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The Light and the Dark Side of Social Media Use: Depression, Anxiety, and Eating Attitudes among Adolescents*

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In the current study, we explored the links between social networking activity, eating attitudes (EA), anxiety, and depression among adolescents. We used a cross-sectional design. Our sample consisted of 532 males and females, aged 12 to 15 (M = 13.55, SD = 0.90), from the Eastern side of Romania. We analyzed our data using three different pathways to explore these relationships on the overall sample, as well as the at-risk for eating disorders (ED) group (n = 134), and the non-ED-risk (n = 398) samples. The results suggested that depressive and anxiety symptoms partially mediated the relationship between social networking and eating attitudes in the overall group and in the not-at-risk for ED group, but not in the at-risk for ED sample. When controlling for gender, social networking use partially mediated the relationship between anxiety and depressive symptoms and eating attitudes in the overall group and the not-at-risk for ED group, and a total mediating effect within this relationship in the at-risk ED sample was also found. In adolescents with symptoms of potential ED, social networking use seemed to have a protective role compared to the not-at-risk sample. The present study suggested that social networking use might increase the chances of developing unhealthy eating attitudes in adolescents who are not-at risk to develop an eating disorder, but, at the same time, it might play a protective role (instead of a harmful one) for adolescents who already developed such symptoms. Results are discussed concerning their clinical and practical implication for adolescents' physical and mental health, especially during the COVID–19 pandemic, and the potential protective role of social media use for adolescents with ED symptoms.

Keywords: adolescents, eating attitudes, eating disorders, social networking, depression, anxiety

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Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors upon request.

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Highlights:

- One in four adolescents reported symptoms of a potential eating disorder (ED).
- Compared to males, female adolescents had higher levels of unhealthy eating attitudes (EA), depression (DEP), and anxiety (ANX) symptoms.
- DEP and ANX symptoms partially mediated the link between social networking use (SN) and EA overall.
- EA significantly predicted SN and ANX symptoms.
- EA significantly predicted DEP symptoms in females only.
- In the at-risk sample, SN might have a protective role.

Developmental theories describe adolescence as a critical phase due to the biological, psychological, social, and cultural changes that mark the transition to adulthood (e.g., Buchmann & Kriesi, 2011). At the same time, adolescence seems to be a challenging period associated with elevated risks of developing an eating disorder (ED), such as anorexia nervosa, bulimia nervosa, or binge eating (Potterton et al., 2020; Torstveit et al., 2015). For example, according to literature, the mean age of onset for anorexia nervosa seems to be between 15 and 19 (Hudson et al., 2007), while the most recent data showed that it is between 12 and 16 (Silén et al., 2020). Binge eating seems to have a peak around 15 and 16 years of age, bulimia nervosa around the age of 13–14, and other unspecified eating and feeding disorders seem to develop around the same time (Silén et al., 2020). Several factors contribute to the early onset of unhealthy eating behavior, such as negative affect, dieting, overeating, body shame, low self-esteem, positive thinness expectations, or impaired interpersonal functioning among many others (e.g., Cella et al., 2017; Stice et al., 2017).

Adolescents' physical and mental health is one of the primary concerns of our society, given the increasing number of online and offline factors that might affect their well-being (Althoff et al., 2017). Though researchers and society, in general, continuously develop new and modern ways to increase the quality of our children's lives, official data indicate that a growing number of teenagers worldwide experience anxiety and depressive symptoms (Center for Disease Control and Prevention – CDC, 2020; Geiger & Dabis, 2019; Mojtabai et al., 2016), especially among females (Twenge et al., 2017). One of the reasons for these growing numbers is considered to be increased media screen time (Twenge et al., 2017; Wang et al., 2021), in addition to other significant factors, such as social and economic backgrounds and adverse childhood experiences (Choi et al., 2002), school bullying (Fekkes et al., 2019; Urbanski, 2019), or bodyweight contingent self-worth (Ching et al., 2021).

A growing number of studies have already suggested a significant link between social network use, depression, and anxiety symptoms. For example, studies suggested that increased rates in adolescent depression (and the general decrease in adolescents' well-being, with increasing suicidal rates) may be

linked to a technological environment, like social media (or social networking) platforms (Twenge, 2019). In addition, a systematic review conducted by Keles et al. (2019) suggested that the time spent on social media significantly correlated with increased levels of depression, anxiety, and psychological distress. Several other studies also linked social media use to overt internalizing symptoms (i.e., anxiety and depression; Ivie et al., 2020; Ohannessian et al., 2021; Vannucci et al., 2017).

The "pernicious mental illnesses that are characterized by significant preoccupations with food and weight/shape, and abnormal eating patterns" (Nakai et al., 2020, p. 40) i.e., ED represent one of the most common mental health issues along with anxiety and depression (Johnston et al., 2007), and can have devastating effects on teens. According to Mento et al. (2021), ED affect about 0.3% of female adolescents, with a prevalence among teenage girls between 1.2% and 4.2%. When it comes to boys, evidence suggests that males are also vulnerable to eating disorders (Makino et al., 2004), and the prevalence is also increasing among teenage boys (Nagata et al., 2020). Many scholars explored the adverse psychological consequences, predictors, and risk factors of adolescents' eating disorders. For example, Hughes et al. (2013) compared children and adolescents' demographic and clinical characteristics with an eating disorder and comorbid depression or anxiety. Their results suggested that the children and adolescents with comorbid depression had more severe presentations than those with an ED but no comorbid disorder (or with comorbid anxiety alone). Other studies reported similar findings, e.g., Brand-Gothelf et al. (2014) and Melton et al. (2016). Teasing and bullying victimization also significantly impact disordered eating and body image disturbance among adolescents (Day et al., 2021; Lie et al., 2019).

Other predictors of ED risk in adolescents seem to be related to higher levels of general psychological maladjustments (Batista et al., 2018), children's perceptions of parental concerns about their body size (Gardner et al., 2000), low self-esteem, depression, and anxiety (Gardner et al., 2000; Russo et al., 2012), body dissatisfaction, the drive for thinness (Russo et al., 2012), perfectionism (Cella et al., 2017), younger ages (Sander et al., 2021), female gender (Touchette et al., 2011), body-related social comparison (Hamel et al., 2012), and, eventually social networking (Holland & Tiggemann, 2016; Santarossa & Woodruff, 2017). In a recent study, Lonergan et al. (2020) suggested that appearance-related social media behaviors might be significant predictors of eating disorder risks among adolescents. These results are in line with previous findings that suggested that, generally, adolescents' increased rates of social networking, especially on photo-based platforms, might be associated with higher levels of body image concerns and eating disorder symptoms (Lonergan et al., 2020; McLean et al., 2015; de Vries et al. 2014).

Compared to traditional media platforms, social networking encourages interactivity, active participation, social engagement, and communication between its users (Pempek et al., 2009). Popular social networks such as Facebook, Twitter, Instagram, or the more recent Tik Tok proliferated as some of the most preferred communication means in adolescents. Social media may

increase adolescents' communication abilities, their technical skills and generally facilitates social interaction. However, social media's dark side includes exposure to Facebook depression (Tartari, 2015), cyberbullying perpetration, anxiety, or low self-esteem (Kırcaburun et al., 2019). More importantly, social networks generally seem to cultivate and promote unrealistic beauty ideals that negatively impact adolescents' body image and eating behaviors in both males and females (e.g., Muris et al., 2005; Wilksch et al., 2020).

In their systematic review, Mento et al. (2021) highlighted the high psychological impact of pro-anorexia and pro-eating disorder websites on adolescent females and the need for immediate interventions to correct the severe forms of associated psychopathology generated by these social network-generated body image ideals. Social media generally promotes thin bodies as the ideal body shape (Aparicio-Martinez et al., 2019) for female adolescents. In male adolescents, body image concerns might generally involve muscularity (Nagata et al., 2020). Thus, muscle-enhancing goals and muscularity-oriented disordered eating might become common means to achieve the ideal body shapes promoted through social networking (Lavender et al., 2017; Murray et al., 2016).

Since eating disorder risks are elevated during adolescence, and teenagers are the most prolific users of social networking sites (Smith & Anderson, 2018), we examined the relationships between social networking activity, eating attitudes, levels of anxiety, and depression symptoms among adolescents. The generous number of findings from previous related studies confirmed the significant links between anxiety and depressive symptoms, ED risks, and social networking or Internet use.

The pattern of previous findings indicated, for example, that anxiety and depressive symptoms are both predictors (Brand-Gothelf et al., 2014; Gardner et al., 2000; Hughes et al., 2013; Melton et al., 2016; Russo et al., 2012), as well as consequences of ED (e.g., Keski-Rahkonen & Mustelin, 2016). Similarly, the technological environment, through social networking use (and social media, in general) seems to be a predictor of ED, higher levels of body image concerns, and bodyweight contingent self-worth (Ching et al., 2021; Lonergan et al., 2020; McLean et al., 2015; de Vries et al., 2014), as well as depressive and anxiety symptoms (Ivie et al., 2020; Kales et al., 2019; Ohannessian et al., 2021; Tartari, 2015; Twenge, 2019). At the same time, the relationship between symptoms of depression, anxiety, and social networking use revealed many mixed findings in previous findings. The systematic review conducted by Seabrook and her collaborators (2016), for example, suggested that research has not explicitly established whether the social networking use effect is beneficial or detrimental because it generally depends on the quality of the social factors within the online social networking environment. Finally, while many scholars suggested that social media use might enhance and maintain ED (e.g., Mabe et al., 2014) risk, some studies also suggested the importance of social media in the recovery process from ED. For example, Saunders et al. (2020) suggested that posting selfies on social media sites might be helpful through their positive effects in clinical settings and populations, highlighting the empowering effects of social networking use concerning ED recovery.

Given these various and complex patterns of relationships between the main variables, we aimed to explore their connections in a comprehensive research model that would test multiple relationship models in an understudied population, i.e., Romanian adolescents aged 12 to 15, and in a particular problematic context, i.e., during the Covid–19 pandemic. Our comprehensive research approach also included assessing the sample of participants with at-risk eating disorders (ED) symptoms and exploring (and comparing) these relationships with the not-at-risk for eating disorders sample, as well as the overall sample. Our primary assumptions were: a) Depressive and anxiety symptoms would be significantly correlated with ED symptoms and social networking use; b) Participants at risk of ED would report higher scores of depressive and anxiety symptoms, as well as higher levels of social networking use, and c) Depressive and anxiety symptoms would mediate the relationship between social networking use and ED symptoms.

As previously stated, we aimed for a more comprehensive approach, and, therefore, additional sets of hypotheses would emerge following the initial results related to the associations and mediation relationship between the primary variables. Furthermore, the extended analyses we aimed for are also related to the complex psychological and social mechanisms shaped by the COVID–19 pandemic. Studies already showed, for example, that adolescents' anxiety and depressive symptoms increased since the outbreak of the COVID-19, especially during home-quarantine (e.g., Kılınçel et al., 2020; Magson et al., 2021; Marques de Miranda et al., 2020), as well as their social media use (Paschke et al., 2021). However, researchers have also pointed out the "bright" side of social media use during the pandemic, i.e., the way social networking helped adolescents cope with feelings of loneliness and anxiety during the COVID–19 lockdown (Cauberghe et al., 2021) and engage in public health activism (Sobowale et al., 2020). More importantly, as Spigel and her collaborators suggested (2021), the perceived disruptions in access to care worsened eating disorder symptomatology in youth during the pandemic. Thus, our exploratory results would indicate a pattern of relationships during the pandemic that might serve as an important theoretical and practical addition to the current literature that generally explores changes in ED symptoms and the associated factors during such stressful times as the current one.

Methods

Study Design and Participants

Our convenient sample consisted of 532 adolescents aged 12 to 15 years (M = 13.55, SD = 0.90), balanced in gender (51.5% females and 48.5% males). They were all students in public schools from the same town, (i.e., Iași), from the eastern part of Romania. The participation was voluntary, and all their answers remained anonymous. Before beginning the study, parents were sent consent forms, and only adolescents whose parents agreed to participate (87% acceptance rate) were included. Participants were informed that they can retire from the study at any time, without any further consequences. The time needed to

answer all questions was around 25 minutes. All instruments were filled during the first weeks of the first school semester in 2020, in the short period when schools were open in Romania (due to the Covid–19 pandemic, all school were closed again in November 2020). Our cross-sectional survey was designed following the Declaration of Helsinki and the national laws from Romania regarding ethical conduct in scientific research, following the ethical clearance procedures from the Ethics Committee of the faculty where the authors are affiliated.

Measures

We used the Eating Attitudes Test (EAT; Garner et al., 1982) to determine participants' attitudes towards eating and potential eating disorders. Our decision was based on a) the consistent evidence suggesting the scale's validity and reliability (Wade, 2006), the EAT–26 being probably the most widely researched self-report measure of ED symptoms and concerns; and b) due to the fact that our aim was not to make a diagnosis of ED, but to assess ED risk. The instrument consists of 26 self-reported items such as: "I am terrified about being overweight" and "I find myself preoccupied with food", and 5 items that measure eating-related behaviors, i.e., "Have you ever made yourself sick (vomited) to control your weight or shape?" Participants' answers were rated on a scale ranging from 0 = *never* to 3 = *always*. According to Garner et al. (1982), a total score higher than 20 might indicate a potential ED that requires further investigation by a qualified medical professional. Therefore, we considered participants with scores higher than 20 as the participants with at-risk ED symptoms. Cronbach's α in the current sample was .87.

We used the Revised Child Anxiety and Depression Scale (RCADS–25, Child version; Muris et al., 2002) to evaluate symptoms of anxiety and depression. This self-administered scale consists of 25 items on a 4-point Likert scale ranging from 0 = *never* to 3 = *always*. Higher scores indicate higher levels of symptoms of anxiety and depression. Fifteen items measure anxiety (e.g., "I worry when I think I have done poorly at something"; "I worry that something awful will happen to someone in my family"), and ten items measure depression (e.g., "I feel sad or empty"; "I have no energy for things"). The sum of all 25 items assesses the general psychological distress. In the current research, we used the sum of each subscale (anxiety and depression) to assess the severity of general anxiety and depressive symptoms. Cronbach's α in the current sample was .87 for the anxiety subscale and .88 for and the depression.

We further used the Social Networking Activity Intensity Scale (SNAIS), developed by Li et al. (2016). The self-administered scale consists of 14 items that measure overall Social Networking Activity Intensity, and two dimensions: Social Function Use Intensity (SFUI; example items: "How often have you sent messages to friends on message board in the last month?"; "How often have you commented on friends' status, logs, and photos in the last month?") and Entertainment Function Use Intensity (EFUI; example items: "How often have you bought/gave virtual goods (e.g., birthday gifts) in the last month?" and "How often have you played games/applications in the last month?"). Participants answered on a Likert scale ranging from 0 = *never* to 5 = *always*. In the current study, we used the overall score of participants' social networking. Cronbach's α in the current sample was .89 for the overall scale. For the Social Function Use Intensity (SFUI), which comprised 10 items, Cronbach's α was .88, and for the Entertainment Function Use Intensity (EFUI), which comprised 4 items, Cronbach's α was .6 (average inter-item correlation mean = .5).

Statistical Analyses

We used the 24.0 version of the IBM SPSS program and the Hayes (2013) SPSS macro program PROCESS to analyze our data. We first computed descriptive statistics for all the main variables and the covariates in the overall sample. Then, we conducted bivariate correlation analyses to explore the relationships between the main variables (see Table 1).

Table 1
Means, standard deviations, and correlations between the main variables in the overall sample (N = 532)

	M	*SD*	*Min*	*Max*	1	2	3	4	5	6
1. Social networking	33.46	14.19	6	66	1					
2. Eating attitudes	13.42	11.12	0	53	.25**	1				
3. Depression	23.39	11.45	3	46	.18**	.40**	1			
4. Anxiety	25.79	14.17	0	58	.18**	.48**	.84**	1		
5. Age	13.55	.90	12	15	-.05	-.00	.00	.00	1	
6. Gender	-	-	-	-	.07	.34**	.33**	.38**	.03	1

Note. ** $p < .001$.

In the overall sample, statistically significant correlations between our dependent variable, i.e., adolescents' eating attitudes and depression ($r = .40$, $p < .001$), anxiety ($r = .489$, $p < .001$), and social networking ($r = .26$, $p < .001$) were found. Statistically significant gender differences concerning mean values of eating attitudes, anxiety, and depression were also obtained. More specifically, females reported significantly higher overall scores at the EAT scores, $t(530) = -8.51$, $p < .001$, 95% CI [-9.48, -5.92], Cohen's $d = 0.77$ and Hedges' $g = 0.73$, as well as RCADS depression scores, $t(530) = -8.25$, $p < .001$, 95% CI [-9.50, -5.81], Cohen's $d = 0.71$ and Hedges' $g = 0.70$, and, finally, at the RCADS anxiety scores, $t(530) = -9.82$, $p < .001$, 95% CI [-13.23, -8.77], Cohen's d and Hedges' $g = 0.84$, compared to males.

In our sample, 134 girls and boys scored higher than 20 at this measure, and, therefore, we considered them the at-risk for ED group (according to Garner et.al, 1982). We repeated our analyses on this specific at-risk for ED sample, which was formed by 113 girls (84.3%) and 21 boys (15.7%), aged 12 ($n = 19$, 14.2%), 13 ($n = 42$, 31.3%), 14 ($n = 55$, 41.0%), and 15 ($n = 18$, 13.4%). Table 2 presents the means, standard deviations, and correlations between the main variables.

Table 2
Means, standard deviations, and correlations between the main variables, at-risk for ED sample (n = 134)

	M	*SD*	1	2	3	4	5	6
1. Social networking	39.97	17.59	-					
2. Eating attitudes	28.89	8.90	-.250**	-				
3. Depression	29.20	11.25	-.282**	.314**	-			
4. Anxiety	35.31	12.55	-.354**	.391**	.824**	-		
5. Age	13.53	.89	-.075	.026	.026	.020	-	
6. Gender			-.238**	.219*	.639**	.600**	-.016	-

Note. ** $p < .001$.

In the at-risk for ED sample, participants' eating attitudes were significantly correlated with social networking, as in the overall sample. However, in the at-risk sample, this association was negative. Depression and anxiety were also significantly correlated with participants' eating attitudes, and both correlations were positive, as in the overall sample. Similar to the overall sample, our data also suggested significant gender differences, the girls in our sample reporting significantly higher overall scores, $t(132) = -2.58$, $p = .01$, 95% CI [-9.45, -1.25] at the EAT ($M = 29.73$), compared to boys ($M = 24.38$), Cohen's $d = 0.79$ and Hedges' $g = 0.61$. We also found significant gender differences concerning depression ($t(132) = -18.43$, $p < .001$, girls ($M = 32.29$) scoring higher than boys ($M = 12.57$), 95% CI [-23.80, -15.63], and anxiety ($t(132) = -14.42$, $p < .001$, girls ($M = 38.54$) scoring higher than boys ($M = 17.90$), 95% CI [-25.38, -15.90], Cohen's $d = 2.85$ and Hedges' $g = 2.27$.

We then ran similar analyses on the not-at-risk for ED sample, i.e., participants who scored lower than 20 at the EAT. The not-at-risk sample consisted of 398 adolescents aged 12 to 15 (M = 13.55, SD = .90), i.e., 237 girls (59.5%) and 161 boys (40.5%). Table 3 presents the means, standard deviations, and correlations between the main variables.

Table 3
Means, standard deviations, and correlations between the main variables, not-at-risk sample (n = 398)

	M	SD	1	2	3	4	5	6
1. Social networking	31.28	12.11	-					
2. Eating attitudes	8.21	5.55	.324**	-				
3. Depression	21.43	22.58	.324**	.293**	-			
4. Anxiety	22.58	13.22	.300**	.297**	.826**	-		
5. Age	13.55	.90	-.051	.003	.007	.005	-	
6. Gender	-	-	.044	.018	.154**	.208**	.060	-

*Note.*** $p < .001$.

In the not-at-risk for ED sample, results suggested similar associations as in the overall sample. More specifically, participants' eating attitudes were significantly and positively correlated with social networking use, depression, and anxiety. Concerning gender differences, in the not-at-risk sample, results suggested significant differences between girls and boys regarding depression ($t(396) = -2.88$, $p = .002$), girls scoring higher (M = 23.47) than boys (M = 20.05), 95% CI [-9.50, -5.81], Cohen's d=0.71, Hedges' g = 0.70, and anxiety ($t(396) = -3.90$, $p < .001$, girls scoring higher (M = 25.91) than boys (M = 20.32), 95% CI [-13.23, -8.77], Cohen's d = 0.84, Hedges' g = 0.84.

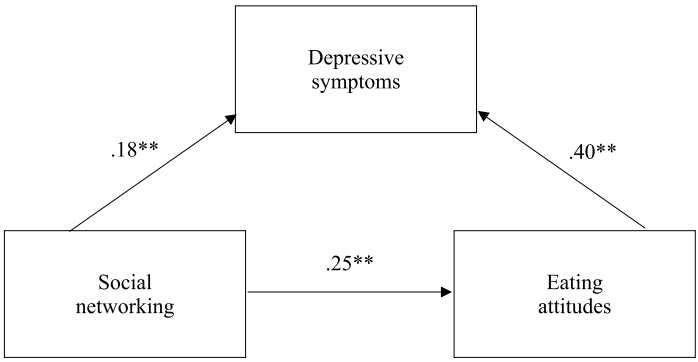
Thus, the primary difference in the associations between the main variables lies in the opposed valence of the relationship between social network use and eating attitudes. More specifically, while in the at-risk for ED sample of participants, this relationship is negative (higher symptoms of eating disorders are associated with lower social network use), in the not-at-risk foe ED sample, this link is reversed: higher social networking seemed to be linked to higher symptoms of eating disorders.

We further used SPSS macro program PROCESS – Model 4 (95% confidence interval (CI); 5000 bootstrapped samples) to explore the mediating effects of depression and anxiety on the relationship between social networking activity and eating attitudes among the overall sample, as well as on the at-risk sample of adolescents with ED symptoms and the not-at-risk of ED sample.

Mediation Analyses Results for the Overall Sample (N = 532)

The Mediating Role of Depressive Symptoms on the Relationship Between Social Networking and Eating Attitudes, Controlling for Gender (*N* = 532). The total effect of social networking use (i.e., without taking into account the mediator) was significant; b = .18, SE = .03, $t(529) = 5.83$, $p < .01$, 95% CI [.12, .24], $R^2 = .17$. Furthermore, the effect of social networking use on depressive symptoms was also significant; b = .13, SE = .03, $t(529) = 4.05$, p = .01, 95% CI [.06, .19], $R^2 = .13$. In the model that included both social networking use and depressive symptoms as predictors of eating attitudes, depressive symptoms emerged as a significant predictor of eating attitudes, b = .28, SE = .03, $t(529) = 7.11$, $p < .01$, 95% CI [.20, 35]. The direct effect of social networking use on eating attitudes was significant in this model, b = .14, SE = .03, 95% CI [.08, .20], and so was the indirect effect, b = .03, SE = .01, 95% CI [.02, .05]. Therefore, depressive symptoms partially mediated the relationship between social networking and eating attitudes, when controlling for gender in the overall sample (see Figure 1).

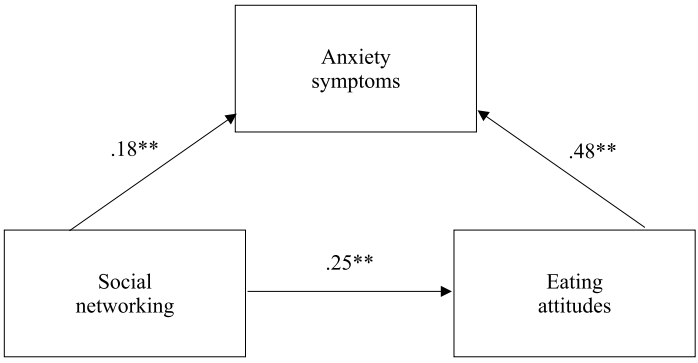
Figure 1
The mediating role of depressive symptoms on the relationship between social networking and eating attitudes, overall sample (N = 532)



The values represent **standardized coefficients**; ** $p < .001$

The mediating Role of Anxiety Symptoms on the Relationship between Social Networking and Eating Attitudes, Controlling for Gender (*N* = 532). The total effect of social networking use (i.e., without taking into account the mediator) was statistically significant, $b = .18$, $SE = .03$, $t(529) = 5.83$, $p < .01$, 95%CI [.12, .24], $R^2 = .17$. Furthermore, the effect of social networking use on anxiety symptoms was also statistically significant: $b = .15$, $SE = .03$, $t(529) = 3.96$, $p < .01$, 95% CI [.07, .23], $R^2 = .17$. In the model that included both social networking use and anxiety symptoms as predictors of eating attitudes, anxiety symptoms emerged as a statistically significant predictor of eating attitudes, $b = .30$, $SE = .03$, $t(529) = 9.57$, $p < .01$, 95% CI [.24, .36]. The direct effect of social networking use on eating attitudes was significant in this model, $b = .13$, $SE = .02$, 95% CI [.07, .19], and so was the indirect effect, $b = .04$, $SE = .01$, 95% CI [.02, .06]. Therefore, anxiety symptoms partially mediated the relationship between social networking and eating attitudes, when controlling for gender in the overall sample (see Figure 2).

Figure 2
The mediating role of anxiety symptoms on the relationship between social networking and eating attitudes, overall sample (N = 532)



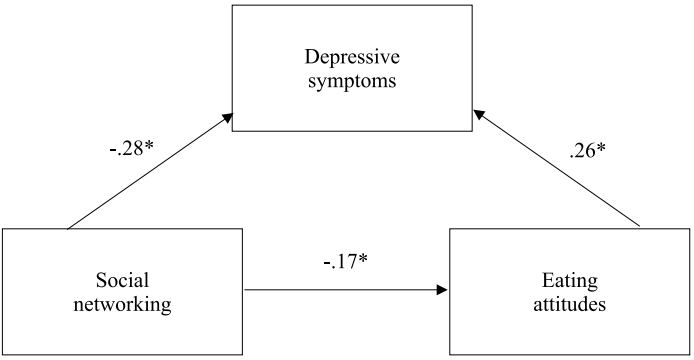
The values represent **standardized coefficients**; ** $p < .001$.

Mediation analyses results for the at-risk for ED sample

The Mediating Role of Depressive Symptoms on the Relationship Between Social Networking and Eating Attitudes, Controlling for Gender (*n* = 134). The total effect of social networking use (i.e., without taking into account the mediator) was statistically significant, b = -.10, SE = .04, $t(131) = 1.97$, p = .05, 95% CI [-.19, .01], R^2 = .08. Furthermore, the effect of social networking use on depression was also statistically significant: b = –.08, SE = .04, $t(131) = -2.01$, p = .04, 95% CI [-.17, .001], R^2 = .42. In the model that included both social networking use and depressive symptoms as predictors of eating attitudes, depressive symptoms emerged as a statistically significant predictor of eating attitudes, b = .20, SE = .08, $t(130) = 2.36$, p = .01, 95% CI [.03, .37]. The direct effect of social networking use on eating attitudes was not statistically significant in this model, b = –.08, SE = .04, 95% CI [-.17, 002], and neither were the indirect effect, b = -.01, 95% CI [-.04, 0001]. Therefore, our assumed mediation model was not confirmed in the at-risk for ED sample (see Figure 3).

Figure 3

The mediating effect of depressive symptoms on the relationship between social networking use and eating attitude, at-risk for ED sample, n = 134

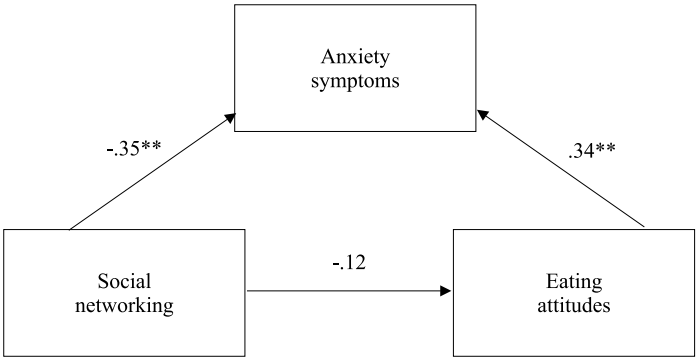


The values represent **standardized coefficients**; * $p < .05$

The Mediating Role of Anxiety Symptoms on the Relationship between Social Networking and Eating Attitudes, Controlling for Gender (*n* = 134). The total effect of social networking use (i.e., without taking into account the mediator) was statistically significant, b = –.10, SE = .04, $t(131) = 2.43$, p = .01, 95% CI [-.19, .01], R^2 = .08. Furthermore, the effect of social networking use on anxiety symptoms was also statistically significant: b = -.15, SE = .04, $t(131) = -3.22$, p = .001, 95% CI [-.25, .06], R^2 = .40. In the model that included both social networking use and anxiety symptoms as predictors of eating attitudes, anxiety emerged as a statistically significant predictor of eating attitudes, b = .25, SE = .07, $t(130) = 3.49$, p = .0007, 95% CI [.11, .40]. The direct effect of social networking use on eating attitudes was not statistically significant in this model, b = -.06, SE = .04, 95% CI [-.15, 02], and neither was the indirect effect, b = -.04, SE = .01, 95% CI [-.08, .008]. Therefore, our assumed mediation model was not confirmed in the at-risk for ED sample (see Figure 4).

Figure 4

The mediating effect of anxiety symptoms on the relationship between social networking use and eating attitude, at-risk for ED sample, n = 134



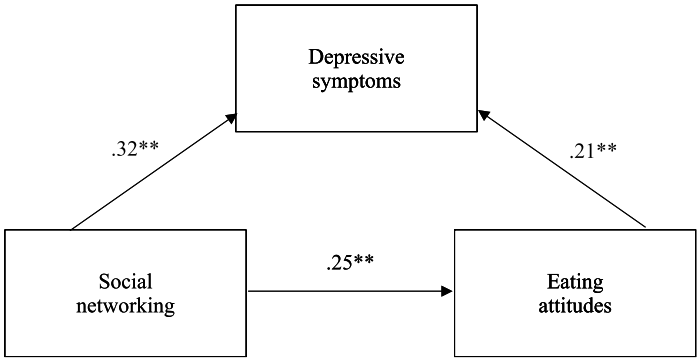
The values represent **standardized coefficients**; ** $p < .001$.

Mediation Analyses Results for the not-at-risk for ED Sample

The Mediating Role of Depressive Symptoms on the Relationship between Social Networking and Eating Attitudes, controlling for gender (*n* = 398). The total effect of social networking use (i.e., without taking into account the mediator) was statistically significant, $b = .14$, $SE = .02$, $t(395) = 6.80$, $p < .01$, 95% CI [.10, .19], $R^2 = .10$. Furthermore, the effect of social networking use on depressive symptoms was also statistically significant: $b = .28$, $SE = .04$, $t(395) = 6.74$, $p < .01$, 95% CI [.20, .36], $R^2 = .12$. In the model that included both social networking use and depressive symptoms as predictors of eating attitudes, depressive symptoms emerged as a statistically significant predictor of eating attitudes, $b = .10$, $SE = .02$, $t(394) = 4.29$, $p < .01$ 95% CI [.05, .15]. The direct effect of social networking on eating attitudes was statistically significant, $b = .11$, $SE = .02$, 95% CI [.07, .16], as well as the indirect effect, $b = .03$, $SE = .01$, 95% CI [.01, .04]. Therefore, our results suggested that depressive symptoms partially mediated the relationship between social networking and eating attitudes in the not-at-risk sample (see Figure 5).

Figure 5

The mediating effect of depressive symptoms on the relationship between social networking use and eating attitude, not-at-risk for ED sample, n = 398

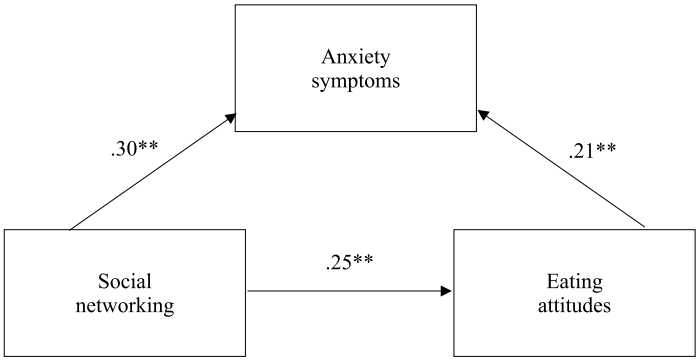


The values represent **standardized coefficients**; * $p < .05$; ** $p < .001$.

The Mediating Role of Anxiety Symptoms on the Relationship between Social Networking and Eating Attitudes, controlling for gender (*n* = 398). The total effect of social networking use (i.e., without taking into account the mediator) was statistically significant, $b = .14$, $SE = .02$, $t(395) = 6.80$, $p < .01$, 95% CI [.10, .19], $R^2 = .10$. Furthermore, the effect of social networking use on anxiety symptoms was also statistically significant: $b = .31$, $SE = .05$, $t(395) = 6.20$, $p < .01$, 95% CI [.21, .41], $R^2 = .12$. In the model that included both social networking use and anxiety symptoms as predictors of eating attitudes, anxiety symptoms emerged as a statistically significant predictor of eating attitudes, $b = .09$, $SE = .02$, $t(395) = 4.58$, $p < .01$, 95% CI [.05, .13]. The direct effect of social networking use on eating attitudes was statistically significant, $b = .11$, $SE = .02$, 95% CI [.07, .16], as well as the indirect effect, $b = .03$, $SE = .07$, 95% CI [.01, .04]. Therefore, our results suggested that anxiety symptoms partially mediated the relationship between social networking and eating attitudes in the not-at-risk sample (see Figure 6).

Figure 6

The mediating effect of anxiety symptoms on the relationship between social networking use and eating attitude, not-at-risk for ED sample, n = 398



The values represent **standardized coefficients**; * $p < .05$; ** $p < .001$.

Summary of the Mediation Models

Our mediation analyses suggested that, when controlling for gender, depressive and anxiety symptoms partially mediated the relationship between social networking and eating attitudes in the overall group and in the not-at-risk for ED group, but not in the at-risk for ED sample of participants. Given the previous literature in this area of research and the general clinical related practice, we were also interested in finding out whether these results would also appear when the mediating roles of anxiety and depressive symptoms are reported separately, depending on participants' gender.

a.1. The Mediating Role of Depressive Symptoms on the Relationship between Social Networking and Eating Attitudes – the male sample of participants (*n* = 258). The total effect of social networking use (i.e., without taking into account the mediator) was statistically significant, $b = .23$, $SE = .02$, $t(256) = 8.90$, $p < .01$, 95% CI [.18, .28], $R^2 = .23$. Furthermore, the effect of social networking use on depressive symptoms was also statistically significant: $b = .22$, $SE = .03$, $t(256) = 6.41$, $p < .01$, 95% CI [.15, .29], $R^2 = .13$. In the model that included both social networking use and depressive symptoms as predictors of eating attitudes, depressive symptoms did not emerge as a statistically significant predictor of eating attitudes, $b = -.09$, $SE = .04$, $t(255) = -2.07$, $p = .03$, 95% CI [-.18, .004]. The direct effect of social networking use on eating attitudes was statistically significant in this model, *b*

= .25, *SE* = .02, 95% CI [.20, .31], but the indirect effect was not, *b* = .-02, *SE* = .01, 95% CI [-.04, .001]. Therefore, depressive symptoms did not mediate the relationship between social networking and eating attitudes, in the male participants from our sample.

a.2. The Mediating Role of Depressive Symptoms on the Relationship between Social Networking and Eating Attitudes – the female sample of participants (*n* = 258). The total effect of social networking use (i.e., without taking into account the mediator) was statistically significant, *b* = .13, *SE* = .05, *t*(272) = 2.35, *p* = .01, 95% CI [.02, .23], R^2 = .02. The effect of social networking use on depressive symptoms was not statistically significant: *b* = .04, *SE* = .05, *t*(272) = 0.81, *p* = .41, 95% CI [-.06, .15], R^2 = .002. In the model that included both social networking use and depressive symptoms as predictors of eating attitudes, depressive symptoms emerged as a statistically significant predictor of eating attitudes, *b* = .41, *SE* = .05, *t*(272) = 7.40, *p* < .001, 95% CI [.30, .53]. The direct effect of social networking use on eating attitudes was statistically significant in this model, *b* = .11, *SE* = .05, 95% CI [.01, .21], but the indirect effect was not, *b* = .012, *SE* = .01, 95% CI [-.02, .05]. Therefore, depressive symptoms did not mediate the relationship between social networking and eating attitudes, in the female participants from our sample.

b.1. The Mediating Role of Anxiety Symptoms on the Relationship between Social Networking and Eating Attitudes – the Male Sample of Participants (*n* = 258). The total effect of social networking use (i.e., without taking into account the mediator) was statistically significant, *b* = .23, *SE* = .02, *t*(256) = 8.90, *p* < .01, 95% CI [.18, .28], R^2 = .23. Furthermore, the effect of social networking use on anxiety symptoms was also statistically significant: *b* = .24, *SE* = .04, *t*(256) = 6.04, *p* < .01, 95% CI [.16, .32], R^2 = .23. In the model that included both social networking use and anxiety symptoms as predictors of eating attitudes, anxiety symptoms did not emerge as a statistically significant predictor of eating attitudes, *b* = -.03, *SE* = .04, *t*(255) = -.77, *p* = .44, 95% CI [-.11, .04]. The direct effect of social networking use on eating attitudes was statistically significant in this model, *b* = .24, *SE* = .02, 95% CI [.18, .29], but the indirect effect was not, *b* = -.007, *SE* = .01, 95% CI [-.02, .009]. Therefore, anxiety symptoms did not mediate the relationship between social networking and eating attitudes, in the male participants from our sample.

b.2. The Mediating role of Anxiety Symptoms on the Relationship between Social Networking and Eating Attitudes – the Female Sample of participants (*n* = 274). The total effect of social networking use (i.e., without taking into account the mediator) was statistically significant, *b* =.13, *SE* = .05, *t*(272) = 2.35, *p* = .01, 95% CI [.02, .23], R^2 = .02. Furthermore, the effect of social networking use on anxiety symptoms was also statistically significant: *b* = .06, *SE* = .06, *t*(272) = 1.04, *p* = .29, 95% CI [.-.06, .20], R^2 = .004. In the model that included both social networking use and anxiety symptoms as predictors of eating attitudes, anxiety symptoms emerged as a statistically significant predictor of eating attitudes, *b* = .41, *SE* = .04, *t*(272) = 9.44, *p* < .01, 95% CI [.32, .50]. The direct effect of social networking use on eating attitudes was statistically significant in this model, *b* = .10, *SE* = .04, 95% CI [.006, .19], but the indirect effect was not, *b* = -.02, *SE* = -.02, 95% CI [-.02, .07]. Therefore, anxiety symptoms did not mediate the relationship between social networking and eating attitudes, in the female participants from our sample.

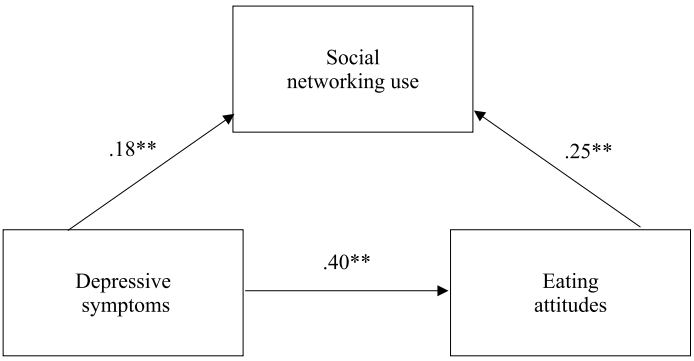
Given the cross-sectional data in our study, we also conducted reversed mediation models to better understand the directionality and patterns between our primary variables. Thus, we repeated the mediation models using social networking as the mediating variable on the relationship between depression/anxiety and eating attitudes in all three samples (overall, at-risk and not-at-risk for ED) samples. Our results suggested the following:

Reversed Mediation Analyses Results for the Overall Sample

g. The Mediating Role of Social Networking Use on the Relationship between Depressive Symptoms and Eating Attitudes, controlling for Gender (*n* = 532). The total effect of depression symptoms (i.e., without taking into account the mediator) was statistically significant, $b = .31$, $SE = .03$, $t(529) = 7.90$, $p < .01$, 95% CI [.23, .39], $R^2 = .21$. Furthermore, the effect of depressive symptoms on social networking use was also statistically significant: $b = .22$, $SE = .05$, $t(529) = 4.05$, $p < .01$, 95% CI [.11, .33], $R^2 = .03$. In the model that included both depressive symptoms and social networking use as predictors of eating attitudes, social networking use emerged as a statistically significant predictor of eating attitudes, $b = .14$, $SE = .03$, $t(529) = 4.77$, $p < .01$, 95% CI [.08, .20]. The direct effect of depressive symptoms on eating attitudes was statistically significant in this model, $b = .28$, $SE = .03$, 95% CI [.20, .35], as well as the indirect effect was, $b = .03$, $SE = .01$, 95% CI [.01, .06], suggesting a partially mediating effect of social networking use on the relationship between depressive symptoms and eating attitudes in the overall sample (see Figure 7).

Figure 7

The mediating role of social networking use on the relationship between depressive symptoms and eating attitudes, overall sample (n = 532)

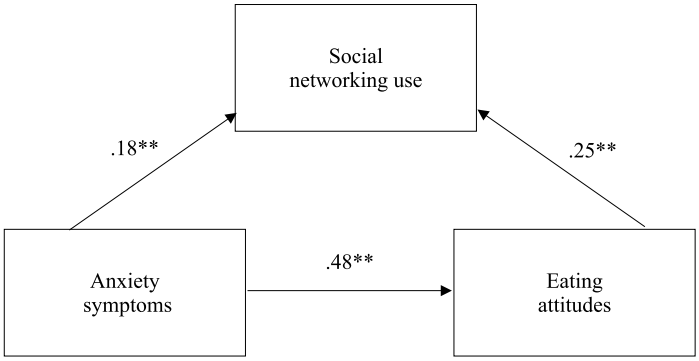


The values represent **standardized coefficients**; ** $p < .001$

h. The Mediating Role of Social Networking Use on the Relationship between Anxiety Symptoms and Eating Attitudes, controlling for Gender (*n* = 532). The total effect of anxiety symptoms (i.e., without taking into account the mediator) was statistically significant, $b = .32$, $SE = .03$, $t(529) = 10.31$, $p < .01$, 95% CI [.26, .38], $R^2 = .26$. Furthermore, the effect of anxiety symptoms on social networking use was also statistically significant: $b = .18$, $SE = .04$, $t(529) = 3.96$, $p < .01$, 95% CI [.09, .27], $R^2 = .03$. In the model that included both anxiety symptoms and social networking use as predictors of eating attitudes, social networking use emerged as a significant predictor of eating attitudes, $b = .13$, $SE = .02$, $t(529) = 4.59$, $p < .01$, 95% CI [.07, .19]. The direct effect of anxiety symptoms on eating attitudes was statistically significant in this model, $b = .30$, $SE = .03$, 95% CI [.24, .36], as well as the indirect effect was, $b = .02$, $SE = .01$, 95% CI [.006, .05], suggesting a partially mediating effect of social networking use on the relationship between anxiety symptoms and eating attitudes in the overall sample (see Figure 8).

Figure 8

The mediating role of social networking use on the relationship between anxiety symptoms and eating attitudes, overall sample (n = 532)



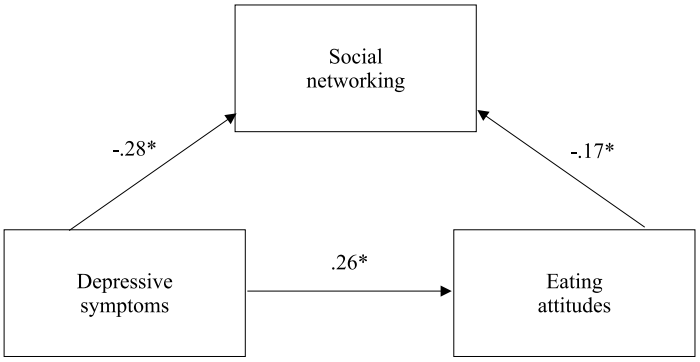
The values represent **standardized coefficients**; ** $p < .001$

Reversed Mediation Analyses Results for the At-risk for ED sample

i. The Mediating Role of Social Networking Use on the Relationship between Depressive Symptoms and Eating Attitudes, controlling for Gender (*n* = 134). The total effect of depressive symptoms (i.e., without taking into account the mediator) was statistically significant, $b = .23$, $SE = .08$, $t(131) = 2.72$, $p < .01$, 95% CI [.06, .40], $R^2 = .09$. Furthermore, the effect of depressive symptoms on social networking use was also statistically significant: $b = -.34$, $SE = .16$, $t(131) = –2.01$, $p = .04$, 95% CI[-.67, .005], $R^2 = .42$. In the model that included both depressive symptoms and social networking use as predictors of eating attitudes, social networking use emerged as a statistically significant predictor of eating attitudes, $b = -.08$, $SE = .04$, $t(130) = -2.03$, $p = .04$, 95% CI [-.17, .002]. The direct effect of depression on eating attitudes was statistically significant in this model, $b = .20$, $SE = .08$, 95% CI [.03, .37], but the indirect effect was not, $b = .03$, $SE = .02$, 95% CI [-.007, .09], suggesting a total mediation effect of social networking use on the relationship between depressive symptoms and eating attitudes in the at-risk for ED sample (see Figure 9).

Figure 9

The mediating effect of social networking on the relationship between depressive symptoms and eating attitudes, at-risk for ED sample, n = 134

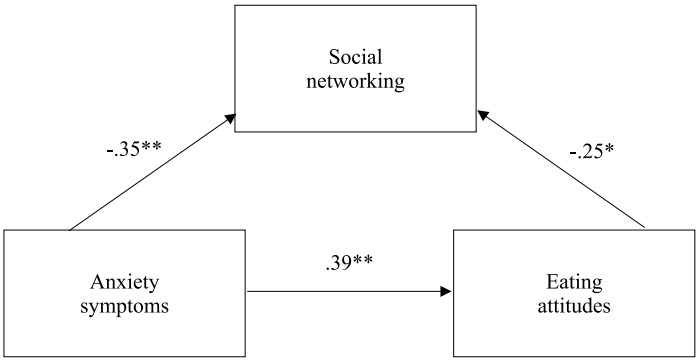


The values represent **standardized coefficients**; * $p < .05$.

j. The Mediating Role of Social Networking Use on the Relationship between Anxiety Symptoms and Eating Attitudes, controlling for Gender (*n* = 134). The total effect of anxiety symptoms (i.e., without taking into account the mediator) was statistically significant, $b = .28$, $SE = .07$, $t(131) = 4.03$, $p < .011$, 95% CI [.14, .42], $R^2 = .15$. Furthermore, the effect of anxiety on social networking use was also statistically significant: $b = -.46$, $SE = .14$, $t(131) = -3.22$, $p = .001$, 95% CI [-.74, .17], $R^2 = .12$. In the model that included both anxiety and social networking use as predictors of eating attitudes, social networking use did not emerge as a statistically significant predictor of eating attitudes, $b = -.06$, $SE = .04$, $t(130) = -1.49$, $p = .13$, 95% CI [-.15, .02]. The direct effect of anxiety symptoms on eating attitudes was statistically significant in this model, $b = .25$, $SE = .07$, 95% CI [.11, .40], as well as the total effect, $b = .28$, $SE = .07$, 95% CI [.14, .42]. However, the indirect effect was not statistically significant, $b = .02$, 95% CI [-.01, 09], suggesting a total mediation of social networking use on the relationship between anxiety symptoms and eating attitudes in the at-risk for ED sample (see Figure 10).

Figure 10

The mediating effect of social networking on the relationship between anxiety symptoms and eating attitudes, at-risk for ED sample, n = 134

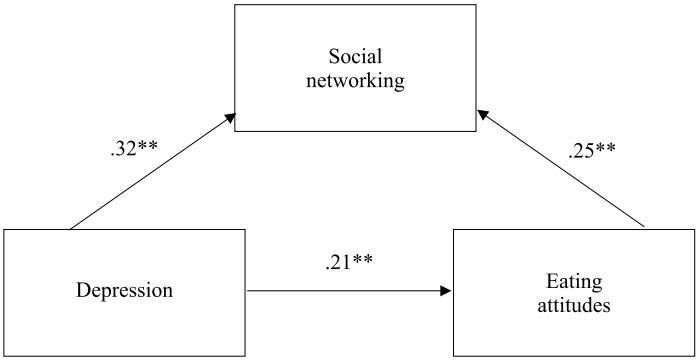


The values represent **standardized coefficients**; * $p < .05$; ** $p < .001$.

Reversed Mediation Analyses Results for the not-at-risk Sample

k. The Mediating Role of Social Networking Use on the Relationship between Depressive Symptoms and Eating Attitudes, controlling for Gender – not-at-risk sample (*n* = 398). The total effect of depression (i.e., without taking into account the mediator) was statistically significant, $b = .15$, $SE = .02$, $t(395) = 6.10$, $p < .01$, 95% CI [.10, 20], $R^2 = .08$. Furthermore, the effect of depression on social networking use was also statistically significant: $b = .36$, $SE = .05$, $t(395) = 6.74$, $p < .01$, 95% CI [.25, .46], $R^2 = .10$. In the model that included both depression and social networking use as predictors of eating attitudes, social networking use emerged as a statistically significant predictor of eating attitudes, $b = .11$, $SE = .02$, $t(394) = 5.20$, $p < .01$, 95% CI [.07, .16]. The direct effect of depression on eating attitudes was statistically significant in this model, $b = .10$, $SE = .02$, 95% CI [.05, .15], as well as the indirect effect was, $b = .04$, $SE = .01$, 95% CI [.004, .12], suggesting a partially mediating effect of social networking use on the relationship between depression and eating attitudes in the not-at-risk sample (see Figure 11).

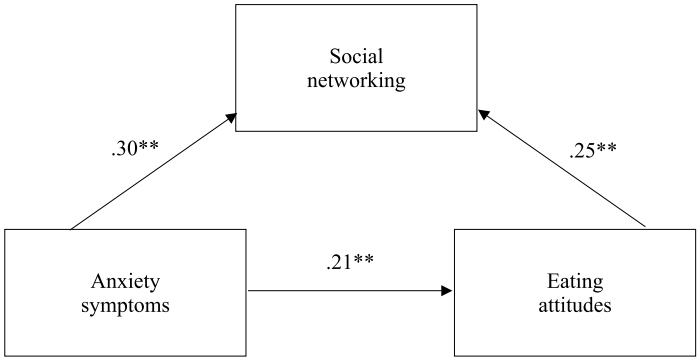
Figure 11
The mediating effect of social networking on the relationship between depressive symptoms and eating attitudes, not-at-risk for ED sample, n = 398



The values represent **standardized coefficients**; ** $p < .001$.

h. The Mediating Role of Social Networking Use on the Relationship between Anxiety and Eating Attitudes, controlling for Gender – not-at-risk sample (*n* = 398). The total effect of anxiety (i.e., without taking into account the mediator) was statistically significant, $b = .12$, $SE = .02$, $t(395) = 6.24$, $p < .01$, 95% CI [.08, .16], $R^2 = .09$. Furthermore, the effect of anxiety on social networking use was also statistically significant: $b = .27$, $SE = .04$, $t(395) = 6.20$, $p < .01$, 95% CI [.19, .36], $R^2 = .09$. In the model that included both anxiety and social networking use as predictors of eating attitudes, social networking use emerged as a statistically significant predictor of eating attitudes, $b = .11$, $SE = .02$, $t(395) = 5.28$, $p < .01$, 95% CI [.07, .16]. The direct effect of depression on eating attitudes was statistically significant in this model, $b = .09$, $SE = .02$, 95% CI [.05, .13], as well as indirect effect, $b = .03$, $SE = .008$, 95% CI [.01, .05], suggesting a partially mediating effect of social networking use on the relationship between anxiety and eating attitudes in the not-at-risk sample (see Figure 12).

Figure 12
The mediating effect of social networking on the relationship between anxiety symptoms and eating attitudes, not-at risk for ED sample, n = 398



The values represent **standardized coefficients**; ** $p < .001$.

Summary of the Reversed Mediation Models

Our reversed mediation analyses suggested that, when controlling for gender, social networking use partially mediated the relationship between anxiety and depressive symptoms and eating attitudes in the overall group and in the not-at-risk for ED group, and totally mediated this relationship in the at-risk for ED sample of participants.

Finally, we used a second alternative model, with the same purpose related to a better understanding directionality and patterns of our results, given the cross-sectional data of our study. Thus, we tested a prediction model using the EAT-26 scores as a potential predictor of depressive symptoms, anxiety symptoms, and social networking use. For a more comprehensive view, we reported our data according to participants' gender. Table 4 summarizes our findings for all samples.

Table 4

Summary of regression analyses of EAT-26 on the main variables, depending on participants' gender, in the at-risk for ED (n = 134) and the not-at risk for ED (n = 398) samples

	Dependent variable	Gender: male			Gender: female		
Overall group		β	*F*	R^2	β	*F*	R^2
	Depressive symptoms	.07	1.51	.006	.41**	55.85**	.17
	Anxiety symptoms	.13*	4.57*	.018	.50**	90.91**	.25
	Social networking use	.48**	79.34**	.23	.14*	5.55*	.02
At-risk for ED (*N* = 134)							
	Depressive symptoms	.12	.31	.01	.23*	6.37*	.05
	Anxiety symptoms	.55*	8.25*	.30	.33**	13.73**	.11
	Social networking use	.91**	99.65**	.84	-.23*	6.35*	.05
Not-at-risk for ED (*N* = 398)							
	Depressive symptoms	.07	*1.51*	*.006*	*.41***	*55.85***	*.17*
	Anxiety symptoms	.13*	4.57*	.01	.50**	90.91**	.25
	Social networking use	.48**	79.34**	.48	.14*	5.55*	.02

Note. $^{**}p < .001$; $^{*}p < .05$.

The second alternative model that we computed suggested that, in the overall sample, the EAT scores statistically significantly predicted both boys' and girls' anxiety symptoms and social networking use. However, the EAT scores significantly predicted depressive symptoms only for the girls in our sample. In both at-risk for ED sample and not-at-risk samples, we found similar patterns concerning the regression of ED symptoms on depressive symptoms for both boys and girls. More specifically, ED symptoms significantly predicted depressive symptoms in girls from all samples, while in boys this regression was not significant. Anxiety symptoms and social networking use were significantly predicted in all samples, for both boys and girls. However, an interesting difference is related to the fact that, in the at-risk for ED sample, ED symptoms were a positive predictor for social networking use in boys, and a negative predictor for girls. In other words, the higher the ED symptoms in boys, the higher the social networking use; in girls, the higher the ED symptoms, the lower the social networking use.

Discussion

Our results suggested that, when controlling for gender, depressive and anxiety symptoms partially mediated the relationship between social networking and eating attitudes in the overall group and in the not-at-risk for ED group,

but not in the at-risk for ED sample of participants. This was a counterintuitive result that contradicted the general clinical practice and the related literature, and generated the need for an additional analysis reported separately, by gender. When computing the mediation models according to gender, the pattern of results remained unchanged. Our primary explanation for this unusual result lies in the complex emotional context generated by the COVID-19 pandemic, which shifted our values and shaped a highly challenging psychological context. Another potential explanation might be related to the instrument we used to assess the sample of participants at-risk for ED symptoms. Though the measure we used is, probably, the most widely researched self-report measure of ED symptoms, due to its time of development (i.e., 39 years ago) it might not reflect an accurate image of how eating disorders are self-reported today. Also, in the at-risk for ED sample, social networking use totally mediated the relationship between depression and anxiety symptoms and eating attitudes. In the not-at-risk sample, this mediation effect was partial.

First of all, it is important to mention significant, positive correlations between participants' eating attitudes, depression, anxiety, and social networking, as well as the significant gender differences (with girls reporting significantly higher overall scores), in both samples (i.e., at-risk for ED and not-at-risk for ED). These results are in line with previous studies suggesting that higher levels of depression and anxiety are associated with disordered eating (Gardner et al., 2000; Russo et al., 2012). The significant association between social networking and eating attitudes suggested by the current results is in line with an increasing number of studies (e.g., Aparicio-Martinez et al., 2019; Mento et al., 2021) that suggested similar significant connections. Second, according to Touchette et al. (2011), girls are more likely to develop unhealthy eating attitudes and behaviors. Our findings seem to support this assumption, given that both in the overall sample and in the potential clinical sample, girls scored higher on the EAT, suggesting increased potentially unhealthy eating behaviors.

One of the most interesting results, in our opinion, was related to the fact that in the at-risk sample, the relationship between eating attitudes and social networking was significant but negative, compared to the not-at-risk sample, where this association was positive. In other words, in the not-at-risk sample, lower use of social networking was associated with a lower risk of developing an eating disorder; in the at-risk for ED sample, lower social networking use was associated with increased risks of developing an eating disorder. Moreover, our results suggested a total mediation effect of social networking use on the relationship between depression and anxiety symptoms, and eating attitudes in the at-risk for ED sample. These findings highlighted the idea that social networking use might increase the chances of developing unhealthy eating attitudes in the not-at-risk sample but, once diagnosed (though our measures do not establish eating disorder diagnoses but suggest potentially clinical levels of unhealthy eating attitudes, i.e., eating disorders), social media networking might play a protective role instead of a harmful one. More specifically, higher

social network use seemed to be associated with lower symptoms of unhealthy behaviors in adolescents with high levels of depression and anxiety, while in the not-at-risk sample, we found the opposite outcome. This specific result is in line with previous data that suggested the helpful (instead of detrimental role) played by social media use concerning ED risks or recovery strategies (e.g., Saunders et al., 2020).

One potential explanation for these contrasting results may lie in the fact that, as suggested by several studies, social media seem to also serve as an important resource for adolescents and people of all ages who seek help, support, and medical advice for their eating disorders (e.g., Engel & Wonderlich, 2010; Hopf et al., 2012). Several Internet-based chat platforms and social media groups are known to deliver effective eating disorder programming (Hopf et al., 2012; McCormack & Coulson, 2009; McCormack, 2010; Ransom et al., 2010) as online forms of social support. Among the advantages of these online, social media intervention and help groups are the increased access to information and shared experiences of other members with potential eating disorders, i.e., a heterogeneous mix of individuals with different experiences in the field of unhealthy eating attitudes and behavior, increased perceived intimacy for some people, more flexibility (McCormack & Coulson, 2009), and, especially during these current pandemic times (i.e., COVID–19), unrestrained access to help and support. For example, McCormack (2010) analyzed more than three hundred messages in online support groups for people with anorexia and found that "the primary function of the group was the communication of encouragement and esteem and information support notably in terms of diagnosis, treatment, and interaction with healthcare specialists" (p. 12).

Ramson et al. (2010) suggested that individuals who use online forums to address their eating concerns participated in these online help groups as a means of attaining higher social support. Kendal et al. (2017) also suggested that moderated online discussion forums might facilitate support for youth with eating disorders. In their study, the authors concluded that "a moderated online discussion forum can make a positive contribution to support for youth with eating disorders, countering negative media perceptions of online groups", and that "online discussion forums can be safe and acceptable spaces for youth to access help" (p. 98). Given these findings, our study highlights both the dark side of social media as a significantly associated factor of unhealthy eating attitudes among adolescents and its potential protective role in at-risk groups.

Our results also suggested significant and powerful correlations, in both at-risk and not-at-risk samples between depression, anxiety, and eating attitudes. More specifically, higher levels of anxiety and depression were associated with increased levels of unhealthy eating attitudes among adolescents. These findings highlight the need for prevention and intervention programs designed to assess adolescents' mental health states and increase their well-being, especially during challenging times such as the current COVID–19 pandemic. In their systematic

review, Octavius et al. (2020) highlighted the significant challenges of the current pandemic on adolescents' mental health, while de Figueiredo et al. (2021) draw a signal on the fact that the pandemic stressors early in life (i.e., in children and adolescents) may lead to neuropsychiatric outcomes in adulthood. The pandemic also decreased some families' access to healthy foods and general physical activity, and eating habits (Al Hourani et al., 2021), and doctors warn about the pandemic's eating disorders legacy among adolescents (Timko, 2021).

Generally, individuals with eating disorders are at high risk for severe physical and psychological outcomes following the COVID–19 pandemic due to decreased feelings of control (primarily due to significant changes in one's routine) and social support, changes to the relationship with food, reduced access to healthcare services, or increased rumination about disordered eating (Branley-Bell & Talbot, 2020). However, due to the reduced physical access to their usual support networks, participants from Branley-Bell and Talbot's research (2020) reported using social media platforms and related Facebook, WhatsApp, and YouTube groups to access friends and communities facing eating disorders and unhealthy eating behaviors. More importantly, as the authors suggested, these social networking resources facilitated social communication and helped individuals manage the pandemic challenges related to disordered eating behaviors, similar to our findings in the potential clinical group of adolescents.

Finally, our results also suggested that the potential symptoms of ED, measured through the EAT scale, significantly predicted both boys' and girls' anxiety symptoms and social networking use, but osignificantly predicted depressive symptoms only for the girls in our sample (and not for boys). This is an interesting result, given the additional higher prevalence found in girls, compared to boys, for all the variables in our study. One of the interesting differences observed was related to the fact that, the higher the ED symptoms in boys, the higher the social networking use; in girls, the higher the ED symptoms, the lower the social networking use. There are several explanations that might shed light concerning this specific result. For example, if social media works as a coping mechanism, as previous research suggested, it may be that boys might use social networking as a way to cope with ED symptoms more than girls. This explanation is based on previous research on the area that suggested that boys are more likely than girls to use the media to reduce their negative mood levels (Carpentier et al., 2008) and as an active coping mechanism related to body-image processing (Mahon & Hevey, 2021). In addition to this potential explanation, another possible explanatory pathway might be related to the fact that social networks might place a higher perceived body-image related burden on girls, and, therefore, ED symptoms might generate girls' tendency to avoid social media exposure, basically as a way to avoid the subsequent psychological distress, compared to boys, who tend to report higher positive agency over their bodies, as well as their social networking use (Mahon & Hevey, 2021). However, these patterns require further investigations.

In addition to the already mentioned limitations, some other constraints also need to be addressed concerning the present research. First, all measures

were self-reported, which might have resulted in biased participants' responses. Second, we did not account for other variables that were found to be significant for eating disorders onset among adolescents, such as body shame, low self-esteem, positive thinness expectations, or impaired interpersonal functioning (Cella et al., 2017; Stice et al., 2017), as well as several other individuals, family, and other interpersonal characteristics. Third, we did not assess the physical and psychological challenges related to the COVID-19 pandemic, as we already suggested their significant related role. Future studies might want to address these concerns in investigations linking the pandemic changes and how they might have shaped adolescents' body image concerns and eating behaviors. It is also important to mention that we used a convenient sample of participants, which also raises some limitations regarding the generalizability of our findings (Crossman, 2018). Furthermore, in general, it is difficult to assess the representativeness of research samples, especially when using convenient ones, thus lowering the external validity of the study (Etikan, 2016). Future research might benefit from focusing on larger samples and other sampling techniques that would further produce representative samples.

Conclusions

The present study suggested that social network use might increase the chances of developing unhealthy eating attitudes in adolescents who are not-at risk of developing an eating disorder, but, at the same time, it might play a protective role (instead of a harmful one) for adolescents who already developed such symptoms.

Our study expands on the burgeoning literature on social networking and eating attitudes among adolescents. Eating disorders can severely affect adolescents' emotional, social, psychological, and physical well-being and development. These complex conditions, which undermine one's self-worth by judging and comparing their body weights with ideal thinness (generally girls) or muscularity (generally boys) promoted by contemporary society primarily through social media, need our full attention. In light of the present findings, and because eating disorders are so pernicious, it is important to 1) extend the related research in the context of the psychological, social, and physical changes generated by the COVID-19 pandemic; 2) to offer adolescents and parents access to prevention programs that would help reduce the risks for these conditions, including intervention programs aimed to prevent and decrease teenagers' anxiety and depression; 3) to encourage teenagers with eating disorders to access online help and support groups, especially during difficult social periods (e.g., the COVID-19 pandemic that we are currently experiencing), when access to physical (i.e., in-person, face-to-face) meetings is restricted or impossible due to national regulations; 4) to monitor, control, discourage and report social networking groups, chats, and generally platforms that encourage disordered eating and unhealthy eating habits, in general.

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Svetla i tamna strana upotrebe društvenih mreža: depresija, anksioznost i stavovi prema ishrani kod adolescenata

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U ovoj studiji smo istraživali veze između aktivnosti na društvenim mrežama, stavova prema ishrani, anksioznosti i depresije među adolescentima. Sprovedena je transferzalna studija. Uzorak su činila 532 adolescenta muškog i ženskog pola uzrasta od 12 do 15 godina (M = 13.55, SD = 0.90) iz istočne Rumunije. Koristili smo tri različita modela puta da bismo istražili ove odnose na uzorku u celini, kao i pojedinačno u grupama onih koji su rizični za poremećaj ishrane (n = 134), i onih koji nisu (n = 398). Rezultati ukazuju da su depresivni i anksiozni simptomi delimični medijatori veze između upotrebe društvenih mreža i stavova prema ishrani na uzorku u celini i poduzorku onih koji nisu rizični za poremećaje ishrane, ali ne i u grupi onih koji su rizični za poremećaje ishrane. Kada je kontrolisan efekat pola, upotreba društvenih mreža se pokazala parcijalnim medijatorom odnosa između anksioznih i depresivnih simptoma i stavova prema ishrani na uzorku u celini i u grupi onih koji nisu skloni poremećajima ishrane i potpunim medijatorom u grupi onih koji su skloni poremećajima ishrane. Kod adolescenata sa simptomima koji ukazuju na mogući poremećaj ishrane, upotreba društvenih mreža se čini da ima protektivan efekat u odnosu na grupu onih koji nisu rizični za poremećaje ishrane. Rezultati ovog istraživanja ukazuju da upotreba društvenih mreža može da poveća šanse za razvijanje nezdravih stavova prema ishrani kod adolescenata koji nisu rizični za nastanak poremećaja ishrane, ali da istovremeno može da ima zaštitnu (umesto štetne) ulogu za adolescente koji već imaju ove simptome. Rezultati su diskutovani imajući u vidu kliničke i praktične implikacije za fizičko i mentalno zdravlje adolescenata, naročito za vreme pandemije COVID–19, kao i potencijalno protektivnu ulogu upotrebe socijalnih medija za adolescente koji imaju simptome poremećaja ishrane.

Ključne reči: adolescent, stavovi prema ishrani, poremećaji ishrane, društvene mreže, depresija, anksioznost

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