How adolescents use social media to cope with feelings of loneliness and anxiety during COVID-19 lockdown

The Silver Lining of Social Media: How Adolescents Use Social Media to Cope with Feelings

of Loneliness and Anxiety during Covid-19 Lockdown

Running Title: Social Media, Loneliness & Anxiety during Covid-19

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Abstract

Next to physical health problems and economic damage, the 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 2165 (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 nor 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 pandemic[1] caused by the Coronavirus (Covid-19 disease; leading to a respiratory syndrome, resembling pneumonia), adolescents (aged 13 to 18 years old) 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. Schools, restaurants and bars were closed for several months and leisure activities were cancelled, primary meeting spaces for adolescents. Besides the health, economic and political impact of the Coronavirus, the mental consequences should not be underestimated.[2,3,4] 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 to 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, US, 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 has been stressed; however, also the spread of unverified disinformation has been reported, referred to as the *'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 (see figure 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 which was heavily stricken by the Covid virus. The Belgian lockdown started on March 18, 2020 and included a shutdown of schools, restaurants and bars, leisure activities, and non-essential stores, and a closing of the borders (including in and outgoing flights). Citizens were obliged to work at home as much as possible (telework), and were only allowed to have physical contact with the people who live in the same house. During the data collection, little information was yet available about the exit strategy in this lockdown. The first phase of the exit strategy started at the 4th of May 2020.

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Theoretical Framework

Adolescents are known as heavy social media users (including Instagram, Facebook and TikTok) to connect with (online) 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] At the same time, several studies connect heavy social media use to mental health issues, and limiting this social media use decreases feelings of loneliness and anxiety.[20] Additionally, 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 to cope with these feelings. 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 (7 to 17 years) 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 level. 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 lowers 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 (1999).[28]

First, social media may be used as a coping strategy 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 about which measures one needs to follow, activate others to do so and trying to 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 threatening situation and reduce their stress level.[30,31] Even when individuals perceive that their actions are ineffective (low self-efficacy), individuals may seek for actions to reduce their distress, for example by searching for information.

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A content analysis of Covid-19 tweets revealed that the information about the methods to decrease the spreading of the virus, was among the four main themes discussed on Twitter.[32] Likewise, during the Zika epidemic in the US, pregnant women indicated the importance of social media as source of information.[33] Also governments (as in China) inform citizen about the evolution of Covid-19, the measures taken (e.g., closing borders, quarantine), and self-efficacy (e.g., hand hygiene, physical distance,…).[34] Hence, we predict that the influence of feelings of anxiousness on happiness are partly mediated by using social media for active coping to face the risk of the crisis (Hypothesis 1). For adolescents feeling lonely, we do not expect active coping related to the risk of Covid to help them relieve their feelings of isolation. Secondly, social media during a crisis event, and especially 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 by using social media for social relations coping (Hypothesis 2a). In addition, previous research on adolescents and life crises (e.g., divorce, serious illness, death) found that adolescents with higher social support are better able to cope with crisis situations, which in turn positively affects their wellbeing. [35]

Consequently, we expect that contact with friends and family on social media might be a coping strategy to relieve fear, and thus has a positive effect on happiness (Hypothesis 2b).

 Thirdly, social media are also used for entertainment motivations, such as game play, watching and sharing funny videos. [37] This leads us to the use of social media to cope with the current Covid-19 pandemic using humor (e.g., memes, funny video's). Coping humor has been shown to have a beneficial influence on individuals' feelings of happiness, given its power to elevate feelings of anxiety and arousal 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, leading to positive influences on happiness.[39] Laughter has also shown to increase perceptions of similarity among people, increasing social connectedness having detrimental effects on feelings of loneliness.[40,41] Hence, we expect humorous coping to partly mediate the effects of anxiety (a) and loneliness (b) and on feelings of happiness (Hypotheses 3a, 3b).

Methods

Participants & Procedure

To test the conceptual model, an online survey study was developed using Qualtrics software. Data collection took place between April 16th and 30th, 2020, in Belgium (Western-Europe). Ethical consent was provided by the university's ethical committee. 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 non-governmental organization active in family care (De Gezinsbond) and through social media. Via the survey link, youngsters were informed about the aim of the study and provided with the online consent form, asking for their consent and approval of their parents to participate.[41]

In total, 2165 adolescents between 13 and 19 years old completed the survey. The sample description can be found in table 1.

** Insert Table 1 here **

Measures

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

was used measuring 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 current Covid-19 situation. [27] For the purpose of this study, 14 items (from the 28 items) were selected. Table 2 provides more information about the scales (Cronbach alphas, means and SD).

** Insert Table 2 here **

Given the adaptation of the BRIEF-Coping scale to social media use and the selection of items, an exploratory factor analysis (EFA) was performed to examine the underlying structure of the scale. Based on the Principal Component Analysis (varimax rotation) and the eigenvalue >1 method, four different factors came forward, explaining 53.86% of the variance. Table 3 provides an overview of item loadings for each factor. Based on Hair et al. the cut-off 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]

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 (1981, p.141), *"referring to cognitive and behavioral attempts to deal directly with problems and their effects."[28]* The second and third factor can be described as rather passive coping strategies since they avoid actively confronting the crisis and mainly aim to reduce the emotional tension caused by it. The second factor refers using social media to cope with the lack of social relations, whereas the third factor combines two items that are related to using

social media for humor to cope with the crisis. The last factor is not incorporated in the analyses since it contains only one item.

** Insert Table 3 here **

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 in AMOS software (AMOS Graphics, 22). Before examining the structural relations between the variables, the measurement model was built. The measurement model estimates if the observed variables (measured items) represent a reliable reflection of the latent variables.

** Insert Table 4 here **

Measurement Model

The fit of the initial measurement model with the data was average: Chi²/df= 10.050, p < .001, which is high compared to the suggested maximum level of 5.0. [46] The Comparative fit index (CFI) and Tucker-Lewis index (TLI) with a general cut-off of .90 were .889 and .871. The root mean square error of approximation (RMSEA) (=.065) was higher compared to the recommended cut-off value of .06, but can still be considered as an adequate model fit (below .08).[47] A value around .95 for the goodness of fit index (GFI) indicates a proper model. However, the current measurement model did not reach that level (.906).[48]

The factor loadings of the measurement items for each of the latent variables were satisfying (cf. EFA). 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 be dropped. The model fit of the adjusted model increased to a satisfactory level: Chi²/df= 4.617, *p* < .001, comparative fit index (CFI) = .959, Tucker-Lewis index (TLI) = .950, root mean square error of approximation (RMSEA) = .041, goodness of fit index (GFI) = .962. Table 4 provides an overview of the Pearson correlations between the different constructs.

** Insert Table 5 here **

Structural Model

The model fit of the structural model was satisfying: Chi²/df= 4641, p <.001, CFI = .96, TLI=.95, RMSEA= .041, GFI=.963.

Both anxiety (β=-.382, p<.001) and loneliness (β=-.616, p<.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 (β=.224, p<.001) and social coping (β=.156, p<.001), but was not significantly associated with humorous coping (β=.071, p=.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 (β=.135, p=.004), but not related to active coping (β=-.058, p=.233), nor to humorous coping (β=.002, p=.958). These results show that lonely people are using social media more often to keep in touch with others.

Active coping (β=.074, p=.008) and humorous coping (β=.057, p=.008) were significantly positively related to happiness, while social coping was not (β=-.034, p=.205). However, neither loneliness nor anxiety were associated to humorous coping.

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An analysis of the indirect effects showed that the effect of anxiety on happiness is positively mediated by social media (active) coping (β=.015; p= .016, [.003; .031]), positive effect of social media use for adolescents who are experiencing more anxious feelings. These results confirm hypothesis 1.

Next, the indirect effect of loneliness on happiness through social media (social relations and humorous) coping is not significant (β=-.009; p=.117 [-.024; .003]).

Hypotheses 2a and 2b are not confirmed. Social relations coping did not mediate the effect of loneliness on feelings of 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 were associated with the use of humor to cope with the crisis. Hypotheses 3a and 3b 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 among adolescents using social media coping strategies during Covid-19 lockdown confirm this premise to some extent. Most of the adolescents indicated an 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. Adolescents feeling anxious, used this strategy more often, which enabled them to find advice on which measures they should follow, and to motivate others to follow these, how to accept the situation and reframe it in a positive way. Using social media to actively face the situation, relieved their feelings of distress and anxiety to some degree, increasing happiness feelings.

The results further show that the social functioning of social media (the most used strategy, cf. M-values, table 3) could not mediate the relation between feelings of loneliness and happiness, as expected. Although a higher feeling of loneliness among the participants predicted social media use to keep in touch with peers and family, it was not associated with feelings of happiness. Pearsons correlations (cf. table 4) even showed a significant negative correlation between using social media use to cope with the lack of social relations and feelings of 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 e.g. nonverbal aspects and physical proximity may be determining their general happiness level.

Although humorous coping appeared to be an efficient strategy to cope especially with anxiety in previous studies, it did not influence the adverse effects of loneliness and anxiety on

happiness in the current study. However, adolescents who indicated to use social media for humorous coping, experienced the silver lining effect on happiness feelings. Further research should examine in which moods, coping humor might increase feelings of happiness among adolescents. Feelings of boredom might be interesting to investigate in this perspective. [50]

Lastly, adolescents' feelings of loneliness are more strongly (and negatively) related to feelings of happiness than those of anxiety. Given that adolescents are unlikely to experience the life-threatening consequences of the disease, this is not surprising.[51]

Hence, the silver lining effect of social media coping during the Covid-19 lockdown among adolescents has been beneficial for anxious adolescents and for some type of activities, i.e. using social media to actively manage the situation, and using humor to cope with the situation. These beneficial effects of social media use on mental health contrasts 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 information on social media, of which the validity is difficult to trace, may disorient and overwhelm individuals. In addition, sharing of highly emotional Covid-19 related tweets [17] may amplify feelings of anxiety and depression across the social network, 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 (approx. one 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. In general, they are in a life phase that is mostly self-focused, [12] which combined with their optimism bias, [55,56] might explain their mild emotional reactions (cf. M-values, table 3) and the silver lining effect of social media during Covid-19 lockdown.

The harshness of the Covid-19 virus, and the fast contagious level, still leads to unseen cruel human situations, and 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 10000 deaths).[57] As in the US, India and Brazil the peak of the distribution of the virus has not yet been reached, in various West-European countries a second wave of the virus is popping up during the summer months. When tightening the measures again to (local) lockdowns, social media can be used as an instrument to actively cope with the situation to relief feelings of anxiety, and feel better. Distribution of positive, reassuring information, guidelines about self-efficacy, ways to increase general citizen engagement on social media might be helpful to make anxious adolescents feel better. Also humor on social media is beneficial to make adolescents feel better during lockdown. Social media providers (Twitter, Facebook, …) may take the lead in these initiatives and provide the requested information on their platforms. Based on interactions with their young audience, interactive campaigns (cf. post your most humorous Covid meme) may increase the involvement of the audience to connect with each other and talk about Covid, which may reduce their feelings of anxiety. Additionally, organizations educating parents and teachers on the topic of media literacy may promote the benefits of social media during a health crisis and especially during lock down, focusing on its potential of reducing feelings of anxiety and stress among their teenagers.

The current study holds the following limitations. First, a self-selection bias may be present in the sample. Although efforts were made to address all Flemish high schools (across the different school tracks, and various regions), not all schools invited their pupils, and not all adolescents participated when invited. Secondly, both anxiety and loneliness were measured using validated

general scales, which were not specifically developed for the Covid-19 situation. Future studies could use the validated Covid-19 fear scale. [15] Lastly, although the cross-sectional nature of the survey does not allow to examine causality among the included variables, mood management theory was used for the development of the conceptual model.

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