

How Adolescents Use Social Media to Cope with Feelings of Loneliness and Anxiety During COVID-19 Lockdown

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Abstract

Next to physical health problems and economic damage, the coronavirus disease 2019 (COVID-19) pandemic and associated lockdown measures taken by governments of many countries are expected to cause mental health problems. Especially for adolescents, who highly rely on social contacts with peers, the prolonged period of social isolation may have detrimental effects on their mental health. Based on the mood management theory, the current study examines if social media are beneficial for adolescents to cope with feelings of anxiety and loneliness during the quarantine. A survey study among 2,165 (Belgian) adolescents (13–19 years old) tested how feelings of anxiety and loneliness contributed to their happiness level, and whether different social media coping strategies (active, social relations, and humor) mediated these relations. Structural equation modeling revealed that feelings of loneliness had a higher negative impact on adolescents' happiness than feelings of anxiety. However, anxious participants indicated to use social media more often to actively seek for a manner to adapt to the current situation, and to a lesser extent as a way to keep in touch with friends and family. The indirect effect of anxiety on happiness through active coping was significantly positive. Participants who were feeling lonely were more inclined to use social media to cope with lacking social contact. However, this coping strategy was not significantly related to their happiness feelings. Humorous coping was positively related with feelings of happiness, but not influenced by loneliness or anxiety. To conclude, social media can be used as a constructive coping strategy for adolescents to deal with anxious feelings during the COVID-19 quarantine.

Keywords: COVID-19, social media, mood management theory, coping, adolescents

Introduction

FOLLOWING THE PANDEMIC¹ caused by the coronavirus disease 2019 (COVID-19; leading to a respiratory syndrome, resembling pneumonia), adolescents (aged 13–18 years) have been restricted in their real-life social contacts. Worldwide lockdown measures obliged individuals to stay at home, keep social distance, and reduce physical contact. Besides the health, economic, and political impact of the coronavirus, the mental consequences should not be underestimated.^{2–4} The prolonged social isolation of the COVID-19 lockdown increases the delirious effects of stress and uncertainty on physical and mental disorders, increasing feelings of anxiety,^{5,6} depression,⁷ eating disorders,⁸ and posttraumatic stress syndrome.⁹ Hence, more and more voices, under which the United Nations,¹⁰ advocate to draw attention to the mental health problems related to COVID-19.

This may be especially relevant for adolescents, as adolescence is already associated with a higher risk for perceived social isolation.¹¹ Compared with children and adults, social comparison processes are automatically activated among adolescents, triggering them to heavily rely on peers—to gain approval, feel good about themselves, and reduce uncertainty.^{12,13} When all physical social contacts are cut off in lockdown, feelings of loneliness might heighten among adolescents, which may be negatively related to happiness feelings.¹⁴ In various countries (e.g., China, the United States, and Israel), tremendous feelings of anxiety appear to infect society, which have been related to depressive symptoms, especially when experiencing these stressful feelings during a long period.¹⁵

In the context of crisis events (i.e., terrorist attacks, health risks, ...), the important informational role of social media was stressed; however, also the spread of an overload of

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unverified disinformation has been reported, called “infodemic.”^{16,17} Although social media may amplify negative emotional reactions among all users of the same social network, the current study aims to examine the silver lining of adolescents’ social media use, reflecting a coping strategy to manage negative emotions evoked by the COVID-19 crisis.

Based on the mood management model, a conceptual model (Fig. 1) is developed to test the mediating role of different social media coping types (active, social relations, and humorous coping) on the effect of loneliness and anxiety on feelings of happiness.¹⁸

Data were collected in Belgium, a Western European country that was heavily stricken by the COVID. The Belgian lockdown started on March 18, 2020, and included a shutdown of schools, restaurants and bars, leisure activities, and nonessential stores, and a closing of the borders. Citizens were obliged to work at home (telework), and were only allowed to have physical contact with the people who live in the same house. The first phase of the exit strategy started on May 4, 2020.

Theoretical framework

Adolescents are known as heavy social media users (e.g., Instagram, TikTok) to connect with friends and to feel better. For instance, a qualitative study among adolescents with depression revealed that young people may use social media to cope with negativity.¹⁹ However, several studies connect heavy social media use to mental health issues, and limiting this social media use decreases feelings of loneliness and anxiety.²⁰ In addition, these studies indicate that merely individuals lacking social skills increase their Internet use to cope with loneliness.^{21,22}

Given the social isolation and anxiety during the COVID-19 lockdown, adolescents especially may self-regulate their emotions using social media. This is in line with mechanisms of mood management theory, which postulates that individuals (subconsciously) use specific media to regulate their emotional states and obtain a more positive mood and optimal level of arousal.^{18,23} As such, individuals aim at avoiding stress and boredom, as these are both unpleasant levels of arousal.²⁴ A longitudinal study among children and adolescents also found that adolescents who feel less positive turn to media.²⁵ Other studies among young adults reported that social media may facilitate functional coping, for example, to counter low esteem.²⁶

As the social isolation and health threats caused by the COVID-19 situation may lead to feelings of anxiety and loneliness, social media use may be a valuable strategy to cope with these feelings. Specifically, we expect that anxiety and loneliness will activate different social media coping strategies, which may influence their happiness. For instance, a study among undergraduate students showed that different facets of social media use lead to diverse effects on mental health. As such, browsing and interacting on Instagram lower loneliness, while broadcasting (uploading content to a general public) increases loneliness.²⁷

In the current study, three coping strategies using social media are examined based on the BRIEF coping inventory defined by Carver.²⁸

First, social media may be used to actively adapt one’s thoughts and behavior to face the problem in the current crisis.²⁹ Active coping is operationalized (cf. Table 2) as accepting the current situation, searching information on the measures, activate others to follow measures, and think positive about the situation. Based on threat and risk communication literature, we expect that anxious adolescents will be prone to actively change their thoughts and behavior to manage the situation.^{30,31} Even when individuals have little control over the crisis, they may seek for actions to reduce their distress, for example, by searching for information. Actions about how to decrease the spreading of COVID-19 was among the four main themes discussed on Twitter.³²

Social media are often used (even by governments) to distribute information about the measures.^{33,34} Hence, we predict that the influence of feelings of anxiousness on happiness is partly mediated by using social media for active coping to face the risk of the crisis (H1). For lonely adolescents, we do not expect active coping will help them to feel happy.

Second, social media during a lockdown is for many a primary source to cope for the lack of social relations. More specific, research has shown that young adults who are reporting positive social relations on social media feel less depressed.^{35,36} Hence, we expect that the impact of loneliness on feelings of happiness during the COVID-19 lockdown is partly mediated social relations coping (H2a). In addition, previous research on adolescents and life crises (e.g., divorce, serious illness) found that adolescents with higher social support are better able to cope with crises, which positively affects their well-being.³⁵ We expect that contact with friends and family on social media

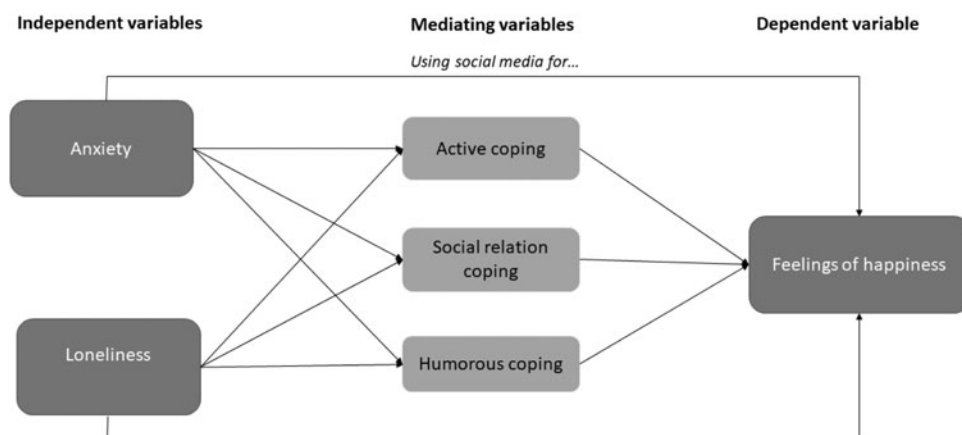


FIG. 1. Conceptual model.

might be a coping strategy to relieve fear, and thus has a positive effect on happiness (H2b).

Third, social media are also used for entertainment motivations, such as game play and watching funny videos.³⁷ This leads us to the use of social media to cope with the COVID-19 pandemic using humor (e.g., memes). Humorous coping may have a beneficial influence on individuals' happiness by reducing the attention on negative feelings.³⁸ The arousal-relieve theory states that humor leads to positive physical symptoms, as a result of releasing stress and arousal, positively influencing happiness.³⁹ Laughter has also shown to increase perceptions of similarity among people, increasing social connectedness and well-being.^{40,41} Hence, we expect humorous coping to partly mediate the effects of anxiety (a) and loneliness (b) and on feelings of happiness (H3a and H3b).

Methods

Participants and procedure

To test the conceptual model, an online survey study was developed (Qualtrics software). Data collection took place between April 16 and 30, 2020, in Belgium.

The university's ethics committee provided ethical consent. All Flemish (northern Belgium) high schools were e-mailed with the request to forward the survey to their pupils. The survey was also distributed by a nongovernmental organization active in family care (De Gezinsbond) and through social media. Via the link, youngsters were informed about the aim of the study and were asked for their consent and approval of their parents to participate.⁴¹

In total, 2,165 adolescents between 13 and 19 years old completed the survey (cf. Table 1; sample description). The study received ethical approval of the host university to launch the study.

Measures

The dependent variable, happiness, was measured by three items of the Center of Epidemiological Studies-Depression Scale.⁴² The General Anxiety Disorder Scale (GAP-7)

TABLE 1. DESCRIPTIVES OF SAMPLE

Gender	
Girls	66.6 percent
Boys	34.4 percent
Age	<i>M</i> = 15.51 <i>SD</i> = 1.59
School track	
Academic	51 percent
Technical	30.9 percent
Vocational	14.6 percent
Creative	3 percent
Household type	
Living with two parents	71.1 percent
Living with one parent	28.2 percent
COVID-19 symptoms	
No COVID-19 symptoms	92.7 percent
COVID-19 in social context	
Nobody I know had COVID-19	74.3 percent
Social media during lockdown?	
A lot more	76.2 percent
Equally as before	17 percent
Less than before	6.8 percent

measured anxiety feelings experienced over the last month in the COVID-19 period.⁴³ Loneliness was measured by a 6-item scale (RULS-6).⁴⁴

The Brief-Coping Scale was adapted to measure how participants use social media to cope with the COVID-19 situation.²⁷ For the purpose of this study, 14 items (from the 28) were selected. Table 2 provides more information about the scales.

Given the adaptation of the BRIEF-Coping Scale to social media use, an exploratory factor analysis examined the underlying measurement structure. Based on the principal component analysis (varimax rotation) and the eigenvalue >1, four different factors came forward, explaining 53.86 percent of the variance. Table 3 provides an overview of item loadings for each factor. Based on Hair et al. the cutoff value of the factor loadings should be higher than 0.6, with 0.7 reaching the recommended level, motivating the drop of measurement items scoring lower.⁴⁵

TABLE 2. BRIEF COPING SCALE EXPLORATORY FACTOR ANALYSES FACTOR LOADINGS

<i>How often did you use social media to ...</i>	<i>Factor</i>			
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
Item 2: Motivate others to take action	0.651	0.079	−0.050	−0.003
Item 6: Search which measures I need to follow	0.643	0.048	0.063	0.287
Item 7: Reframe the situation in a different, more positive way	0.688	0.064	0.206	0.259
Item 8: Accept what is currently happening	0.706	0.059	0.191	0.230
Item 1: Compensate for the missing of our friends	0.151	0.744	0.0455	0.067
Item 12: Talk with family and friends	−0.018	0.775	0.135	0.226
Item 13: Stay updated with my family and friends' lives	0.126	0.774	0.116	0.183
Item 9: Watch funny movies about the situation	0.094	0.010	0.858	−0.020
Item 10: To share funny movies about the situation with others	0.210	0.181	0.760	−0.085
Item 3: Keep track of my school work	0.174	0.186	−0.137	0.617
Item 4 ^a : Help me perform a hobby (e.g., cooking, drawing....)	0.249	0.010	0.038	0.490
Item 5 ^a : Relax	−0.107	0.342	0.435	0.383
Item 11 ^a : Receive advise from others	0.547	0.403	0.040	−0.170
Item 14 ^a : Think less about the current situation	0.401	0.412	0.110	0.024
Item 15 ^a : Share negative feelings with others	0.432	0.469	−0.079	−0.393

The italic numbers indicate on which factor that specific item loads. Extraction method: principal component analysis. Rotation method: varimax with Kaiser normalization. Rotation converged in five iterations ($p < .01$).

^aItem dropped.

TABLE 3. DESCRIPTIVE STATISTICS FOR THE INDICATORS

	Mean	SD	Cronbach's α
Loneliness			
How often did you feel... (in the last month)			0.768
Item 1: That you lack companionship	4.24	1.01	
Item 2: Alone	2.20	1.11	
Item 3: That you are no longer close to anyone	2.12	1.04	
Item 4: Left out	3.48	1.20	
Item 5: That no one really knows you well	2.58	1.20	
Item 6: That people are around you but not with you	2.90	1.21	
Anxiety			
How often did you feel... (in the last month)			0.868
Item 1: Nervous, anxious, or on edge	2.19	0.96	
Item 2: Not being able to stop or control worrying	2.00	1.07	
Item 3: You worry too much about different things	2.48	1.02	
Item 4: Trouble to relax	1.99	1.03	
Item 5: Being so restless that it is hard to sit still	1.81	1.00	
Item 6: Easily annoyed or irritable	2.62	1.04	
Item 7: Feeling afraid as if something awful might happen	1.81	0.96	
Coping using social media			
Factor 1: Active coping			
How often do you use social media to cope with the situation?			0.722
Item 2: Motivate others to take action	1.42	0.69	
Item 6: Search which measures I need to follow	1.94	0.90	
Item 7: Reframe the situation in a different, more positive way	1.96	0.98	
Item 8: Accept what is currently happening	2.08	1.020	
Factor 2: Social coping			
How often do you use social media to cope with the situation?			0.765
Item 1: Compensate for the missing of our friends	2.75	0.99	
Item 12: Talk with family and friends	3.18	0.93	
Item 13: Stay updated with my family and friends' lives	2.90	0.98	
Factor 3: Humorous coping			
How often do you use social media to cope with the situation using humor?			
Item 9: Watch funny movies about the situation	2.74	1.125	
Item 10: To share funny movies about the situation with others	2.04	1.096	
Happiness/depression			
How often did you... (in the last month)			0.811
Item 1: Feel happy	3.01	0.83	
Item 2: Enjoyed life	2.82	0.85	
Item 3: Feel sad (reversed)	2.30	0.85	

The results indicate three factors (deviating from the original scale), which are used in the structural equation model. The first factor relates to aspects on how social media are used to actively deal with the crisis, based on the definition of active coping of Billings and Moos (p. 141), "referring to cognitive and behavioral attempts to deal directly with problems and their effects."²⁸ The second and third factors can be described as rather passive coping strategies referring to using social media to cope with the lack of social relations, and humorous coping. The last factor is not incorporated since it contains only one item.

Data Analyses and Results

Explorative data analyses provide some descriptive insights in the results (cf. Table 4).

The structural equation model was tested using maximum likelihood estimation (AMOS Graphics, 22). First, the measurement model was built. The measurement model estimates if the observed variables (measured items) represent a reliable reflection of the latent variables.

Measurement model

The fit of the initial measurement model with the data was average: $\chi^2/df = 10.050$, $p < 0.001$, which is high compared with the suggested maximum level of 5.0.⁴⁶ The comparative fit index (CFI) and Tucker Lewis Index (TLI) with a general cutoff of 0.90 were 0.889 and 0.871. Root mean square error of approximation (RMSEA) (0.065) was higher compared with the recommended cutoff value of 0.06, but can still be considered an adequate model fit (below 0.08).⁴⁷ A value around 0.95 for the goodness of fit index (GFI) indicates a proper model. However, the current measurement model did not reach that level (0.906).⁴⁸

The factor loadings of the measurement items for each of the latent variables were satisfying (cf. exploratory factor analysis). The modification indices suggested to allow correlations between the two exogenous variables, anxiety and loneliness, and the three endogenous coping styles. In addition, some of the error terms of the measurement items of the same latent variable were correlated based on similar phrasing of the items. Item one of the loneliness scale had to

TABLE 4. DESCRIPTIVE ANALYSES FOR THE MAIN VARIABLES

Dependent variables	Loneliness		Anxiety		Happiness		Social media use	
	M	SD	M	SD	M	SD	M	SD
Gender ^a								
Male	2.62	0.76	1.70	0.64	3.19	0.69	3.89	1.07
Female	2.92	0.77	2.13	0.75	2.82	0.72	4.37	0.89
Age ^b								
13–14	2.62	0.77	1.87	0.71	3.12	0.69	3.88	0.94
15–16	2.82	0.78	1.99	0.75	2.91	0.75	4.24	0.99
16–19	3.0	0.76	2.08	0.77	2.80	0.72	4.43	0.94
School track ^b								
Academic	2.76	0.77	1.96	0.73	2.97	0.70	No significant difference	
Technical	2.86	0.79	1.97	0.74	2.94	0.76		
Vocational	2.85	0.83	2.04	0.80	2.90	0.79		
Creative	3.20	0.66	2.35	0.77	2.61	0.70		
Household type ^a								
Living with one parent	No significant difference		1.96	0.74	2.97	0.73	4.15	1.0
Living with two parents			2.05	0.76	2.88	0.72	4.31	0.94
COVID in social context ^b								
No	2.77	0.81	1.93	0.73	2.98	0.74	No significant difference	
Maybe	2.84	0.75	2.02	0.75	2.95	0.69		
Yes	2.90	0.76	2.08	0.77	2.85	0.75		
Symptoms COVID ^a								
No symptoms	No significant difference							
COVID disease								

All mean differences are significant at the 0.05 level.

^aAnalysis based on independent sample *t*-test.

^bAnalysis based on univariate analysis of variance.

be dropped. The model fit of the adjusted model increased to a satisfactory level: $\chi^2/\text{df}=4.617$, $p<0.001$, CFI=0.959, TLI=0.950, RMSEA=0.041, GFI=0.962. Table 5 provides an overview of the Pearson correlations between the different constructs.

Structural model

The model fit of the structural model was satisfying: $\chi^2/\text{df}=4.641$, $p<0.001$, CFI=0.96, TLI=0.95, RMSEA=0.041, GFI=0.963.

Both anxiety ($\beta=-0.382$, $p<0.001$) and loneliness ($\beta=-0.616$, $p<0.001$) were negatively associated with happiness. Higher feelings of anxiety and loneliness are associated with lower feelings of happiness.

Anxiety was significantly related to active ($\beta=0.224$, $p<0.001$) and social coping ($\beta=0.156$, $p<0.001$), but was not significantly associated with humorous coping ($\beta=0.071$, $p=0.066$). This implies that anxious people use social media more often to actively handle the crisis and keep in touch with others.

Loneliness was positively associated with social coping ($\beta=0.135$, $p=0.004$), but not related to active coping ($\beta=-0.058$, $p=0.233$), nor to humorous coping ($\beta=0.002$, $p=0.958$). These results show that lonely people are using social media more often to keep in touch with others.

Active coping ($\beta=0.074$, $p=0.008$) and humorous coping ($\beta=0.057$, $p=0.008$) were significantly positively related to happiness, while social coping was not ($\beta=-0.034$, $p=0.205$). However, neither loneliness nor anxiety was associated with humorous coping (Fig. 2).

An analysis of the indirect effects showed that the effect of anxiety on happiness is positively mediated by social media (active) coping ($\beta=0.015$; $p=0.016$, [0.003; 0.031]), positive effect of social media use for adolescents who are experiencing more anxious feelings. These results confirm H1.

Next, the indirect effect of loneliness on happiness through social media (social relations and humorous) coping is not significant ($\beta=-0.009$; $p=0.117$ [-0.024; 0.003]).

H2a and H2b are not confirmed. Social relations coping did not mediate the effect of loneliness on feelings of

TABLE 5. PEARSON CORRELATIONS AMONG THE INDICATORS

	1	2	3	4	5	6
1. Loneliness	1					
2. Anxiety	0.523**	1				
3. Active coping	0.080**	0.157**	1			
4. Social relations coping	0.224**	0.180**	0.293**	1		
5. Humorous coping	0.056**	0.053*	0.252**	0.227**	1	
6. Happiness	-0.590**	-0.606**	-0.018	-0.110**	0.022	1

* $p<0.05$; ** $p<0.01$.

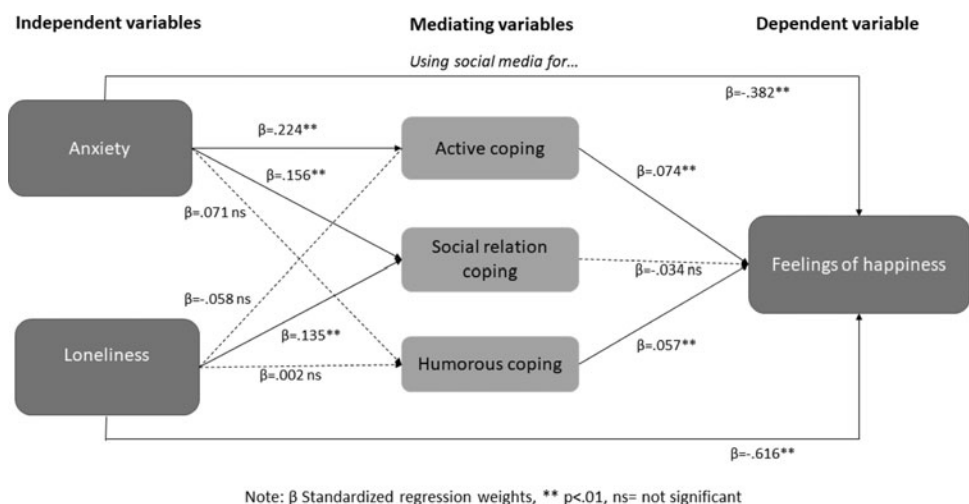


FIG. 2. Structural model with standardized regression weights.

happiness. Although loneliness was strongly associated with social relations coping, this later did not influence feelings of happiness. Also for anxiety, social relations coping did not mediate the effect on happiness.

Humorous coping had a positive effect on feelings of happiness, but neither anxiousness nor loneliness was associated with the use of humor to cope with the crisis. H3a and H3b are not supported.

Discussion and Conclusions

Mood management theory argues that media use is driven by a need to self-regulate one's (negative) emotions, to feel better.²⁴ The results of the current study confirm this premise to some extent.

Most of the adolescents indicated a heightened social media use during the lockdown (cf. Table 1). Although participants reported to use social media for actively coping with the current situation, the least frequent (cf. *M*-values, Table 3), it was the most beneficial strategy to use social media to self-regulate mood during the lockdown. Using social media to actively face the situation relieved their feelings of distress and anxiety to some degree, increasing happiness feelings.

A higher feeling of loneliness among the participants predicted social media use to keep in touch with peers and family, but it was not associated with happiness. Pearson's correlations (cf. Table 4) even showed a significant negative correlation between using social relations cope and happiness. As such, it appears that using social media as a substitute for physical social relations makes adolescents feel less happy. Further examination of the quality, quantity, and type of the social connection is necessary to unravel potential underlying mechanisms to explain these results.⁴⁹ Lonely adolescents might have a need to communicate about specific types of content or circumstances in which, for example, nonverbal aspects and physical proximity may be determining their happiness level.

Although humorous coping did not influence the adverse effects of loneliness and anxiety on happiness in the current study, it independently from these emotions heightens happiness. Further research should examine in which moods

(e.g., boredom) coping humor might increase feelings of happiness among adolescents.⁵⁰

Lastly, adolescents' feelings of loneliness are more strongly (and negatively) related to feelings of happiness than those of anxiety, which is not surprising given that adolescents are unlikely to experience the life-threatening consequences of COVID-19.⁵¹

Hence, the silver lining effect of social media coping during the COVID-19 lockdown among adolescents appears beneficial for anxious adolescents and for some type of activities, that is, using social media to actively manage the situation, and using humor to cope with it.

These beneficial effects of social media use on mental health contrast other recent studies reporting negative effects of use of Internet and social media on individuals' mental health during the COVID-19.⁵² The enormous amount of distributed (dis)information on social media may disorient and overwhelm individuals. In addition, emotional COVID-19-related tweets¹⁷ may amplify feelings of anxiety and depression, based on the contagious paradigm, defined as: "the transfer of emotional states to others, leading them to experience the same emotions as those who share the same social network."⁵³ This may lead to emotional dysfunctional coping behavior and possible panic reactions, such as the hoarding of toilet paper during COVID-19, which was activated on social media.⁵⁴

Given that the data collection of the current study took place in the midst of the COVID-19 crisis in Belgium (~1 month in lockdown), the most intense reactions might have lowered, since participants are suggested to be familiar with the health crisis. Further research should examine how emotions and the influence of social media on mental health evolve during the progression of the crisis. Also, adolescents might react differently on a health crisis than the general public. Their life-phase is mostly self-focused,¹² which combined with their optimism bias,^{55,56} might explain the mild emotional reactions (cf. *M*-values).

The harshness of the COVID-19 virus and the high contagious level still lead to many deaths. Worldwide almost 22 million people were infected and more than 774,000 died (in Belgium: more than 78,000 infected citizens, and almost 10,000 deaths).⁵⁷ As in the United States, India, and Brazil

the peak of the distribution of the COVID has not yet been reached, in Western European countries, a second wave of the virus is popping up since July 2020. When tightening the measures again to (local) lockdowns, social media can be used as an instrument to actively cope with the situation to relieve feelings of anxiety, and feel better. Distribution of reassuring information and self-efficacy on social media might make anxious adolescents feel better. Also, humor on social media is beneficial for adolescents' well-being during lockdown. Social media providers should initiate and distribute this information. Interactive campaigns (e.g., "post your most humorous Covid meme") may increase the involvement of the audience, and their happiness level. In addition, organizations educating parents and teachers on the topic of media literacy may promote the benefits of social media on its potential to reduce anxiety and stress among their teenagers.

As a first limitation, a self-selection bias may be present in the sample. Although efforts were made to address all Flemish high schools, not all schools invited their pupils, and not all adolescents participated when invited. Second, further research should use scales developed for the COVID-19 situation.¹⁵ Lastly, although a cross-sectional study does not allow to examine causality among the variables, the model is based on the mood management theory.

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