., 2020). Prolonged exposure to stress derived from such a major health crisis is also associated with an inability to cope with negative emotional states and trauma (Saladino et al., 2020). In addition, previous outbreaks, such as the 2003 outbreak of severe acute respiratory syndrome (Brooks et al., 2020; Hawryluck et al., 2004; Reynolds et al., 2008; Serafini et al., 2020), demonstrated a stronger psychological impact on people who were quarantined, which included posttraumatic stress symptoms and negative feelings (e.g., fear, confusion, frustration, and anger).

COVID-19 lockdowns have radically transformed many individuals' daily routines and habits. With people spending significantly more time at home, the use of digital technology (e.g., smartphone apps, video games, and social technologies such as Zoom, Meet, or Teams) has become instrumental for social connection, information, and entertainment (Boursier et al., 2020; Giardina et al., 2021; Király et al., 2020; Saladino et al., 2020; Wiederhold, 2020). From the beginning of the pandemic, global streaming services (e.g., Netflix, Hulu, Disney Plus) recorded a significant increase in subscriptions. Netflix subscriptions, for example, rose from 167 million in late 2019 to 193 million in July 2020 (Gruber, 2020; Moody, 2020). The average daily time spent watching TV in the United States increased by 2.5 hr in 2019 to 3.9 hr between March and April 2020 (Gruber, 2020). The same trend was observed for other Internet-based activities, including video gaming (Arkenberg, 2020; Hawkins, 2020; Xu et al., 2021), cybersex (Dubé et al., 2020), or online gambling (The European Business Review, 2020).

In this context of social isolation, it has also been suggested that digital technology use may be particularly aimed at improving or maintaining personal well-being (Riva et al., 2020). The high availability, accessibility, and affordability of entertainment devices may foster the emergence of prolonged patterns of TV series viewing in such a containment context, that is, binge-watching. This media viewing practice (further described in the following text) was given special attention.

Capitalizing on prior evidence and existing theories about the positive impact of media use on individuals' well-being (Reinecke & Oliver, 2017; Reinecke et al., 2011), this study constitutes the first longitudinal investigation of the relationship between TV series consumption patterns and subjective well-being (i.e., individuals' affective states) during the first COVID-19 lockdown. In the current study, we decided to focus on subjective well-being (i.e., hedonic well-being), which involves the evaluation of life conditions in terms of satisfaction, happiness, and balance between positive and negative affect, rather than on psychological well-being (i.e., eudaimonic well-being), which relates to personal growth and human potential for effectively engaging with the challenges of life (Keyes et al., 2002; Ryan & Deci, 2001). We made this choice because most studies conducted in the COVID-19 context focus on subjective well-being and assessed constructs such as self-reported affective states or emotional distress (Salari et al., 2020; Zhang et al., 2020).

Binge-Watching: Current Definition and Related Motivations

In the first systematic literature review conducted on the topic, Flayelle, Maurage, et al. (2020) pointed out the lack of a consensus definition of binge-watching, which greatly varies according to three subcomponents: (a) a *quantity based-index*, namely, the number of episodes or programs considered; (b) the *characterization of the content*, varying from the same TV series to miscellaneous programs; and (c) a *time pattern*, including different timeframes of TV viewing. Nevertheless, binge-watching can be broadly defined as the practice of seeing multiple episodes of TV series in a unique session (Flayelle, Maurage, et al., 2020). Recent studies provided evidence about its heterogeneous nature, which may reflect, on the one hand, a positive experience that may drive intensive but healthy involvement (i.e., nonproblematic binge-watching, associated with positive emotions and needs satisfaction) and, on the other hand, an excessive behavior denoting problematic engagement (i.e., problematic binge-watching, associated with loss of control and negative outcomes such as impaired sleep quality and daily functioning, or emotional distress; Brookes & Ellithorpe, 2017; De Feijter et al., 2016; Exelmans & Van den Bulck, 2017; Flayelle, Canale, et al., 2019; Flayelle, Maurage, 2020; Starosta et al., 2019; Steins-Loeber et al., 2020; Tóth-Király et al., 2017).

In this regard, understanding the specific motivations underlying TV series viewing may be critical for differentiating between problematic and nonproblematic binge-watching. Although some studies have supported the role of hedonistic motivations such as enjoyment and entertainment in fostering binge-watching (Pittman & Sheehan, 2015; Rubenking & Bracken, 2021; Shim & Kim, 2018; Flayelle, Canale, et al., 2019; Starosta et al., 2019), others have evidenced rather eudaemonic motivations such as personal enrichment or information seeking (Flayelle, Canale, et al., 2019; Merrill & Rubenking, 2019; Starosta et al., 2019). Moreover, binge-watching may also be driven by compensatory-based motives such as dealing with loneliness (Sung et al., 2015; Starosta et al., 2019) or escaping from everyday problems (Panda & Pandey, 2017; Starosta et al., 2019). Relatedly, coping/escapism motivation was associated with problematic binge-watching (Flayelle, Canale, et al., 2019; Ort et al., 2021). Nevertheless, based on Lazarus and Folkman's (1984) transactional model of coping, Halfmann and Reinecke (2021) suggested that, in a particularly stressful situation, binge-watching may constitute an effective source of relaxation and stress reduction (thus, a form of adaptive emotion-focused coping), which may primarily contribute to the restoration of general coping resources and thus promote efficient problem-focused coping. Hence, the same authors proposed binge-watching as a form of *escapist entertainment use*, stressing its functional nature as a potentially adaptive coping strategy (Halfmann & Reinecke, 2021). Accordingly, questioning the (adaptive or maladaptive) coping function of binge-watching behaviors during a challenging context such as the COVID-19 lockdown is of particular relevance.

Available Evidence on TV Viewing Practices During Stay-at-Home Orders

From the early days of the COVID-19 pandemic, experts warned about the potential risks associated with the escalation of some online behaviors, such as gambling, video gaming, pornography viewing, or TV series watching (Király et al., 2020). Since then, the available literature on binge-watching during the COVID-19 lockdown has expanded. A descriptive study in Southeast Asian countries showed that 73.7% of the sample (*N*

= 548) reported a significant increase in TV/Internet engagement during the first COVID-19 lockdown (Dixit et al., 2020). Among the main motivations for binge-watching were notably the need to pass time and escape boredom, to relieve stress and loneliness, and to stay updated. Participants also reported some concerns about the consequences of their current higher involvement in binge-watching, with 30.3% fearing that they would become "addicted" to TV series (Dixit et al., 2020). Relying on an Italian community sample, a recent cross-sectional study showed that during the first COVID-19 lockdown, people spent significantly more time watching TV series; this was particularly observed among women (Boursier et al., 2021). Binge-watching behaviors (both problematic and nonproblematic) were predicted by anxiety symptoms and escapism motives, thereby suggesting the role of TV series watching as a recovery strategy in such a specific context (Boursier et al., 2021). In a similar vein, findings from a recent study conducted in Germany corroborated a significant increase in different online activities' frequency, including video streaming consumption, especially in women (Lemenager et al., 2021).

Relatedly, Rubenking and Bracken (2021) examined the evolution of media viewing practices among U.S university students between 2015 and 2020 and found that together with serial viewing (i.e., self-paced viewing of narrative content over time), binge-watching frequency significantly increased over this 5-year period (as traditional appointment TV series viewing decreased considerably), with a peak at the height of COVID-19 stay-at-home measures. In the same line, Arend et al. (2021) showed that pandemic-related confinements in Germany and Austria were positively related to watching TV and social media consumption, particularly in younger people.

In view of prior studies reporting positive associations between binge-watching and both positive (e.g., viewing enjoyment) and negative (e.g., depression and anxiety) affective states (Ahmed, 2017; Granow et al., 2018; Merrill & Rubenking, 2019; Tefertiller & Maxwell, 2018; Tukachinsky & Eyal, 2018), the assumption that binge-watching behaviors centrally involve emotion-regulation mechanics has emerged (Flayelle, Maurage, et al., 2019; Rubenking & Bracken, 2021). In this regard, the mood management theory (Zillmann, 1988a, 1988b, 2000) is a sound theoretical framework to account for binge-watching as an emotion-regulation process. In line with the mood management theory, media content selection could be driven by the hedonistic purpose of mood regulation (i.e., enhancing positive affect and diminishing negative affect; Reinecke & Oliver, 2017). Available research has extended this perspective, evidencing that beyond enjoyment and mood regulation, media consumption may also have broader positive effects on psychological rejuvenation and well-being (Reinecke & Oliver, 2017; Reinecke et al., 2011). Nevertheless, such an effect could be dependent on self-control skills (Eden et al., 2018; Hoffmann et al., 2017; Schnauber-Stockmann et al., 2018): for example, ego-depleted individuals (i.e., individuals presenting lower available cognitive resources to exert self-control) showed a tendency to negatively evaluate entertainment use as a procrastination form, which may elicit feelings of guilt and negatively impact stress recovery and well-being (Reinecke et al., 2014).

Against this background, it is possible that continued TV series consumption in a pandemic lockdown context may serve as a means to regulate emotional states (i.e., reducing negative emotions and enhancing positive emotions), thereby enhancing individuals' (subjective) well-being as a form of escapist entertainment use (Halfmann & Reinecke, 2021).

The Present Study

The aim of the present study was, therefore, twofold: (a) to assess changes in TV series viewing patterns (e.g., viewing frequency and intensity, TV series watching motivations, patterns of engagement) during the first COVID-19 lockdown across French-speaking European countries and (b) to test whether problematic and nonproblematic binge-watching behaviors predict changes in negative and positive affect (i.e., subjective well-being) throughout this period. This is the first large-scale longitudinal study specifically designed to explore the impact of TV series viewing practices on individuals' subjective well-being during such a context of social isolation.

Method

Participants and Procedure

An online survey was disseminated among 1,356 TV series viewers (69.2% females) aged between 18 and 79 years (M = 35.74; SD = 14.67) in French-speaking countries (i.e., Belgium, France, and Switzerland) following the implementation of the first lockdown due to the COVID-19 pandemic[1]. To monitor changes in viewing practices and affect throughout this lockdown, we invited participants to answer the online questionnaire every 2 weeks until the lifting of lockdown measures. The design of our longitudinal study thus consisted of a panel study (i.e., we collected repeated measures from the same sample at different points in time for 6 weeks). Therefore, along with the initial assessment (i.e., T1: n = 1,356), we ended up with two additional assessments (i.e., T2: n = 346; T3: n = 115) until the final date[2] of recruitment (i.e., May 18, 2020). We recruited participants by means of advertisements among various TV series' fan communities (e.g., "films and TV series' fans", "best movies and TV shows") on social networks (i.e., Facebook). They were informed about the aims of the research project and gave their consent before starting the survey. Inclusion criteria were as follows: being at least 18 years old, being a native French speaker, and having regularly watched TV series over the past 6 months.

Table 1 displays participants' characteristics over the three measurement times. Along with sociodemographic information, housing characteristics and general life circumstances were also assessed to document participants' specific life context while they were confined at home. Globally, these features were stable across the three samples. Between 59% and 61% lived in town, the vast majority (i.e., between 80% and 83%) reporting having available outdoor space and having no children at home (i.e., between 69%

[1] As the dissemination of the online survey started on April 2, 2020, participants had been experiencing lockdown for at least 2 weeks (COVID-19 containment measures officially took place on March 17, 2020, in France, March 18, 2020, in Belgium, and March 16, 2020, in Switzerland).

[2] COVID-19 containment measures gradually ended starting May 11, 2020, in France and Switzerland, and May 18, 2020, in Belgium.

Table 1
Participants' Characteristics Across Samples

Sociodemographic variables	T1 n = 1,356	T2 n = 346	T3 n = 115
Age (year), *M* (*SD*)	35.74 (14.67)	35.85 (14.81)	38.19 (15.42)
Range	18–79	18–77	18–76
Gender			
Male	30.2% (n = 409)	33.8% (n = 117)	33% (n = 38)
Female	69.2% (n = 938)	65.3% (n = 226)	65.2% (n = 75)
Other	0.6% (n = 9)	0.9% (n = 3)	1.7% (n = 2)
Education			
High school degree	18.4% (n = 249)	14.5% (n = 50)	9.6% (n = 11)
Bachelor degree	37.4% (n = 507)	39% (n = 135)	36.5% (n = 42)
Master degree	36.9% (n = 500)	40.1% (n = 139)	47% (n = 54)
Doctoral degree	7.4% (n = 100)	6.4% (n = 22)	7% (n = 8)
Professional status			
Student	31.9% (n = 433)	31.5% (n = 109)	28.7% (n = 33)
Active worker	57.6% (n = 780)	57.8% (n = 200)	60.9% (n = 70)
Unemployed	4.1% (n = 56)	4.3% (n = 15)	3.5% (n = 4)
Retired	6.4% (n = 87)	6.4% (n = 22)	7% (n = 8)
Country of residence			
Belgium	51.8% (n = 702)	59.2% (n = 205)	54.8% (n = 63)
France	26.8% (n = 363)	19.7% (n = 68)	18.3% (n = 21)
Switzerland	21.3% (n = 289)	21.1% (n = 73)	27% (n = 31)
Housing characteristics	**T1 n = 1,356**	**T2 n = 346**	**T3 n = 115**
Residence area			
In town	59% (n = 800)	60.4% (n = 209)	60.9% (n = 70)
In the countryside	41% (n = 556)	39.6% (n = 137)	39.1% (n = 45)
Surface area (in square meters)			
<30	3.4% (n = 46)	2.6% (n = 9)	2.6% (n = 3)
>30–60	10.8% (n = 146)	11.8% (n = 41)	7.8% (n = 9)
>60–90	20.4% (n = 277)	19.4% (n = 67)	20% (n = 23)
>90–120	22.9% (n = 310)	20.2% (n = 70)	27% (n = 31)
>120–150	19.4% (n = 263)	19.4% (n = 67)	17.4% (n = 20)
>150	23.2% (n = 314)	26.6% (n = 92)	25.2% (n = 29)
Number of rooms			
1–2	3.5% (n = 48)	2.9% (n = 10)	1.7% (n = 2)
3–4	15% (n = 203)	17% (n = 59)	16.6% (n = 19)
5–6	23.3% (n = 311)	18.8% (n = 65)	17.4% (n = 20)
>6	58.6% (n = 794)	61.3% (n = 212)	64.3% (n = 74)
Outdoor space availability			
Yes	81.3% (n = 1,102)	82.9% (n = 287)	80% (n = 92)
No	18.7% (n = 254)	17.1% (n = 59)	20% (n = 23)
Life circumstances during lockdown	**T1 n = 1,356**	**T2 n = 346**	**T3 n = 115**
Presence of children at home			
All day	26.5% (n = 360)	22.5% (n = 78)	20% (n = 23)
Part of the day or less	4.6% (n = 62)	3.5% (n = 12)	4.3% (n = 5)
Not applicable	68.9% (n = 934)	74% (n = 256)	75.7% (n = 87)
Workload			
Decreasing	38.4% (n = 521)	39.9% (n = 138)	45.2% (n = 52)
Identical	38.2% (n = 518)	38.1% (n = 132)	38.3% (n = 44)
Increasing	23.4% (n = 317)	22% (n = 76)	16.5% (n = 19)

and 76%). In addition, between 52% and 59% of the participants were residing in Belgium.

The current study was conducted in accordance with the Declaration of Helsinki, and participants did not receive any compensation for their participation. All data and survey items are available via the Open Science Framework (https://osf.io/gk7u2/ [https://doi.org/10.17605/OSF.IO/GK7U2]). All questionnaires included in the survey are related to the current study.

Measures

Sociodemographic Information and Life Circumstances

At the first testing session (T1), the online survey included a series of questions that assessed sociodemographic variables, participants' housing characteristics (e.g., surface area in square meters, number of rooms), and general life situation (e.g., having children at home) during lockdown. In addition, we evaluated

how much time people spent at home before and during the lockdown.

TV Series Watching-Related Practices, Motivations, and Engagement

At T1, we asked participants to evaluate (a) TV series viewing patterns, (b) TV series watching motivations, and (c) binge-watching behaviors since entering the lockdown and how this evaluation differed from before the lockdown (i.e., at T1, participants reported prior *and* current TV series viewing habits). We asked this set of variables again at the second (T2) and third (T3) testing sessions, with the past 2 weeks as a reference point (i.e., at T2 and T3, participants were asked to report their TV series viewing habits over the last 2 weeks). TV series watching patterns were rated through a series of items that evaluated viewing frequency, average time spent watching, number of episodes seen during a typical viewing session, and whether participants practiced coviewing, that is, watching TV series with others, be it in their physical or virtual presence (screen synchronization, e.g., Netflix Party).

We assessed TV series watching motivations and binge-watching behaviors with previously validated scales. TV series watching motivations were assessed with the French version of the Watching TV Series Motives Questionnaire (Flayelle, Canale, et al., 2019; Flayelle, Castro-Calvo, et al., 2020), a 22-item scale that includes four dimensions: coping/escapism, emotional enhancement, enrichment, and social. Items are rated on a 4-point Likert scale ranging from 1 (*not at all*) to 4 (*to a great extent*). Higher average scores on each subscale denote greater levels of motivation for TV series watching.

Binge-watching engagement and symptoms of problematic binge-watching were assessed by using the French version of the Binge-Watching Engagement and Symptoms Questionnaire (Flayelle, Canale, et al., 2019; Flayelle, Castro-Calvo, et al., 2020). This 40-item scale measures engagement in binge-watching and markers of problematic binge-watching across seven dimensions (i.e., engagement, positive emotions, desire/savoring, pleasure preservation, binge-watching, dependency, and loss of control). Items are rated on a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). In this study, we used two subscales, namely, *engagement* (to assess high but nonproblematic engagement in TV series viewing) and *loss of control* (to assess problematic binge-watching and related negative outcomes), as they constitute the most suitable indicators of the dual nature of binge-watching behavior (functional and dysfunctional, respectively; Flayelle, Canale, et al., 2019; Flayelle, Castro-Calvo, et al., 2020). Higher average scores on each subscale express higher levels of engagement in binge-watching and problematic binge-watching.

Psychopathological Symptoms and Affect

Psychopathological symptoms and positive/negative affect were evaluated at each testing session, with the past 2 weeks as the reference time frame. Psychopathological symptoms (i.e., depression, anxiety, and somatization) were measured via the French version of the Brief Symptom Inventory (Derogatis, 2016), an 18-item self-report tool with a 5-point Likert scale ranging from 0 (*not at all*) to 4 (*very much*). Higher scores imply more pronounced psychopathological symptoms severity. Affect was evaluated with the Positive and Negative Affect Schedule (original French version; Gaudreau et al., 2006), a 20-item measure of positive and negative affect. Items are rated on a 5-point Likert scale ranging from 1 (*not at all*) to 5 (*very much*), with higher scores representing more intense affective states. Sample items of all the scales used in this study along with the internal reliability of each test scores are reported in Table 2.

Statistical Analyses

IBM SPSS Statistics for Windows Version 24 (IBM Corp, 2016) was used to conduct all statistical analyses. As the first step, descriptive statistics were computed. Changes arising from the first lockdown due to the COVID-19 pandemic were then examined through paired-sample *t* tests for dependent samples to compare (a) time spent at home, (b) TV series watching patterns, (c) TV series watching motivations, and (d) binge-watching behaviors before and during lockdown. By subtracting the mean score before lockdown from the mean score during lockdown, we could derive an indicator of change (i.e., ΔM or %), with positive scores indicating an increase and negative scores a decrease. Spearman's correlations[3] were used to explore the magnitude of the relationships between the study variables.

As the second step, we performed a series of multiple hierarchical regression analyses. All the analyses included sociodemographic features (i.e., age, gender), psychopathological symptoms, TV series watching motivations, and adaptive and maladaptive engagement in binge-watching (reflected by the Binge-Watching Engagement and Symptoms Questionnaire subscales engagement and loss of control, respectively) consecutively set as predictors. We first set positive and negative affect levels reported at T1, as dependent variables; then, we set the change in positive and negative affect at T2 (i.e., Δ positive and negative affect[4]) as dependent variables; finally, we set the change in positive and negative affect at T3 (i.e., global Δ positive and negative affect[5]) as dependent variables, with the same grouping of predictors. This data analytic strategy allowed us to capitalize on the highest possible sample size for each measurement time.

Results

Descriptive Statistics

Table 3 displays descriptive statistics, along with effect sizes and significance levels for changes before and during the COVID-19 lockdown at the first assessment moment (T1). We found a

[3] Spearman's correlations were used because of the non-normal distribution of data.

[4] To compute an index of change in positive affect at T2, we calculated "Δ Positive affect" according to the following formula: Positive affect T2 − Positive affect T1 (positive values indicate an increase in positive affect, whereas negative values indicate a decrease in positive affect). To compute an index of change in negative affect at T2, we applied the same calculation approach as for "Δ Positive affect."

[5] To compute a global index of change in positive affect, we calculated "global Δ Positive affect" according to the following formula: (Positive affect T2 − Positive affect T1) + (Positive affect T3 − Positive affect T2)/2 (positive values indicate an increase in positive affect, whereas negative values indicate a decrease in positive affect).To compute a global index of change in negative affect, we applied the same calculation approach as for "global Δ Positive affect."

Table 2
Questionnaire Variables Evaluated in the Online Survey

Questionnaire	Scale	Example of item	Reliability coefficient (α)
Watching TV Series Motives Questionnaire			
	Social	"I watch TV series to relate to others more easily, because TV series give me something to discuss"	.68
	Emotional Enhancement	"I watch TV series to be captivated and experience extraordinary adventures by proxy"	.75
	Enrichment	"I watch TV series to develop my personality and broaden my views"	.76
	Coping/Escapism	"I watch TV series to escape reality and seek shelter in fictional worlds"	.80
Binge-Watching Engagement and Symptoms Questionnaire			
	Engagement	"Watching TV series is one of my favorite hobbies"	.85
	Positive emotions	"Watching TV series is a cause for joy and enthusiasm in my life"	.78
	Desire/savoring	"I look forward to the moment I will be able to see a new episode of my favorite TV series"	.84
	Pleasure Preservation	"I worry about getting spoiled"	.62
	Binge-Watching	"When an episode comes to an end, and because I want to know what happens next, I often feel an irresistible tension that makes me push through the next episode"	.84
	Loss of Control	"I sometimes try not to spend as much time watching TV series, but I fail every time"	.84
	Dependency	"I get tense, irritated or agitated when I can't watch my favorite TV series"	.77
Brief Symptom Inventory-18			
	Depression	"Feeling no interest in things"	.82
	Anxiety	"Feeling tense"	.85
	Somatization	"Trouble getting breath"	.76
Positive Affect and Negative Affect Schedule			
	Negative affect	"Afraid"	.87
	Positive affect	"Enthusiastic"	.86

Note. Internal reliability coefficients (α) were obtained in the current sample (T1; n = 1,356).

significant increase for all variables related to both home confinement (e.g., time spent at home increased by 47%) and TV series watching patterns (e.g., time spent viewing per working day nearly doubled; slightly more than one episode was additionally seen in one session). Regarding motivations to watch TV series, participants reported a higher motivation for enhancing and coping with their emotional states (i.e., enhancement and coping/escapism) through watching TV series during lockdown. They also reported a higher extent of engagement in TV series watching (i.e., engagement) and, in contrast, more symptoms of problematic binge-watching (i.e., binge-watching, dependency, and loss of control).

Analyses at T1

The intercorrelations between age, gender, changes in TV series watching motivations and binge-watching engagement variables (i.e., Δ scores), and psychopathological symptoms and affect, as assessed at T1 (N = 1,356), are presented in Table 4 (medium and large correlations are highlighted in bold). Globally, increases in affect-based motivations to watch TV series were significantly and positively associated with increases in binge-watching engagement variables. We found low correlations between negative and positive affect and the different increased indicators of binge-watching (i.e., emotional enhancement and coping–escapism motives, engagement, binge-watching, dependency, and loss of control). Negative affect was significantly and positively associated with all psychopathological symptom domains (i.e., depression, anxiety, and somatization), whereas positive affect was significantly and negatively correlated to depression symptoms.

We report the results from the two hierarchical regression analyses at T1 in Table 5. The first analysis showed that only age predicted an increase in positive affect at Step 1 ($\beta = .13$, $p < .01$). At Step 2, age ($\beta = .08$, $p < .01$) and psychopathological symptoms ($\beta = -.27$, $p < .01$) predicted an increase and a decrease in positive affect level, respectively. With the inclusion of TV series watching motivations at Step 3, age ($\beta = .12$, $p < .01$), emotional enhancement ($\beta = .13$, $p < .01$) and enrichment motives ($\beta = .25$, $p < .01$) predicted an increase in positive affect, whereas psychopathological symptoms ($\beta = -.20$, $p < .01$) and coping/escapism motive ($\beta = -.25$, $p < .01$) predicted a decrease in positive affect. The same trend was observed at Step 4, with problematic binge-watching (i.e., loss of control; $\beta = -.13$, $p < .01$) also appearing as a significant predictor of a decrease in positive affect.

The second analysis revealed that age ($\beta = -.20$, $p < .01$) predicted a decrease in negative affect at Step 1, whereas female

Table 3

Changes in Presence at Home, TV Series Viewing Patterns, and Related Motivations and Engagement Before and During the First COVID-19 Lockdown (T1; n = 1,356)

Variable	Range	Prelockdown *M* (*SD*)	During lockdown *M* (*SD*)	*d*	*t*	Δ*M* or percentage
Home confinement						
Teleworking days per week	0−7	1.49 (2.10)	3.75 (2.57)	0.88	−32.45	+2.26***
Time spent at home (in %)	0−100	41.3 (21.51)	88.3 (20.74)	1.71	−63.01	+47%***
TV series viewing patterns						
Frequency	1−4	3.01 (0.89)	3.42 (0.84)	0.55	−20.42	+0.41***
Time spent viewing/working per day (in min)	0−900	90.48 (78.64)	175.33 (149.89)	0.72	−26.34	+93.78%***
Time spent viewing per day off (in min)	0−900	121.11 (105.28)	184.26 (150.23)	0.57	−21.14	+52.14%***
Number of episodes	1−7	2.09 (1.16)	3.23 (1.79)	0.74	−27.40	+1.14***
Coviewing (N = 1; Y = 2)	1−2	1.39 (0.49)	1.46 (0.50)	0.15	−5.35	+0.07***
Watching TV Series Motives Questionnaire						
Social	1−4	1.27 (0.42)	1.27 (0.44)	0.00	−1.01	0.00
Emotional enhancement	1−4	2.64 (0.71)	2.66 (0.72)	0.10	−4.74	+0.02***
Enrichment	1−4	2.20 (0.74)	2.20 (0.75)	0.01	−0.87	0.00
Coping–escapism	1−4	1.85 (0.62)	1.99 (0.69)	0.37	−16.13	+0.14***
Binge-Watching Engagement and Symptoms Questionnaire						
Engagement	1−4	1.78 (0.63)	1.85 (0.64)	0.26	−9.78	+0.07***
Positive emotions	1−4	2.29 (0.70)	2.29 (0.71)	0.01	0.28	0.00
Desire/savoring	1−4	2.56 (0.78)	2.57 (0.80)	0.02	−0.66	+0.01
Pleasure preservation	1−4	1.85 (0.77)	1.84 (076)	0.07	2.58	−0.01*
Binge-watching	1−4	1.94 (0.73)	2.01 (.78)	0.17	−6.10	+0.07***
Dependency	1−4	1.34 (0.49)	1.36 (0.52)	0.08	−3.08	+0.02**
Loss of control	1−4	1.57 (0.62)	1.59 (0.66)	0.07	−2.73	+0.02**

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

gender predicted its increase (β = .10, $p < .01$). At Step 2, psychopathological symptoms (β = .73, $p < .01$) predicted an increase in negative affect, whereas age remained as the single predictor of a decrease in negative affect (β = −.07, $p < .01$). With the inclusion of TV series viewing motivations at Step 3, psychopathological symptoms (β = .69, $p < .01$), emotional enhancement (β = .06, $p < .05$), and coping/escapism motives (β = .06, $p < .01$) significantly predicted an increase in negative affect. Finally, these results remained stable after the inclusion of problematic (i.e., loss of control) and nonproblematic (i.e., engagement) indicators of binge-watching behavior at Step 4.

Longitudinal Analyses

Analyses at T2

Results from the two hierarchical regression analyses at T2 are reported in Table 6. The first analysis showed that only psychopathological symptoms predicted a decrease in positive affect at Steps 2 (β = −.16, $p < .01$), 3 (β = −.15, $p < .01$), and 4 (β = −.15, $p < .01$). The second analysis revealed that only psychopathological symptoms predicted an increase in negative affect at Steps 2 (β = .15, $p < .01$), 3 (β = .16, $p < .01$), and 4 (β = .16, $p < .01$).

Table 4

Correlations Between Age, Gender, Changes in TV Series Watching Motivations and Binge-Watching Engagement Variables, Psychopathological Symptoms, and Affect (T1; n = 1,356)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age	—													
2. Gender[a]	−.26**	—												
3. Δ Emotional enhancement	**−.07****	.04	—											
4. Δ Coping–escapism	−.15***	.05	**.34*****	—										
5. Δ Engagement	−.14***	.05*	**.30*****	**.44*****	—									
6. Δ Pleasure preservation	.03	.02	.23***	.08**	**.34*****	—								
7. Δ Binge-watching	−.11***	.04	**.35*****	**.44*****	**.71*****	**.32*****	—							
8. Δ Dependency	−.01	.02	.23***	**.32*****	**.56*****	**.42*****	**.55*****	—						
9. Δ Loss of control	−.04	.03	.26***	**.45*****	**.68*****	.28***	**.70*****	**.51*****	—					
10. Depression	**−.27*****	.09**	.12***	.22***	.13***	−.02	.10***	.10***	.14***	—				
11. Anxiety	−.17***	.15**	.15***	.20***	.07**	.01	.08**	.08**	.11***	**.63*****	—			
12. Somatization	−.13***	.11**	.12***	.13***	.10***	.02	.08**	.05	.08**	**.40*****	**.57*****	—		
13. Negative affect	−.24***	.15**	.15***	.20***	.09**	.00	.08**	.08**	.11***	**.56*****	**.76*****	**.49*****	—	
14. Positive affect	.15***	−.04	−.05	−.10***	**−.07****	−.03	−.07*	−.08**	−.10***	**−.41*****	−.20***	−.12***	−.14***	—

Note. Medium and large correlations are highlighted in bold. Male gender was coded as 1 while female gender was coded as 2.
[a] Pearson point-biserial correlations.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5
Linear Regressions Predicting Positive and Negative Affect at T1 During the First COVID-19 Lockdown (T1 Sample; n = 1,356)

	Model 1			Model 2			Model 3			Model 4		
Variable	ΔR^2	β	*p*	ΔR^2	β	*p*	ΔR^2	β	*p*	ΔR^2	β	*p*
Positive affect												
	0.02			0.07			0.09			0.02		
Age		**0.130**	**.000**		**0.079**	**.004**		**0.119**	**.000**		**0.102**	**.000**
Gender (M = 1; F = 2)		−0.005	.846		0.017	.518		0.027	.285		0.030	.239
Psychopathological symptoms		—	—		**−0.270**	**.000**		**−0.201**	**.000**		**−0.195**	**.000**
Motivations												
Social		—	—		—	—		−0.011	.688		0.009	.748
Emotional enhancement		—	—		—	—		**0.125**	**.000**		**0.136**	**.000**
Enrichment		—	—		—	—		**0.246**	**.000**		**0.261**	**.000**
Coping/escapism		—	—		—	—		**−0.254**	**.000**		**−0.184**	**.000**
Binge-watching variables												
Engagement		—	—		—	—		—	—		−0.052	.123
Loss of control		—	—		—	—		—	—		**−0.129**	**.000**
Negative affect												
	0.06			0.50			0.01			0.01		
Age		**−0.203**	**.000**		**−0.067**	**.000**		−0.033	.093		−0.038	.057
Gender (M = 1; F = 2)		**0.096**	**.000**		0.035	.059		0.030	.109		0.030	.102
Psychopathological symptoms		—	—		**0.725**	**.000**		**0.689**	**.000**		**0.690**	**.000**
Motivations												
Social		—	—		—	—		0.025	.212		0.030	.131
Emotional enhancement		—	—		—	—		**0.055**	**.014**		**0.060**	**.011**
Enrichment		—	—		—	—		0.004	.860		0.008	.701
Coping/escapism		—	—		—	—		**0.062**	**.009**		**0.080**	**.002**
Binge-watching variables												
Engagement		—	—		—	—		—	—		−0.019	.449
Loss of control		—	—		—	—		—	—		−0.031	.186

Note. Regression coefficients are standardized. Significant results are highlighted in bold.

Analyses at T3

We present results from the two hierarchical regression analyses at T3 in Table 7. The first analysis revealed that only psychopathological symptoms predicted a decrease in positive affect at Steps 2 ($\beta = -.28$, $p < .01$), 3 ($\beta = -.32$, $p < .01$), and 4 ($\beta = -.32$, $p < .01$). The second analysis showed that psychopathological symptoms ($\beta = .23$, $p < .05$) also predicted an increase in negative affect at Step 2. With the inclusion of TV series watching motivations at Step 3, social ($\beta = -.31$, $p < .01$) and coping–escapism ($\beta = .39$, $p < .01$) motives predicted a decrease and an increase in negative affect, respectively. Finally, both male gender ($\beta = -.23$, $p < .05$) and social motive ($\beta = -.29$, $p < .01$) significantly predicted a decrease in negative affect, whereas problematic binge-watching (loss of control; $\beta = .25$, $p < .05$) was the single predictor of an increase in negative affect at Step 4.

Discussion

In the present study, we assessed how the first COVID-19 pandemic lockdown has influenced TV series viewing behaviors and whether binge-watching (in its adaptive or maladaptive forms) might have constituted an effective means of emotion regulation throughout this health crisis situation.

Compared with prepandemic practices, we found significant changes in TV series watching patterns during the first lockdown. As people spent significantly more time at home (including work-from-home arrangements), viewing frequency, number of episodes watched during a single session, daily time spent viewing and coviewing practices all significantly increased. For example, daily time spent viewing *per working day* and *per day off* increased 93.8% and 52.1%, respectively. Therefore, participants reported significantly more engagement in TV series watching since the implementation of spatial distancing measures, and this trend was observed whether we considered the whole initial sample at T1 (i.e., $n = 1{,}356$) or only the T3 sample (i.e., $n = 115$)[6].

Our results are in line with previous research showing a general increase in TV series watching during the COVID-19 pandemic (Boursier et al., 2021; Dixit et al., 2020; Rubenking & Bracken, 2021). They also corroborate the higher consumption of streaming content recorded during this period, as reflected by the significant growth in streaming services subscriptions worldwide (Gruber, 2020; Moody, 2020). More broadly, the same trend was observed for other online and digital activities during the pandemic, including video gaming (Arkenberg, 2020; Hawkins, 2020), cybersex (Dubé et al., 2020), and online gambling (The European Business Review, 2020).

Interestingly, when we examined potential drivers of the increase in TV series watching, we found that only affect-based motivations for TV series watching (i.e., first and essentially,

[6] We also analyzed the data by focusing on the participants who completed the three assessments (T1, T2, and T3) of the longitudinal panel study ($n = 115$). These results, as well as further results regarding gender-related analyses, are available as supplementary material in the Open Science Framework at: https://osf.io/gk7u2/ (https://doi.org/10.17605/OSF.IO/GK7U2).

Table 6

Linear Regressions Predicting Changes in Positive and Negative Affect at T2 During the First COVID-19 Lockdown (Longitudinal Data, T2; n = 346)

	Model 1			Model 2			Model 3			Model 4		
Variable	ΔR^2	β	*p*	ΔR^2	β	*p*	ΔR^2	β	*p*	ΔR^2	β	*p*
Δ Positive affect												
	0.01			0.02			0.01			0.01		
Age		0.040	.488		0.015	.792		−0.002	.969		0.003	.962
Gender (M = 1; F = 2)		0.042	.458		0.058	.307		0.052	.374		0.028	.638
Psychopathological symptoms		—	—		**−0.159**	**.004**		**−0.154**	**.008**		**−0.152**	**.009**
Motivations												
Social		—	—		—	—		−0.049	.530		−0.097	.233
Emotional enhancement		—	—		—	—		0.080	.264		0.017	.829
Enrichment		—	—		—	—		0.015	.857		−0.011	.898
Coping/escapism		—	—		—	—		−0.067	.414		−0.134	.142
Binge-watching variables												
Engagement		—	—		—	—		—	—		0.066	.550
Loss of control		—	—		—	—		—	—		0.152	.161
Δ Negative affect												
	0.01			0.02			0.01			0.01		
Age		−0.077	.175		−0.054	.345		−0.069	.250		−0.063	.292
Gender (M = 1; F = 2)		−0.080	.160		−0.095	.095		−0.091	.117		−0.112	.062
Psychopathological symptoms		—	—		**0.151**	**.006**		**0.161**	**.006**		**0.160**	**.006**
Motivations												
Social		—	—		—	—		0.042	.586		0.003	.968
Emotional enhancement		—	—		—	—		−0.029	.684		−0.069	.379
Enrichment		—	—		—	—		−0.005	.951		−0.007	.939
Coping/escapism		—	—		—	—		−0.074	.362		−0.101	.266
Binge-watching variables												
Engagement		—	—		—	—		—	—		−0.034	.757
Loss of control		—	—		—	—		—	—		0.152	.159

Note. Regression coefficients are standardized. Among the predictors, psychopathological symptoms, motivations, and binge-watching variables refer to the values reported at the second assessment (T2). Significant results are highlighted in bold.

coping–escapism, and then, to a lesser extent, emotional enhancement) were higher during lockdown compared with participants' prelockdown situation. In a period of uncertainty and emotional distress, TV series watching thus seemed to provide a way for individuals to improve their mood and/or temporarily escape from the stressful situation, hence being an emotion-regulation strategy (Flayelle, Maurage, et al., 2019; Tukachinsky & Eyal, 2018). Our findings also indicated that symptoms of problematic binge-watching increased during the first lockdown. We may therefore hypothesize that, in the context of forced isolation at home, constant convenient access to streaming content per se might contribute to excessive and problematic engagement in binge-watching behavior, thereby corroborating the role of contextual and environmental factors in this specific pattern of involvement (Flayelle et al., 2017).

Concerning the relationship between TV series viewing practices and subjective well-being over time, specifically at T1, age, emotional enhancement and enrichment motives predicted an increase in positive affect, whereas psychopathological symptoms, coping–escapism motives and problematic binge-watching (i.e., loss of control) predicted a decrease in positive affect. In addition, psychopathological symptoms, emotional enhancement, and coping/escapism motives predicted an increase in negative affect. Among these initial findings (i.e., at T1), it is particularly interesting to note the impact of coping–escapism motivation in decreasing positive affect and increasing negative affect, respectively. These first results seem, therefore, to corroborate the hypothesized role of binge-watching as a potentially dysfunctional coping strategy to deal with negative affect (Flayelle, Maurage, et al., 2019; Tukachinsky & Eyal, 2018).

At T2, only psychopathological symptoms predicted lower levels of positive affect on the one hand, and higher levels of negative affect on the other hand, thus emphasizing the particular impact of the stressful lockdown context on psychological adjustment and distress on individual's subjective well-being.

Finally, the results from the longitudinal analysis at T3 indicated that psychopathological symptoms predicted lower positive affect throughout the confinement period. In turn, being a male and having social motivations for TV series watching (i.e., fueling relationships with others through TV series) predicted a decrease in negative affect over time, potentially constituting protective factors for negative emotional states experienced during the first COVID-19 pandemic lockdown. This result is in line with recent data showing a positive relationship between female gender and anxiety symptoms (and thus negative affect) during the COVID-19 pandemic (García-Fernández et al., 2021; Hou et al., 2020; Özdin & Bayrak Özdin, 2020). Moreover, in a period of forced isolation, socially driven TV series watching may effectively allow individuals to maintain social connections, which may also be interpreted in the frame of the contextual increase of coviewing practices shown in the current sample. Conversely, maladaptive involvement in TV series watching (assessed through items that measure loss of control

Table 7
Linear Regressions Predicting Changes in Positive and Negative Affect During the First COVID-19 Lockdown (Longitudinal Data, T3; n = 115)

	Model 1			Model 2			Model 3			Model 4		
Variable	ΔR^2	β	*p*	ΔR^2	β	*p*	ΔR^2	β	*p*	ΔR^2	β	*p*
Δ Positive affect												
	0.01			0.07			0.03			0.01		
Age		0.009	.927		−0.057	.566		−0.087	.440		−0.074	.510
Gender (M = 1; F = 2)		0.103	.297		0.154	.115		0.173	.094		0.181	.092
Psychopathological symptoms		—	—		**−0.277**	**.005**		**−0.321**	**.006**		**−0.317**	**.006**
Motivations												
Social		—	—		—	—		−0.128	.241		−0.164	.149
Emotional enhancement		—	—		—	—		−0.118	.335		−0.181	.172
Enrichment		—	—		—	—		−0.017	.893		−0.019	.880
Coping/escapism		—	—		—	—		0.120	.378		0.064	.699
Binge-watching variables												
Engagement		—	—		—	—		—	—		0.006	.962
Loss of control		—	—		—	—		—	—		0.168	.213
Δ Negative affect												
	0.01			0.05			0.16			0.04		
Age		0.004	.969		0.059	.559		0.083	.430		0.065	.531
Gender (M = 1; F = 2)		−0.038	.698		−0.081	.413		−0.168	.085		**−0.230**	**.021**
Psychopathological symptoms		—	—		**0.231**	**.021**		0.037	.734		0.033	.758
Motivations												
Social		—	—		—	—		**−0.312**	**.003**		**−0.294**	**.006**
Emotional enhancement		—	—		—	—		0.166	.150		0.237	.055
Enrichment		—	—		—	—		0.014	.907		0.057	.625
Coping/escapism		—	—		—	—		**0.387**	**.003**		0.275	.072
Binge-watching variables												
Engagement		—	—		—	—		—	—		−0.169	.177
Loss of control		—	—		—	—		—	—		**0.254**	**.036**

Note. Regression coefficients are standardized. Among the predictors, psychopathological symptoms, motivations, and binge-watching variables refer to the values reported at the final assessment (T3). Significant results are highlighted in bold.

and negative consequences resulting from problematic binge-watching) was the single predictor of increased negative affect throughout the lockdown. The current pattern of longitudinal results therefore follows the tendency observed at the initial assessment time point (i.e., at T1), with a significant increase in symptoms of problematic binge-watching and primarily negative reinforcement motivation (i.e., coping–escapism) during lockdown. Not only is this finding consistent with previous literature showing that such leisure activity may generate loss of control over watching time and thereby negative outcomes and emotional distress (De Feijter et al., 2016; Devasagayam, 2014; Riddle et al., 2018), but it is also in line with the hypothesized role of problematic binge-watching as a maladaptive means of coping to face negative affect (Flayelle, Maurage, et al., 2019; Tukachinsky & Eyal, 2018). In this regard, the seemingly "disproving" observation that the coping–escapism motivation only approached statistical significance (i.e., $p = .07$) in predicting change in negative affect at the final step of the regression may most probably be explained by the T3 lower sample size or by the very nature of the current dependent variable (i.e., negative affect in a more general sense), although coping usually involves psychopathological parameters (e.g., depression, anxiety).

Limitations of the present study included the use of self-report measures to collect data, which are prone to biases (e.g., social desirability). Moreover, the sample size significantly diminished from T1 (i.e., $n = 1{,}356$) to T3 (i.e., $n = 115$), which corresponds to a general pattern observed in longitudinal studies (Laurie et al., 1999; Watson & Wooden, 2009). The study's highly educated sample (e.g., 36.9% of the participants had a master degree) also limits the generalizability of our findings. Further research is recommended to explore the role of other individual characteristics (e.g., personality traits, emotion regulation strategies) in changes in emotional states in the context of pandemic confinement. In addition, given that the present data were collected during the first lockdown (i.e., at the beginning of the pandemic), it would be interesting to examine whether this pattern of results is maintained in the long term, for example, after 1 year of social distancing restrictions. Finally, as the current study was restricted to French-speaking European countries, there is a need to examine potential differences across different cultural contexts.

Overall, the present longitudinal study showed that in French-speaking European countries, TV series watching behaviors were effectively amplified during the first COVID-19 lockdown. Concomitantly, stay-at-home mandates also led to an increased problematic binge-watching pattern that the current findings show are best understood as a potential dysfunctional coping strategy during this period. Watching TV series for social motives, however, emerged as a protective factor throughout this health crisis situation, thus highlighting the potential value and utility of virtual gatherings (e.g., Netflix Party) to reduce isolation and help overcome the emotional distress caused by social distancing interventions.

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