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The role of metacognitions in cyberbullying and cybervictimization among adolescents diagnosed with major depressive disorder and anxiety disorders: A case-control study

Pinar Ünal-Aydın¹ | Yekta Özkan² | Masum Öztürk³ | Orkun Aydın¹  |
 Marcantonio M. Spada⁴ 

¹Department of Psychology, Faculty of Arts and Science, International University of Sarajevo, Sarajevo, Bosnia and Herzegovina

²Department of Child and Adolescent Psychiatry, Faculty of Medicine, Afyonkarahisar University of Health Sciences, Afyonkarahisar, Turkey

³Department of Child and Adolescent Psychiatry, Faculty of Medicine, Dicle University, Diyarbakir, Turkey

⁴Division of Psychology, School of Applied Sciences, London South Bank University, London, UK

Correspondence

Pinar Ünal-Aydın, Department of Psychology, Faculty of Arts and Science, International University of Sarajevo, Hrasnička cesta 15, 71210 Ilidža, Sarajevo, Bosnia and Herzegovina.
 Email: paydin@ius.edu.ba

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Abstract

Cyberbullying is becoming increasingly widespread as individuals use technology more widely and frequently. Recent studies have shown a growing vulnerability for cyberbullying and cybervictimization, particularly in the adolescent population. We argue that dysfunctional metacognitions, which have been found to be prominent in various psychiatric disorders, may also play a role in predicting cyberbullying and cybervictimization over and above a variety of established factors including daily Internet use, social media use, depression and anxiety. For this purpose, we recruited 121 adolescents diagnosed with major depressive disorder (MDD) and 122 adolescents diagnosed with anxiety disorders (AD) from the child and adolescent psychiatric department of 'Çankırı State Hospital' along with age and gender matched healthy controls ($n = 120$). Participants completed the DSM-5 Depression and Anxiety Severity Scales, the Social Media Disorder Scale (SMDS), the Metacognitions Questionnaire for Children (MCQ-C) and the Revised Cyberbullying Inventory-II (RCBI-II). Cybervictimization scores were found to be higher in the MDD and AD groups when compared with healthy controls. Cyberbullying scores in the MDD group were higher than healthy controls. Additionally, the Superstition, Punishment and Responsibility subdimension of the MCQ-C was a significant predictor of cybervictimization in the AD group while controlling for daily Internet use, social media use and anxiety. However, metacognitions were not associated with cyberbullying in the MDD and AD groups, as well as with cybervictimization in the MDD group. We concluded that dysfunctional metacognitions may be a preventive therapeutic target in reducing the impact of cyberbullying in adolescents with AD.

KEYWORDS

anxiety, cyberbullying, cybervictimization, depression, internet, metacognitions

1 | INTRODUCTION

In recent years, both internet and social media use have been rapidly increasing, particularly among teenagers (Gjoneska et al., 2022; Hamm et al., 2015). Currently, over half of the global population has access to social media platforms including WhatsApp, WeChat, Facebook and Instagram (Marino et al., 2021). In line with global observations, in Turkey, it has been shown that the Internet is mostly used by active social media users (mostly Facebook, YouTube, WhatsApp, Facebook Messenger, WeChat, QQ and Instagram) who represent 63% of its population, which is above world average (39%) (Turkish Statistical Institute, 2021). Despite its many potential benefits, problematic and excessive use of social media has also been found to be associated with depression (Aydin et al., 2020; Huang, 2020), anxiety (Andreassen, 2015; Huang, 2020), social anxiety, lower self-esteem, life satisfaction and well-being (Huang, 2020). Recent research showed that extensive penetration of the Internet via social media tools may facilitate peer bullying and victimization. As a result of this, it has been reported that both cyberbullying and cybervictimization have become more common (Jung et al., 2014; Leung et al., 2018; Park et al., 2021; Topçu et al., 2008; Wang et al., 2019; Wolak et al., 2007; Wright et al., 2015), and the associations between problematic social media use with cyberbullying (Kircaburun et al., 2019) and cybervictimization (Fredrick et al., 2022; Peláez-Fernández et al., 2021) are well documented.

A common definition of cyberbullying is the perpetration of aggressive, repeated, intentional acts that aim to threaten, harass or embarrass other individuals, carried out through electronic forms of contact (McLoughlin et al., 2021). The difference between cyberbullying and traditional bullying is that the former can reach greater audience due to its virtual platform where free expression is allowed without social control (Bottino et al., 2015). Furthermore, anonymity of the perpetrator may provoke intangible violence or bullying harming victims without the fear of accountability (Chan et al., 2021; You & Lim, 2016). On the other hand, cybervictimization is a term used to describe the experience of those being cyberbullied (Tokunaga, 2010). Across Western countries, the prevalence rates were found to oscillate between 4% and 56% for cyberbullying and 6%–72% for cybervictimization (Kowalski et al., 2019; Sorrentino et al., 2019). Particularly, the studies conducted among Turkish adolescent samples demonstrated that cyberbullying ranges between 6.4% and 47.6% (Topçu et al., 2008; Yılmaz, 2011), and cybervictimization ranges between 5.1% and 56% (Akbulut et al., 2010; Topçu et al., 2008). A considerable amount of literature around cybervictimization indicates its relationship with low self-esteem, anxiety, depressive symptoms and suicidal ideation (Landoll et al., 2015). Several studies have reported a strong association between cyberbullying and cybervictimization (Durak, 2018; Hood & Duffy, 2018; Kowalski & Limber, 2013; Leung et al., 2018; Mishna et al., 2012). Additionally, cybervictims have demonstrated cyberbullying behaviours themselves (Ballard & Welch, 2017; Gradinger et al., 2010; Kowalski et al., 2014; Law et al., 2012). There are acknowledged potential causes of cyberbullying and cybervictimization, which can differ across diverse

Key Practitioner Message

- Cybervictimization was found to be higher in the MDD and AD groups when compared with healthy controls.
- Cyberbullying scores in the MDD group were higher than healthy controls.
- The Superstition, Punishment and Responsibility subdimensions of the MCQ-C were significant predictors of cybervictimization in the AD group.
- Problematic social media use was the significant predictor of both cyberbullying and cybervictimization.

cultures. In one meta-analysis, which examined the potential predictors of cyberbullying and cybervictimization across 81 empirical studies, risky technology use and psychological factors such as depression and anxiety were among the major contributors of the cyberbullying and cybervictimization (Chen et al., 2017). Furthermore, social-cognitive and affective reactions such as empathy, moral disengagement and feelings of responsibility (Knauf et al., 2018), as well as cognitive schemas related to mistrust and defectiveness (Calvete et al., 2016), were found to be related to vulnerability to both of these behaviours. Since cognitive factors are acknowledged to be involved, we attempted to examine the potential role of metacognitions in cyberbullying and cybervictimization.

Metacognition refers to the high-level cognitive structures that control, organize and evaluate cognitive-affective states and processes (Wells, 2007). Metacognitions (or 'metacognitive beliefs') are beliefs about the meaning of cognitive-affective experiences and ways to control such experiences. Examples would include 'I need to control my thoughts at all times' or 'worry will help me solve problems'. Positive metacognitions (e.g., 'If I worry, I will be mentally prepared') refer to the benefits of engaging in perseverative thinking as a means of coping. These types of beliefs are associated with the activation of perseverative thinking and the escalation of correlated negative affective states. Negative metacognitions (e.g., 'I cannot stop thinking of depressive thoughts') are associated with the further escalation of negative affective states and decreased attempts at discontinuing perseverative thinking patterns. Maladaptive forms of metacognition are linked to the individuals' ineffective coping strategies and higher stress vulnerability. Specifically, persistent negative thinking in the form of worry and rumination activates unhelpful coping mechanisms which turn out to be a salient cause of psychiatric pathologies (Wells, 2019).

Metacognitions have been found to play a significant role in predicting distress, independently of other established constructs, across a broad variety of psychiatric disturbances, such as psychosis (Tas et al., 2014), depression (Papageorgiou & Wells, 2001), generalized anxiety disorder and panic disorder (Aydin et al., 2019), obsessive-compulsive disorder (Cucchi et al., 2012), eating disorders (Palmieri et al., 2021), problematic social media use (Balıkcı et al., 2020) and

problematic Internet use (Spada & Marino, 2017). There is notable paucity, however, of studies investigating the influence of metacognitions in both cyberbullying and cybervictimization. Only one study has investigated metacognitions in cyberbullying and cybervictimization among young adults, indicating that no specific metacognitions (as assessed by the Metacognitions Questionnaire 30; MCQ-30; Wells & Cartwright-Hatton, 2004) predicted the severity of either cyberbullying or cybervictimization. In the study, however, cognitive confidence (which are beliefs about not trusting one's cognitive capabilities, e.g., judgement or memory) was found to mediate the relationship between cybervictimization and quality of life (McLoughlin et al., 2021). This specific metacognitions subdomain 'cognitive confidence' has also been found to predict problematic Facebook use (Marino et al., 2016) and has a significant negative association with problematic social media use (Balıkcı et al., 2020), Internet Gaming Disorder (Aydın et al., 2020) and technological addictions more generally (Casale et al., 2020). Furthermore, positive and negative metacognitions have been found to be associated with problematic Internet use (Casale et al., 2021), Internet Gaming Disorder (Aydın et al., 2020), problematic social media use (Balıkcı et al., 2020; Ünal-Aydın et al., 2021), problematic smartphone use (Casale et al., 2020), several anxiety disorders (Aydın et al., 2019) and depression (Leahy et al., 2019).

Considering the prominent role of specific metacognitions in technology related addictive behaviours and major psychiatric disturbances including depression and anxiety, we suggest that this cognitive construct may also play a role in cyberbullying and cybervictimization among the diagnosed adolescent population. There have been a number of studies examining the relationship between cyberbullying and cybervictimization in depression and anxiety (Bottino et al., 2015; Hamm et al., 2015; Kircaburun et al., 2019; Landoll et al., 2015; Wright, 2018). In a previous meta-analysis, depression was found to be strongly related with cybervictimization (Hawker & Boulton, 2000). There are also studies supporting the link between cybervictimization and higher levels of anxiety (Chu et al., 2018; Martínez-Monteağudo et al., 2020). Although researchers have shown an increased interest in both cyberbullying and cybervictimization (Landoll et al., 2015), the vast majority of the studies was comprised of healthy populations such as students and they did not survey psychiatric populations. We believe that no previous study has investigated the association of metacognitions with both cyberbullying and cybervictimization among adolescents diagnosed with major depressive disorder (MDD) and anxiety disorders (AD). It has been reported that there is an absence of both cyberbullying research specific to stages across the lifespan, and specific intervention methods aimed at reducing the impact of cyberbullying (Heyeres et al., 2021). Given the significant associations between metacognitions and problematic social media use, depression and AD as outlined in the above-cited studies, we suggest that metacognitions may be a salient factor in cyberbullying and cybervictimization especially among adolescents suffering from MDD and AD. Thus, in our study, we aimed to establish whether any metacognitions (as measured by the Metacognitions

Questionnaire for Children, MCQ-C) are associated with cyberbullying and cybervictimization among adolescents diagnosed with MDD and AD. We hypothesized that specific metacognitions would be positively associated with both cyberbullying and cybervictimization and that they would remain significant predictors of both outcome variables after controlling for potential confounding variables such as frequency of internet use, social media use and symptom severity (Chen et al., 2017).

2 | METHODS

2.1 | Participants

The patient groups comprised of individuals who applied to the outpatient unit of the child and adolescent psychiatric department of 'Çankırı State Hospital'. The Schedule for Affective Disorders and Schizophrenia for School Aged Children (Kiddie-SADS)-Present and Lifetime version for DSM-5 (K-SADS-PL DSM-5), a semi-structured psychiatric interview, was applied for confirmation of the diagnoses (Ünal et al., 2019). One of the researchers (Y.O.) undertook the interviews and the completion of the test battery lasted approximately 40 min for each individual. The interviews were held face to face in the outpatient settings during the controlled normalization process of the COVID-19 pandemic in Turkey. The inclusion criteria for patients were as follows: (i) to be between the ages of 14-18, (ii) to have a diagnosis of MDD or one of the AD (only cases with primary diagnosis were recruited), (iii) no hospital admissions in the last 3 months and (iv) no treatment change in the last month prior to the study. The exclusion criteria were (i) to have comorbid mental disorders (e.g., MDD comorbid with AD, panic disorder comorbid MDD) and (ii) the presence of substance use disorder/alcohol use disorder, psychotic symptoms, mental retardation and neurocognitive disorder. A total of 243 adolescents who met DSM-5 criteria for MDD ($n = 121$) and any AD ($n = 122$) as a primary diagnosis were recruited for the study. The patients with AD consisted of separation anxiety disorder ($n = 12$), specific phobia ($n = 9$), social anxiety disorder ($n = 30$), not otherwise specified anxiety disorder ($n = 32$), agoraphobic disorder ($n = 4$), panic disorder ($n = 2$) and generalized anxiety disorder ($n = 33$). After completion of the participant recruitment, the researchers identified age and gender matched healthy controls through advertisements on social media platforms. The conditions for healthy control status were set as being between 14 and 18 years old and not having any mental disorder. A total of 120 individuals fulfilled the criteria of a healthy control according to the K-SADS-PL DSM-5 (Ünal et al., 2019). The patient groups and healthy control group did not take any allowance or incentives for their participation. All participants and their guardians provided written informed consent, and they were informed about their right to withdraw from the study at any time without any risk of penalty. The study was approved by the T.C. Çankırı Karatekin University (Meeting no:20, Project approval date: 31.05.2021).

2.2 | Measures

2.2.1 | The DSM-5 Level 2 Depression Severity Scale, child age 11–17 (DSS-II; American Psychiatric Association, 2013)

The DSS-II is a 14-item, clinician rated measure that assesses the pure domain of depression in children and adolescents (American Psychiatric Association, 2013). Each item asks the child to rate the severity of depression during the past 7 days (e.g., 'I could not stop feeling sad'). Scoring of the items is rated on a 5-point scale (1 = *never*; 2 = *almost never*; 3 = *sometimes*; 4 = *often*; and 5 = *almost always*). The range of scoring is 14 to 70, and higher scores indicate higher levels of depression (less than 31 = None to slight, 32–38 = Mild, 39–53 = Moderate, 54–70 = Severe). Turkish validity and reliability was performed and the internal consistency coefficient was found to be very high for the child form (Cronbach's $\alpha = .96$) (Yalin Sapmaz et al., 2018). In our study, the Cronbach's α was .96.

2.2.2 | The DSM-5 Level 2 Anxiety Severity Scale, child age 11–17 (ANXS-II; American Psychiatric Association, 2013)

The ANXS-II is a 13-item, clinician rated measure that evaluates anxiety among children and adolescents (American Psychiatric Association, 2013). Each item asks the child to rate the severity of anxiety during the past 7 days (e.g., 'I felt like something awful might happen'). Scoring of the items is rated on a 5-point scale (1 = *never*; 2 = *almost never*; 3 = *sometimes*; 4 = *often*; and 5 = *almost always*). Minimum and maximum scores of the scales range between 13 and 65 and higher scores indicate higher level of anxiety (less than 28 = None to slight, 28–33 = Mild, 34–46 = Moderate, 47–65 = Severe). The scale was found to be valid and reliable among Turkish adolescents (Cronbach's $\alpha = .91$) (Yalin Sapmaz et al., 2018). In our study, the Cronbach's α was .94.

2.2.3 | Social Media Disorder Scale (SMDS; Van Den Eijnden et al., 2016)

The SMDS was developed to assess problematic patterns of social media use among adolescents aged between 11 and 18 (Van Den Eijnden et al., 2016). This self-report scale consists of nine items and one factor (e.g., 'During the past year have you often used social media to escape from negative feelings?'). Responses are recorded on the following 7-point Likert-style scale: 1 (*never*), 2 (*less than once a day*), 3 (*3–5 times a day*), 4 (*6–10 times a day*), and 5 (*11–20 times a day*), 6 (*21–40 times a day*) and 7 (*more than 40 times a day*). The scores range between 9 and 63. Higher scores indicate riskier social media use patterns. The validity and reliability of the Turkish version demonstrated good internal consistency (Cronbach's $\alpha = .75$) (Sarçam & Adam Karduz, 2018). In our study, the Cronbach's α was .96.

2.2.4 | Metacognitions Questionnaire for Children (MCQ-C; Bacow et al., 2009)

The MCQ-C is a 24-item self-report measure that evaluates different metacognitions in children (e.g., 'My worrying is dangerous'). (Bacow et al., 2009). It consists of four factors including positive meta-worry, negative meta-worry, superstitious, punishment and responsibility beliefs and cognitive monitoring. Each subscale includes six items rated on 4-point Likert-style scoring: 1 (*do not agree*), 2 (*slightly agree*), 3 (*somewhat agree*) and 4 (*strongly agree*). The scoring range is between 24 and 96. Higher scores of the subscales indicate higher levels of pathological metacognitions. The validity and reliability study of MCQ-C was established in a Turkish sample (Irak, 2012), and strong internal consistency (Cronbach's $\alpha = .73$) and adequate test-retest reliability ($r = 0.76$ – 0.82) were demonstrated. In our study, the Cronbach's α was .85.

2.2.5 | Revised Cyberbullying Inventory-II (RCBI-II; Topcu & Erdur-Baker, 2018)

The RCBI-II is a self-report scale developed by Topcu and Erdur-Baker (2018) that measures the severity of both cyberbullying (RCBI-II-CB) and cybervictimization (RCBI-II-CV) simultaneously among children aged between 14 and 18. The RCBI-II has 10 items in two separate scoring columns. The participants rate each item twice (once for reporting cyberbullying experience in an 'I did it' column and once for reporting cybervictimization experience in an 'It happened to me' column). One sample item is 'Sending embarrassing or hurtful messages'. Each self-report subdimension is rated on the following 4-point Likert-style scoring: 1 (*none*), 2 (*once*), 3 (*two to three times*) and 4 (*more than three times*). The scores range between 10 and 40 with higher scores indicate higher levels of both cyberbullying and cybervictimization. To determine the status of cyberbullying (cyberbullies, cybervictims, cyberbullies and cybervictims and not involved), categorical scoring is also possible. Those who receive a score of 10 or above can be grouped as not involved in cyberbullying. The Turkish version reflects strong internal consistency for the RCBI-II-CV (Cronbach's $\alpha = .80$) and for the RCBI-II-CB (Cronbach's $\alpha = .79$). In our study, the Cronbach's α was .87 for the RCBI-II-CV and .60 for the RCBI-II-CB.

2.3 | Statistical analysis

Normality of distribution checks were performed using skewness and kurtosis. The assumptions of normality, homogeneity of variances and independence were met. To compare the assessed variables' mean scores by group we performed a one-way ANOVA with Bonferroni correction and utilized Tukey's post hoc test. To evaluate the associations between age, gender, daily Internet use, DSS-II, ANXS-II, SMDS, MCQ-C and RCBI-II in the MDD and AD groups, we ran Pearson product-moment correlations. Following this, hierarchical multiple regression analyses were conducted to explore the predictive factors

for the RCBI-II-CB and the RCBI-II-CV subdimensions. Prior to execution of the regression analysis, the relevant assumptions were tested. First, the sample size of the MDD and AD groups was deemed adequate given a maximum of five independent variables to be included in the analysis (Woltman et al., 2012). The assumption of singularity was also met as the independent variables (daily internet use, DSS-II, ANXS-II, SMDS and MCQ-C subtests) were not a combination of other independent variables. An examination of correlations revealed that only subdimensions of the MCQ-C were highly correlated among each other. However, the collinearity statistics (i.e., Tolerance and VIF) were all within accepted limits so the assumption of multicollinearity was deemed to have been met (Mela & Kopalle, 2002). Mahalanobis distance scores were examined to check multivariate outliers, and no outliers were identified. Moreover, the assumptions of normality, linearity and homoscedasticity observed by scatter and residual plots, were all satisfied (Osborne & Waters, 2002). Cohen's f^2 , which is appropriate for calculating the effect size within a regression model, was computed, and according to Cohen's guidelines, $f^2 \geq .02$, $f^2 \geq .15$ and $f^2 \geq .35$ represent small, medium and large effect sizes, respectively (Cohen, 1988). The level of statistical significance (p) was adjusted to $<.05$, and all analyses were estimated with the Statistical Package for Social Sciences (SPSS) version 23.0 (IBM Corp., Armonk, NY).

3 | RESULTS

3.1 | The demographics and clinical features of the groups

Demographic characteristics of the participants are presented in Table 1. Data analyses demonstrated that there was no difference

between groups in terms of age and gender. There was a greater number of female than male participants in both groups. Regarding daily Internet use of the participants, more than half in each group used the internet for an average 3–4 h per day. In both groups, the most common tool for the Internet use was the mobile phone. Mean and standard deviation scores of the study variables are presented in Table 2. DSS-II means scores of the MDD group reflect severe depression, and ANXS-II mean scores of the AD group show severe anxiety levels. Both patient groups scored higher on SMDS and all MCQ-C factors excluding the positive meta-worry subdimension when compared with healthy controls. According to the RCBI-II-CB, 49 adolescents in the MDD group (40%) and 47 adolescents in the AD group (38%) scored higher than 10, which refers to participation in cyberbullying activities. The RCBI-II-CB score of the MDD group was higher than the healthy controls' score but the AD and healthy control groups did not differ. Sixty-three adolescents in the MDD group (52%) and 60 adolescents in the AD group (49%) scored higher than 10 in the RCBI-II-CV, which refers to cybervictimization. Additionally, the MDD group scored higher than the AD and healthy control groups on The RCBI-II-CV. Furthermore, the AD group's mean score in the RCBI-II-CV was also higher than healthy controls.

3.2 | Bivariate correlations in the MDD group

In the MDD group, bivariate correlation analyses revealed that daily Internet use, $r(119) = .35$, $p < .01$, DSS-II, $r(119) = .24$, $p < .01$, SMDS, $r(119) = .50$, $p < .01$, and MCQ-C including Negative Meta-Worry, $r(119) = .28$, $p < .01$, Superstition, Punishment and Responsibility, $r(119) = .40$, $p < .01$, and Cognitive Monitoring, $r(119) = .35$, $p < .01$, were positively correlated with the RCBI-II-CB. Positive Meta-Worry,

TABLE 1 Characteristics of the groups

	Group									Statistics
	MDD ($n = 121$)			AD ($n = 122$)			HC ($n = 120$)			
	Mean	S.D.	Count (%)	Mean	S.D.	Count (%)	Mean	S.D.	Count (%)	
Age	15.26	1.01		15.25	1.12		15.20	.99		$F(2, 362) = .099$, $p = .90$
Gender										
Male			49 (40%)			57 (47%)			49 (40%)	$\chi^2(2) = 1.217$, $p = .54$
Female			72 (60%)			65 (53%)			71 (60%)	
Daily internet use										
1–2 h			16 (13%)			22 (18%)			28 (23%)	$\chi^2(3) = 11.41$, $p = .02$
3–4 h			69 (57%)			70 (57%)			76 (63%)	
5 h or more			36 (30%)			30 (25%)			16 (14%)	
Device used for internet use										
Personal computer			77 (63%)			70 (57%)			46 (38%)	$\chi^2(2) = 16.79$, $p < .01$
Tablet			9 (8%)			16 (13%)			37 (30%)	$\chi^2(2) = 25.32$, $p < .01$
Mobile phone			121 (100%)			122 (100%)			120 (100%)	-

Abbreviations: AD, anxiety disorders; HC, healthy controls; MDD, major depressive disorder.

TABLE 2 Group comparison of measures

	Group						Statistics	Post hoc Bonferroni
	MDD (n = 121)		AD (n = 122)		HC (n = 120)			
	Mean	S.D.	Mean	S.D.	Mean	S.D.		
DSS-II	57.92	5.18	-	-	19.83	3.44	$t(239) = 67.083, p < .01$	-
ANXS-II	-	-	47.13	5.61	19.60	4.36	$t(240) = 42.357, p < .01$	-
SMDS	26.83	11.01	28.18	11.47	20.64	7.06	$F(2, 362) = 19.26, p < .01$	MDD > HC, AD > HC
MCQ-PMW	10.36	3.29	9.81	3.24	12.75	3.42	$F(2, 362) = 26.81, p < .01$	MDD < HC, AD < HC
MCQ-NMW	18.42	3.01	18.94	2.85	14.01	3.15	$F(2, 362) = 97.88, p < .01$	MDD > HC, AD > HC
MCQ-SPR	17.62	3.77	17.98	3.06	11.38	2.80	$F(2, 362) = 158.08, p < .01$	MDD > HC, AD > HC
MCQ-CM	17.65	3.16	18.19	3.20	14.56	2.35	$F(2, 362) = 53.60, p < .01$	MDD > HC, AD > HC
RCBI-II-CB	10.81	1.29	10.61	1.05	10.36	0.87	$F(2, 362) = 5.17, p < .01$	MDD > HC
RCBI-II-CV	12.85	4.07	11.76	2.91	10.50	0.95	$F(2, 362) = 19.18, p < .01$	MDD > AD > HC

Abbreviations: AD, anxiety disorders; ANXS-II, Level II DSM-5 Anxiety Scale-11-17 years; DSS-II, Level II DSM-5 Depression Scale-11-17 years; HC, healthy controls; MCQ-CM, Cognitive Monitoring; MCQ-NBW, Negative Meta-Worry; MCQ-PMW, Positive Meta-Worry; MCQ-SPR, Superstition, Punishment and Responsibility; MDD, major depressive disorder; RCBI-II-B, Revised Cyberbullying Inventory-II Cyberbullying; RCBI-II-CV, Revised Cyberbullying Inventory-II Cybervictimization; SMDS, Social Media Use Disorder Scale.

$r(119) = -.29, p < .01$, was negatively correlated, but gender $r(119) = -.09, p = .32$, and age, $r(119) = .01, p = .95$, were not correlated with the RCBI-II-CB in this group.

Additionally, daily Internet use, $r(119) = .45, p < .01$, DSS-II, $r(119) = .50, p < .01$, SMDS, $r(119) = .76, p < .01$, and MCQ-C including Negative Meta-Worry, $r(119) = .48, p < .01$, Superstition, Punishment and Responsibility, $r(119) = .49, p < .01$, and Cognitive Monitoring, $r(119) = .45, p < .01$, were positively correlated with the RCBI-II-CV. Positive Meta-Worry, $r(119) = -.29, p < .01$, was negatively correlated, but gender, $r(119) = .05, p = .53$, and age, $r(119) = .16, p = .06$, were not correlated with the RCBI-II-CV in this group.

3.3 | Bivariate correlations in the AD group

The analyses demonstrated that daily Internet use, $r(120) = .48, p < .01$, ANXS-II, $r(120) = .18, p = .03$, and SMDS, $r(120) = .56, p < .01$, were positively correlated with the RCBI-II-CB. On the other hand, Positive Meta-Worry, $r(120) = -.18, p = .04$, was negatively correlated. MCQ-C subscales including Negative Meta-Worry, $r(120) = .06, p = .50$, Superstition, Punishment and Responsibility, $r(120) = .07, p = .42$, Cognitive Monitoring, $r(120) = .02, p = .80$, gender, $r(120) = -.04, p = .61$, and age, $r(120) = .06, p = .44$, were not correlated with the RCBI-II-CB in this group.

Moreover, daily Internet use, $r(120) = .40, p < .01$, ANXS-II, $r(120) = .22, p < .01$, SMDS, $r(120) = .48, p < .01$, and MCQ-C including Negative Meta-Worry, $r(120) = .18, p = .04$, Superstition, Punishment and Responsibility, $r(120) = .28, p < .01$, and Cognitive Monitoring, $r(120) = .20, p = .02$, were positively correlated with the RCBI-II-CV. Positive Meta-Worry, $r(120) = -.09, p = .28$, gender, $r(120) = .06, p = .47$, and age, $r(120) = .14, p = .11$, were not correlated with the RCBI-II-CV in this group.

3.4 | Hierarchical multiple regression analyses in the MDD group

Results from these analyses are presented in Table 3.

3.5 | Predictors of the RCBI-II-CB

In the first step of the hierarchical multiple regression, daily Internet use was entered into the model and was found to be significant, $F(1, 119) = 16.53, p < .01$, accounting for 11% of the variance. In the second step, DSS-II was added to the model, and it significantly contributed an additional 1% of the variance, $F(2, 118) = 9.84, p < .01$. In the third step, SMDS was added and made a significant contribution to the model, $F(3, 117) = 13.01, p < .01$, accounting for 11% additional variance. In the final model, all subsets of the MCQ-C were inserted in the model, but they did not make any significant contribution. Only SMDS remained as a significant predictor of the RCBI-II-CB with a total variance explained of 25%. The effect size of the final regression model was medium ($f^2 = .33$).

3.6 | Predictors of RCBI-II-CV

In the first step of the hierarchical multiple regression, daily Internet use was entered into the model and was found to be significant, $F(1, 119) = 30.67, p < .01$, accounting for 19% of the variance. In the second step, DSS-II was added to the model and it significantly contributed an additional 15% of the variance, $F(2, 118) = 32.69, p < .01$. In the third step, SMDS was added and made a significant contribution to the model, $F(3, 117) = 75.98, p < .01$, accounting for 30% additional variance. In the final model, all subsets of the MCQ-C were

TABLE 3 Hierarchical regression for RCBI-II subtests in the MDD group ($n = 121$)

RCBI-II factors	Predictors	Standardized Beta	t	p	Adjusted R ²	ΔR ²
Cyberbullying	Step 1				.11	.11
	Daily internet use	.34	23.50	<.01		
	Step 2				.12	.01
	Daily internet use	.30	3.46	<.01		
	DSS-II	.14	1.56	.12		
	Step 3				.23	.11
	Daily internet use	.01	0.08	.93		
	DSS-II	.05	0.68	.49		
	SMDS	.46	4.12	<.01		
	Step 4				.25	.02
	Daily internet use	.02	0.18	.85		
	DSS-II	−.12	−1.03	.30		
	SMDS	.39	0.33	<.01		
	Positive Meta-Worry	−.08	−0.64	.51		
	Negative Meta-Worry	−.08	−0.60	.55		
Superstition, Punishment and Responsibility	.16	1.01	.31			
Cognitive Monitoring	.16	1.27	.20			
Cybervictimization	Step 1				.19	.19
	Daily internet use	.45	5.54	<.01		
	Step 2				.34	.15
	Daily internet use	.33	4.34	<.01		
	DSS-II	.40	5.16	<.01		
	Step 3				.64	.30
	Daily internet use	−.16	−2.23	.02		
	DSS-II	.26	4.55	<.01		
	SMDS	.78	10.31	<.01		
	Step 4				.65	.01
	Daily internet use	−.13	−1.72	.08		
	DSS-II	.25	3.01	<.01		
	SMDS	.76	9.49	<.01		
	Positive Meta-Worry	.14	1.70	.09		
	Negative Meta-Worry	.12	1.39	.16		
Superstition, Punishment and Responsibility	−.11	−1.08	.27			
Cognitive Monitoring	.15	1.74	.08			

Abbreviations: DSS-II, Level II DSM-5 Depression Scale-11–17 years; MDD, major depressive disorder; RCBI-II = Revised Cyberbullying Inventory-II; SMDS = Social Media Use Disorder Scale.

inserted in the model, but they did not make any significant contribution. Only DSS-II and SMDS were significant predictors of the RCBI-II-CV with a total variance explained of 65%. The effect size of the final regression model was large ($f^2 = 1.94$).

3.7 | Hierarchical multiple regression analyses in the AD group

Results from these analyses are presented in Table 4.

3.8 | Predictors of the RCBI-II-CB subdimension

In the first step of the hierarchical multiple regression, daily Internet use was entered into the model and was found to be significant, $F(1, 120) = 36.12$, $p < .01$, accounting for 22% of the variance. In the second step, ANXS-II was added to the model and it significantly contributed less than 1% additional variance, $F(2, 119) = 18.67$, $p < .01$. In the third step, SMDS was added and made a significant contribution to the model, $F(3, 118) = 19.16$, $p < .01$, accounting for 9% additional variance. In the final model, the Positive Meta-Worry

TABLE 4 Hierarchical regression for RCBI-II subtests in the AD group ($n = 122$)

RCBI-II factors	Predicting factors	Standardized beta	t	p	Adjusted R ²	ΔR ²
Cyberbullying	Step 1				.22	.22
	Daily internet use	.48	6.01	<.01		
	Step 2				.22	<.01
	Daily internet use	.46	5.64	<.01		
	ANXS-II	.08	1.08	.28		
	Step 3				.31	.09
	Daily internet use	.06	0.49	.62		
	ANXS-II	.05	0.64	.52		
	SMDS	.50	3.94	<.01		
	Step 4				.31	<.01
	Daily internet use	.07	0.55	.58		
	ANXS-II	.08	1.01	.31		
	SMDS	.53	4.10	<.01		
Positive Meta-Worry	.10	1.18	.23			
Cybervictimization	Step 1				.15	.15
	Daily internet use	.39	4.70	<.01		
	Step 2				.17	.02
	Daily internet use	.36	4.26	<.01		
	ANXS-II	.14	1.71	.08		
	Step 3				.24	.07
	Daily internet use	.04	0.02	.97		
	ANXS-II	.11	1.35	.17		
	SMDS	.45	3.36	<.01		
	Step 4				.29	.04
	Daily internet use	.02	0.20	.83		
	ANXS-II	.08	0.93	.35		
	SMDS	.44	3.29	<.01		
	Negative Meta-Worry	-.21	-1.81	.07		
	Superstition, Punishment and Responsibility	.26	2.14	.03		
Cognitive Monitoring	.07	0.65	.51			

Abbreviations: AD, anxiety disorders; ANXS-II, Level II DSM-5 Anxiety Scale-11-17 years; RCBI-II, Revised Cyberbullying Inventory-II; SMDS, Social Media Use Disorder Scale.

subdimension of metacognitions was added; however, it did not make any significant contribution to the model. Only SMDS was the significant predictor of the RCBI-II-CB subdimension with a total variance explained of 33%. The effect size of the final regression model was large ($f^2 = .49$).

3.9 | Predictors of the RCBI-II-CV subdimension

In the first step of the hierarchical multiple regression, daily Internet use was entered into the model and was found to be significant, $F(1, 120) = 22.15$, $p < .01$, accounting for 15% of the variance. In the second step, ANXS-II was added to the model and

it significantly contributed an additional 2% of the variance, $F(2, 119) = 12.72$, $p < .01$. In the third step, SMDS was added and made a significant contribution to the model, $F(3, 118) = 12.98$, $p < .01$, accounting for 7% of the variance. In the final model, all subdimensions of the MCQ-C except Positive Meta-Worry were added to the model. Negative Meta-Worry and Cognitive Monitoring did not make a significant contribution, but the Superstition, Punishment and Responsibility factor was significant. Therefore, SMDS and the Superstition, Punishment and Responsibility subdimension of the MCQ-C were significant predictors of the RCBI-II-CV subdimension with a total variance explained of 29% in the last step. The effect size of the final regression model was large ($f^2 = .40$).

4 | DISCUSSION

Our study aimed to examine the predictive role of dysfunctional metacognitions in cyberbullying and cybervictimization among adolescents diagnosed with MDD and AD. The results of our study showed that metacognitions are not associated with cyberbullying and cybervictimization in the MDD group. Additionally, none of the metacognitions predicted cyberbullying in the AD group. However, the Superstition, Punishment and Responsibility subdimension of metacognitions was found to be a significant predictor of cybervictimization while controlling for daily Internet use, social media use and anxiety severity in the AD group. Therefore, we suggest that dysfunctional metacognitions related to this factor may pose vulnerability for cybervictimization among adolescents with AD. According to our knowledge, this study is the first attempt to examine the possible associations between specific metacognitions and both cyberbullying and cybervictimization among a psychiatric adolescent population.

Additional findings of our study demonstrated comparable results with the literature that refer to higher scores in problematic social media use (Aydın et al., 2020; Lin et al., 2016; Shensa et al., 2018; Worsley et al., 2018), dysfunctional metacognitions (Aydın et al., 2019; Corcoran & Segal, 2008; Spada et al., 2008; Sun et al., 2017) and cybervictimization (Chu et al., 2018; Hoge et al., 2017; Landoll et al., 2015; Martínez-Monteagudo et al., 2020) in MDD and AD groups when compared with healthy controls. Intriguingly, the prevalence of cyberbullying and cybervictimization in our sample was in line with previous studies (Topçu et al., 2008); however, the frequency scores of acting as cyberbully and exposure to these behaviours were found to be low in our sample, which could limit the interpretations of our findings. The MDD group demonstrated higher levels of cyberbullying than AD and healthy control groups. There is scarcity of studies that examine the aetiology of cyberbullying among adolescents; however, one longitudinal study among adolescents observed that depression is more common among individuals who are both bully and victim at the same time when compared with only cyberbullying victims (Gómez-Guadix et al., 2013). Additionally, one recent study indicated that depression may predict subsequent cyberbullying behaviours (Zhang et al., 2020). Therefore, our results showing higher levels of cyberbullying in the MDD group were in line with existing literature. On the other hand, the AD group and healthy controls did not differ on cyberbullying behaviours. Previous research has also shown an increase in cyberbullying behaviours in situations such as elevated social anxiety (Cañas et al., 2020; Martínez-Monteagudo et al., 2020); however, we did not observe a similar result in our sample. The wide variety of diagnoses (e.g., specific phobia, not otherwise specified anxiety disorder, agoraphobic disorder) in the AD group of our adolescent sample may underpin this finding. Perhaps more targeted sample groups such as sole social anxiety disorder may show higher cyberbullying behaviours.

In the MDD group, only depression severity and problematic social media use predicted cybervictimization. Consequently, it can be suggested that the adolescent's depressive symptoms and risky engagement in social media seem to be more significant than

metacognitions in being bullied by others. On the other hand, only problematic social media use predicted cyberbullying in the MDD group. Therefore, if the adolescent participates in social platforms in a more problematic way, they will tend to bully peers more. Contrary to our expectations, metacognitions were not found to be associated with cyberbullying or cybervictimization among adolescents with MDD, although we showed the presence of dysfunctional metacognitions when compared with healthy control group. Since there are no previous studies which have examined similar associations in diagnosed populations, we would suggest that the low scores of the RCBI-II and severe depression symptoms as well as higher SMDS scores might constraint the effect of metacognitions on outcome variables.

In the AD group, similar to the findings in the MDD group, only problematic social media use predicted cyberbullying. Therefore, we can argue that if the adolescent participates in social platforms in a problematic way, they will be more inclined to bully peers. Neither symptom severity nor metacognitions were found to be related to cyberbullying among adolescents with AD. Furthermore, problematic social media use and the Superstition, Punishment and Responsibility factor of metacognitions predicted cybervictimization. The Superstition, Punishment and Responsibility factor of metacognitions corresponds to the negative beliefs about thoughts in general (e.g., typical items include 'Not being able to control my thoughts is a sign of weakness' and 'If I did not control a worrying thought, and then it happened, it would be my fault') (Wells & Cartwright-Hatton, 2004). Therefore, we can suggest that when the adolescent retains these typical beliefs during cyber-activities, it may turn out to escalate negative cognitive-affective states increasing the liability to cybervictimization.

These findings are preliminary particularly for the role of metacognitions in cyberbullying and cybervictimization; hence, there are limitations to be noted in our study. A non-randomized sample and the data collected from self-report questionnaires may contain discrepancies due to recall bias. The cross-sectional design prevents assertions about causality and the direction of the relationships between variables. Observation of potential changes in study variables over time may yield different outcomes. The study was conducted among patients with severe MDD and AD, so it is possible that patients with mild symptoms may demonstrate different patterns in cyberbullying and cybervictimization. Additionally, the low scores on the RCBI-II should be taken into account while interpreting the results. Our sample covers the early to mid-adolescence period; therefore, these results cannot be generalizable to the whole adolescence period whereas social media use behaviours may change among late adolescents. The sample was recruited during the COVID-19 pandemic under a controlled normalization process in Turkey; therefore, unobserved effects of this situation which were not evaluated by the current study tests may affect the results.

Nonetheless, our results support the view that psychiatric populations may be more prone to both cyberbullying and cybervictimization. Additionally, we demonstrated more risky behaviours in problematic social media use in MDD and AD groups compared with

healthy adolescents. Moreover, we showed that metacognitions may play a salient role in cybervictimization among adolescents with AD. Targeting the modification of metacognitions (in particular the dimension of Superstition, Punishment and Responsibility) may be of therapeutic benefits in adolescents with AD who are at risk for cybervictimization. There is a growing literature that has validated the efficacy of metacognitive therapy in treating psychological distress (Normann & Morina, 2018; Wells et al., 2020) including addictive behaviours (Caselli et al., 2018). Accordingly, these interventions may also aid in alleviating the detrimental effects of problematic social media use. Subsequently, this may lessen the weight of its potential harmful contribution to both cyberbullying and cybervictimization among adolescents with MDD and AD. Psychotherapists should also consider potential interventions for decreasing the symptom severity and problematic social media use to prevent patients' cyberbullying and cybervictimization particularly in MDD and ADs.

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CONFLICT OF INTEREST

None to declare.

ORCID

Orkun Aydın  <https://orcid.org/0000-0003-0869-7394>

Marcantonio M. Spada  <https://orcid.org/0000-0003-4548-9578>

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