The Emotional State and Self-Esteem when Dealing with Cyberbullying in Adolescents

Teodora A. Ghinea[i], Elena O. Vladislav

Faculty of Psychology and Educational Sciences, Psychology Department,
University of Bucharest, Romania

Abstract

Introduction: As the use of Internet has become more and more accessible globally, phenomena such as cyberbullying have also emerged – adolescents being amongst the vulnerable categories.

Objectives: Identifying the mediating effect of self-esteem in the relationship between cyberbullying (aggressor, victim) and emotional state (anxiety, depression).

Methods: The sample consisted of 165 adolescents from Romania, out of which 51 (30.9%) were male and 114 (69.1%) female. The age of the participants is between 12 and 18 years (M = 15.43, SD = 1.89). Taking into consideration the educational level, the participants range from being enrolled in the 5th grade to the 12th grade (57 of them are in secondary school and 108 in high school).

Results: The obtained results show that there is a statistically significant relation between all studied variables, self-esteem having a partial mediating effect in their relationships.

Conclusions: If self-esteem was taken into account, the effects of the phenomenon of online bullying could be diminished. Thus, interventions on adolescents' self-esteem would be more than welcome and widely recognized as necessary.

Keywords: anxiety, depression, aggressor, victim, self-esteem, asymmetry of power, cybervictimization

*

*   *

---

[i] Corresponding author: Teodora A. Ghinea, MD, Faculty of Psychology and Educational Sciences, Psychology Department, University of Bucharest, Panduri 90, Sector 5, 050663, Bucharest, Romania, email: teodoraghinea_andreea@yahoo.com.

I. Introduction

The importance of the investigated topic

The Internet and mobile phones have become more and more part of everyday life and shape new ways for adolescents, to both communicate and socialize. They can use the Internet to overcome shyness and make friends online. However, the Internet also seems to provide access for them to engage in antisocial behaviors, whose typical form is defined as cyberbullying or electronic bullying. Adolescents are vulnerable and may become both victims of cyberbullying and aggressors, even though sometimes they do not intend to harm others.

So, although the Internet has transformed the way in which the world works, it has apparently served as a place for cyberbullying, as well. As many young people today face acts of cyberbullying, a growing literature has begun to show the prevalence, predictors, and the outcomes of this behavior. Below can be found a summary of several studies that have addressed this topic.

The bullying phenomenon

Bullying is a specific type of aggression in which a behavior, intended to harm or disturb, keeps repeating itself and is manifested on a person who is not as strong as the aggressor. This asymmetry of power can be either physical or psychological (Nansel et al., 2001).

Whitson (2017) describes four types of bullying: physical bullying (including behaviors such as pushing, hitting, obstructing, pinching, spitting, pulling hair and also confiscating or destroying the others' personal property), verbal bullying (including teasing, nicknames, insults, and also humiliating or sexually explicit, homophobic or racial verbal messages), relational bullying (referring to rumors or lies about others, exclusion of certain participants from groups or encouragement of this behavior, and making jokes or pranks, in order to humiliate or embarrass a colleague), cyberbullying (referring to the virtual space where different messages, pictures or short videos can be posted with or about a person in order to humiliate him or her).

The cyberbullying phenomenon

Cyberbullying is defined as an aggressive behavior that manifests itself through voluntary and repeated harm to a less powerful colleague, caused by the use of computers, mobile phones, and other electronic devices (Smith et al., 2012; Hinduja & Patchin, 2009; Smith et al., 2008). Cyberbullying is an intentional, unjustified, repeated behavior over time; the target of cyberbullying experiences real pain (psychological, emotional or relational) and cannot be easily defended (Patchin & Hinduja, 2010). There is a disproportion of power. Among the relevant criteria to deduce this power disproportion, we can find the technological knowledge and IT skills of the aggressor, compared to the victim.

There are some features that distinguish between cyberbullying and traditional bullying. First of all, cyberbullying uses electronic devices, technology (Patchin & Hinduja, 2010), and the aggressor may remain anonymous by using various online accounts, email addresses or social applications. In cyberbullying, on one hand, the victim may respond digitally (or face to face, if the aggressor is a schoolmate), but may still suffer depending on what happened; on another hand, most of the time, the victim cannot identify their aggressor and assumes the intimidating behavior to themselves, and this makes them feel both vulnerable and powerless. Then, online bullying occurs anywhere, anytime. Unlike traditional bullying that manifests itself in a fixed, clearly defined environment (at school, in the park), cyberbullying can manifest itself uninterruptedly. Moreover, there are no authorities that can regulate this behavior. There is no entity to check conversations and interactions in the online space to ensure courtesy, thus allowing proper communication.

Forms of cyberbullying

Various authors made a classification of the types of cyberbullying: online fighting (online conflicts, through which the aggressor sends messages to other people, with vulgar and threatening content); harassment (sending repetitive online messages having offensive content) (Willard, 2005); denigration/ slander (posting and distributing gossip or rumors about a person online, as well as digitally modified photos (Burton & Mutongwizo, 2009); the theft of one's identity (creating fake accounts, pretending to be another person in order to have conversations with the others by communicating negatively or inappropriately with them) (Dempsey et al., 2009); disclosure (discover and share of a person's secrets, photographs, or private information online, without his or her consent) (Burton & Mutongwizo, 2009; Willard, 2005); deception (the aggressor tricks someone into divulging secrets, photos or embarrassing information, and then posts these online without the consent of the cheated person) (Lampridis, 2015; Willard, 2005); exclusion (ignoring or blocking a

person in various chat groups, in private messages or in the list of friends; online harassment (representing a form of excessive and repetitive harassment performed online) (Lampridis, 2015).

Willard (2007) adds another type of cyberbullying, which is called sexting, meaning the distribution of inappropriate photos (semi-nude/ nude, in obscene positions or situations) without the consent of the person concerned/ targeted.

The influence of cyberbullying on adolescents
a) Adolescence – the distinctive features of the age

Adolescence is that period of transition from childhood to adulthood. This phase includes three stages: the stage of puberty (10/ 11-14/ 15), adolescence (14-18 years), and prolonged adolescence (18-20/ 25 years) (Golu, 2015).

The fundamental characteristics of this period are represented by the changes that the adolescent experiences both from a physical point of view and from a psychological one.

During this period, developing identity is particularly important (Livingstone, 2008). The process of identity formation depends largely on the social environment (social stereotypes). Therefore, young people tend to look for other persons, behaviors and situations that will help them to capitalize positively and avoid those who make them feel bad (not satisfied with their own person) or unappreciated.

Studies have shown that cyberbullying is most prevalent in the last years of secondary school (Williams & Guerra, 2007), among middle-aged children. Both Smith et al. (2012) and Tokunaga (2010) suggest that adolescence is a peak period when it comes to involve in cyberbullying. However, in the meta-analysis conducted by Kowalski and colleagues (2014), they found that samples containing both secondary school students and high school students had higher relationships between cyberbullying and bullying victimization, compared to samples containing only secondary school students or just high school ones.

b) Adolescents' perception of the phenomenon of cyberbullying and its magnitude

Livingstone and collaborators (2011) conducted a study which found out that 46% of the Romanian children in the sample aged between 9 and 16 years have an account on social networks. Also, 4 out of 10 reported of being intimidated both in the traditional way and online. Kowalski et al. (2014) conducted a study in which the sample consisted of secondary school

students and concluded that between 10% and 40% of them were involved in cyberbullying, between 10% and 75% of students have experienced cyber victimization at least once, and between 20% and 40% of students say they are repeatedly bullied online.

Some researchers have found no significant difference in cyberbullying rates when comparing elementary school students with high school students (Tokunaga, 2010). Alternatively, other studies have found out that adolescents and young adults are more likely to be victims of cyberbullying than younger children (Fan et al., 2019; Kowalski & Limber, 2007). As students grow up, their access to Internet increases, thing which can provide more opportunities for such experiences to occur.

Regarding preventive factors/ agents, we refer to school safety, school climate and support (the more the person benefits from these factors, the lower the possibility of becoming a victim) (Kowalski et al., 2014). A personal feature that seems to provide individual protection against involvement in cyberbullying is empathy (op. cit., 2014). People who reported higher levels of both cognitive and affective empathy (or an ability to share other people's emotions) tended to engage in bullying behaviors less often.

Among the risk factors specific to cyberbullying we discover the use of technology, the frequency of Internet use, risky online behavior, parental involvement and the school climate. The strongest associations with the perpetuation of cyberbullying are normative beliefs about aggression and moral disengagement; stress and suicidal thoughts presented the strongest associations with online victimization (Kowalski et al., 2014).

c) Psychological consequences

As in the case of traditional school bullying, both aggressors and victims of cyber-attacks suffer from internalization and outsourcing problems (Cénat et al., 2014).

The meta-analysis conducted by Kowalski and colleagues (2014) highlights a number of positive relationships that were noticed between cyberbullying and psychosocial, behavioral, stress, anxiety, depression, loneliness, behavioral problems, emotional issues, somatic symptoms and consumption of drugs and alcohol. A moderately positive relationship was also found between this type of victimization and the idea of suicide (people who reported higher levels of victimization said they had thought of committing suicide more often).

All four roles analyzed (bullying aggressor, bullying victim, cyberbullying aggressor, cyberbullying victim) showed an increasing anxiety experienced in general situations of social interaction, and the anxiety of both groups of victims was even greater than the anxiety of the aggressors (Estévez et al., 2019).

Cybervictimization itself, or the combination of cybervictimization and traditional victimization, may be better predictors of depression than the experience of traditional victimization (Tennant et al., 2015; Smith et al., 2008).

Cyberbullying and self-esteem

Rosenberg (1965) defined self-esteem as a favorable or unfavorable attitude toward self.

In the study conducted by Patchin and Hinduja (2010), they found out that there was a statistically significant moderate relationship between low self-esteem and experiences of cyberbullying. Thus, students who experienced cyberbullying, both as a victim and as an aggressor, had a significantly lower self-esteem than those who experienced only moderate frequencies of cyberbullying, or those who did not experience such cyberbullying at all. However, the relationship between victims of cyberbullying and self-esteem is stronger than the relationship between cyberbullying aggressors and self-esteem.

Another study showed that victims and their aggressors have negative perceptions of themselves in certain areas, although the victims' self-concept seems to be more deteriorated in all four dimensions (family, academic, physical and social) (Estévez et al., 2019).

II. Method

The mediating effect of self-esteem

The mediating role of self-esteem has not been investigated in the literature, being analyzed either as an independent or as a dependent variable. The innovation of this study comes precisely from the perspective of this aspect, because self-esteem will be analyzed from another point of view.

The purpose of the research:

The present research aims at observing whether self-esteem has a mediating role in this relationship between cyberbullying (aggressor, victim) and emotional state (anxiety, depression) among adolescents. Thus, four basic relationships will be analyzed to see if the mediation analysis can be performed and whether it has statistical relevance.

Aim: Identifying the mediating effect of self-esteem in the relationship between cyberbullying (aggressor/ victim) and emotional state (anxiety/ depression).

Hypotheses:

H1: There is a statistically significant relationship between cyberbullying (aggressor/ victim) and emotional state (anxiety/ depression).

H2: There is a statistically significant relationship between cyberbullying (aggressor/ victim) and self-esteem.

H3: There is a statistically significant relationship between self-esteem and emotional state (anxiety/ depression).

H4: Self-esteem mediates the relationship between cyberbullying (aggressor/ victim) and emotional state (anxiety/ depression).
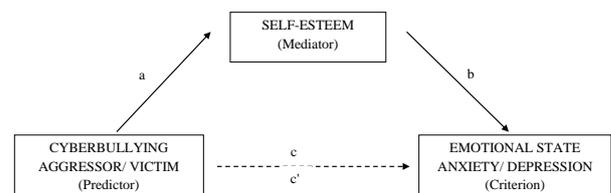

Figure 1 – The mediating effect of self-esteem on the relationship between cyberbullying (aggressor, victim) and emotional state (anxiety, depression).

Data collection

The data collection was done online, with the help of the Google Forms platform, and took place between March and April 2020. The access link was distributed on the personal Facebook page, on WhatsApp and within certain interest groups for adolescents.

Each participant filled in the questionnaires, by ticking the option that suited him or her best, the time allotted being a maximum of 15 minutes. All data are confidential and being part of the study was voluntary.

The criteria for those willing to participate in this research were:
• parental consent;
• age (to be between 12 and 18 years old).

After the database was designed, the statistical analysis was performed using the SPSS 22 program.

Procedure

After receiving the link, the parents had to read the introductory part and check whether or not they

agreed with their child's participation in the study. Subsequently, before starting to fill in the questionnaires, the adolescents agreed to participate in the study.

Participants

The present research involved 165 adolescents from Romania, out of which 51 (30.9%) male and 114 (69.1%) female. The age of the participants is between 12 and 18 years (M = 15.43, SD = 1.89). Regarding the educational level, the participants range from the 5th grade up to the 12th grade, out of which 57 (34.55%) are in secondary school and 108 (64.45%) are in high school. They come from both urban (75.2%) and rural areas (24.8%).

The sampling method used was convenient, non-random.

Instruments

Cyberbullying was measured using 22 items that make up the European Cyberbullying Intervention Project Questionnaire (ECPQI), proposed by Brighi et al. (2012), but published by Del Rey et al. (2015). This questionnaire assesses the frequency of behavior both in the aggressor position (11 items), with a Cronbach Alpha index of .66, and in the victim position (11 items), where the internal consistency index is .90. The questionnaire also includes repetitive criteria of cyberbullying and power disproportion, containing elements of behavior that denote a developed technological field of the aggressor and the lack of use of security measures by the victim. For example, "Someone logged into my account and pretended to be me". Participants had to choose the answer that suited them best, using a five-step Likert scale that marked the frequency of behavior in the last months (Never, Once or Twice, Once or Twice a Month, About Once a week, More than once a week). An example of an item for the aggressor is "I posted embarrassing videos or pictures with someone online". And, for the victim "Someone threatened me with texts or messages online".

Emotional state was measured from the perspective of depressive and anxiety symptoms.

The Multidimensional Anxiety Scale for Children (MASC) was used to assess the dimensions of anxiety. This scale was developed by March et al. (1997) and can be applied to children and adolescents aged 8 to 19 years. The Cronbach Alpha internal consistency index is .89. The scale comprises of 39 items, and the scoring was performed on a four-step Likert scale, ranging from Never True to Often True.

An example of an item is "I feel tense or nervous" or "Bad weather, darkness, heights, animals or insects scare me".

The Child Depression Inventory (CDI) was developed by Kovacs (1983) and devised to assess depressive symptoms; it can be applied to children and adolescents aged 7 to 19 years. The short form of this instrument, consisting of 10 items, was used, and the internal consistency index is .82. Participants had to choose the answer that suited them best from three options available. An example is "I'm sad from time to time/ I'm often sad/ I'm sad all the time".

Self-esteem was measured using the scale proposed by Rosenberg (1965). This scale estimates the level of self-perceived esteem and includes 10 evaluation items scored on a four-step Likert scale, ranging from Strong Disagreement to Strong Agreement. The internal consistency coefficient of Cronbach Alpha is .82. An example of an item is "I feel like I'm at least as valuable as the others".

III. Results

As mentioned, all statistical analyses were performed with the SPSS statistical program, version 22.

The descriptive statistics, the mean, the standard deviation and the internal consistency are reported in Table 1.

The normalcy of the collected data was assessed using the values of the Skewness and Kurtosis indices. The decision to proceed this way was guided by the literature. There are studies showing that a Skewness value greater than 3.0 is an extreme score, and an extreme Kurtosis is indicated by a value greater than 8.0 (Kline, 2011). In the case of the present research, the data fall within the allowed limits.

The inter-correlation of the measured variables is reported in Table 2. We can observe that there is a statistically significant correlation between all the variables studied, which allows the performance of the mediation analysis.

Table 1 – Descriptive statistics for the variables included in the study.

		M	*SD*	Alpha
Cyberbullying	Aggressor	15.04	3.63	0.66
	Victim	18.31	8.36	0.90
Emotional state	Anxiety	86.52	18.21	0.89
	Depression	15.12	3.93	0.82
Self-esteem		28.26	5.98	0.82

Note. M=mean; SD=standard deviation; Alpha=internal consistency

Table 2 – Inter-correlation of measured variables.

		1	2	3	4	5
1.	Cyberbullying – aggressor	-				
2.	Cyberbullying – victim	.51**	-			
3.	Emotional state – anxiety	.31**	.45**	-		
4.	Emotional state – depression	.24**	.38**	.70**	-	
5.	Self-esteem	-.16**	-.25**	-.64*	.74**	-

Note. N=165; * p<0.05; ** p<0.01

The mediating effect of self-esteem on the relationship between cyberbullying (aggressor, victim) and emotional state (anxiety, depression) was achieved using PROCESS, version 3 (Hayes, 2017).

Table 3 presents the results of the mediating effect of self-esteem in the relationship between cyberbullying-aggressor and emotional state (anxiety, depression). We can observe that there is a statistically significant negative influence of cyberbullying in the aggressor position on self-esteem (β=-0.26, p=0.00, p<0.05) and a statistically significant negative influence of self-esteem on anxiety (β=-1.86, p=0.00, p<0.05), but also on depression (β=-0.47, p=0.41, p<0.05). Thus, hypotheses 2 and 3, indicating the relationships between these variables, are supported by statistical data. The mediating effect of self-esteem made the relationship between cyberbullying-aggressor and anxiety to be 1.06 (β=1.06, p=0.00, p<0.05), and in the case of depression to be 0.14 (β=0.14, p=0.00, p<0.05). Thus, hypothesis 4 is supported by statistical data, too. Also, in this table we find the fact that cyberbullying in the case of aggressors contributes to the variation of self-esteem by 0.2% (R2=0.02); cyberbullying-aggressor and self-esteem contributes to the variation of anxiety with 43% (R2=0.43), and to depression variation by 21% (R2=0.21).

Table 4 shows the effects of the mediation analysis. In the case of anxiety, the direct effect (β=1.06, p=0.00) is smaller and statistically more significant than the total effect (β=1.56, p=0.00). Also, in the case of depression, the direct effect (β=0.23, p=0.00) is smaller and statistically more significant than the total effect (β=0.26, p=0.00). Following these results, we understand that hypothesis 1 is supported by statistical data. We also notice that self-esteem has a partial mediating effect in the relationship between

cyberbullying-aggressor and emotional state (anxiety, depression).

Table 3 – Mediation analysis of self-esteem on the relationship between cyberbullying-aggressor and emotional state.

Variables		Self-esteem				Anxiety				Depression		
		β	SE	p		β	SE	p		β	SE	p
Cyberbullying aggressor	a	-0.26	0.12	0.03	c'	1.06	0.29	0.00	c'	0.14	0.05	0.01
Self-esteem					b	-1.86	0.17	0.00	b	-0.47	1.40	0.00
Constancy		32.24				123.21				26.46		
		R²=-0.02				R²=0.43				R²=0.21		
		P=0.03				P=0.00				P=0.00		

Table 4 – The total effect, the direct effect and the indirect effect of self-esteem on the relationship between cyberbullying-aggressor and emotional state.

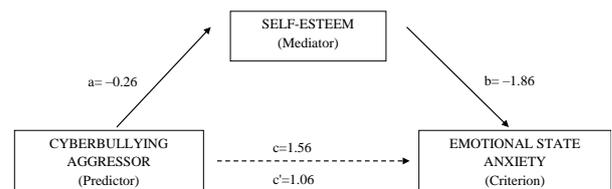|	Anxiety				Depression			
	β	P	LLCI	ULCI	β	P	LLCI	ULCI
Total effect	1.56	0.00	0.82	2.29	0.26	0.00	0.10	0.42
Direct effect	1.06	0.00	0.49	1.64	0.23	0.01	0.02	0.25
Indirect effect	0.49	0.04	0.04	1.08	0.12	0.42	-0.08	0.05

Figure 2 – The mediating effect of self-esteem on the relationship between cyberbullying-aggressor and emotional state-anxiety.
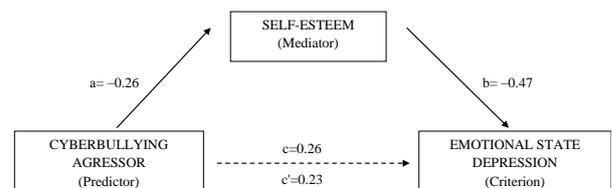

Figure 3 – The mediating effect of self-esteem on the relationship between cyberbullying-aggressor and emotional state-depression.

Table 5 presents the results of the mediating effect of self-esteem on the relationship between cyberbullying-victim and emotional state (anxiety, depression). We can observe that there is a statistically significant negative influence of cyberbullying in the victim position on self-esteem (β=-0.18, p=0.00, p<0.05) and a statistically significant negative influence of self-esteem on anxiety (β=-1.72, p=0.00, p<0.05), but also on depression (β=-0.45, p=0.00, p<0.05). Thus, hypotheses 2 and 3 indicating the relationships between

these variables are supported by statistical data. The mediating effect of self-esteem made the relationship between cyberbullying-victim and anxiety to be 0.68 (β=0.68, p=0.00, p<0.05), and in the case of depression to be 0.10 (β=0.10, p=0.00, p<0.05). Therefore, hypothesis 4 is supported by statistical data. Also, in this table we find the fact that cyberbullying, in the case of victims, contributes to the variation of self-esteem by 0.6% (R2=0.06), and cyberbullying-victim and self-esteem contributes to the variation of anxiety with 51% (R2=0.51), and at the variation of depression by 59% (R2=0.59).

Table 6 shows the effects of the mediation analysis. In the case of anxiety, the direct effect (β=0.68, p=0.00) is smaller and statistically significant compared to the total effect (β=0.99, p=0.00). And, in the case of depression, the direct effect (β=0.10, p=0.00) is smaller and statistically significant in contrast to the total effect (β=0.18, p=0.00). Following these results, we understand that hypothesis 1 is supported by statistical data. We also notice that self-esteem has a partial mediating effect in the relationship between cyberbullying-victim and emotional state (anxiety, depression).

Table 5 – Mediation analysis of self-esteem on the relationship between cyberbullying-victim and emotional state.

Variables		Self-esteem				Anxiety				Depression		
		β	SE	p		β	SE	p		β	SE	p
Cyberbullying victim	a	-0.18	0.05	0.00	c'	0.68	0.12	0.00	c'	0.10	0.02	0.00
Self-esteem					b	-1.72	0.17	0.00	b	-0.45	0.03	0.00
Constancy			31.58				122.85				26.12	
			R²=0.06				R²=0.51				R²=0.59	
			P=0.00				P=0.00				P=0.00	

Table 6 – The total effect, the direct effect and the indirect effect of self-esteem on the relationship between cyberbullying-victim and emotional state.

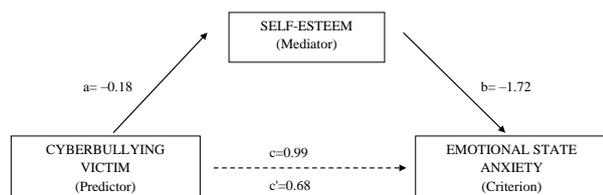|	Anxiety				Depression			
	β	P	LLCI	ULCI	β	P	LLCI	ULCI
Total effect	0.99	0.00	0.69	1.29	0.18	0.00	0.11	0.25
Direct effect	0.68	0.00	0.44	0.92	0.10	0.00	0.05	0.14
Indirect effect	0.31	0.00	0.12	0.53	0.08	0.00	0,03	0.13

Figure 4 – The mediating effect of self-esteem on the relationship between cyberbullying-victim and emotional state-anxiety.
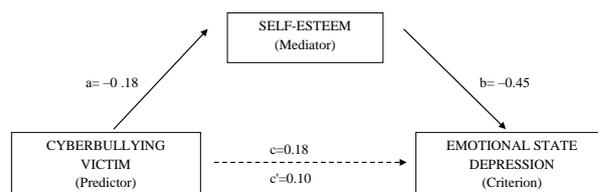

Figure 5 – The mediating effect of self-esteem on the relationship between cyberbullying-victim and emotional state-depression.

IV. Discussions and conclusions

The aim of this study was to test the mediating role of self-esteem in the relationship between cyberbullying and emotional state (anxiety, depression) among adolescents, both in the position of aggressors and in the position of victims.

Hypothesis 1 was supported by the data collected. There is a statistically significant positive relationship between cyberbullying in the position of aggressor, as well as in the position of victim and emotional state (anxiety, depression). In practice, in line with the studies conducted by Kowalski et al. (2014) and Estévez et al. (2019), these relationships indicate that adolescents who are involved in cyberbullying have high scores of emotional states, regardless of the position they take (aggressor or victim) and vice versa.

Hypothesis 2 was supported by statistical data, as well. There is a statistically significant negative relationship between cyberbullying (aggressor, victim) and self-esteem. Adolescents involved more frequently in cyberbullying either as a victim or as an aggressor have lower self-esteem scores. This relationship is also valid in the opposite direction. Adolescents with high self-esteem are less often involved in cyberbullying as an aggressor, as well as a victim. These data are again consistent with the results of other researches. Patchin and Hinduja (2010) were arguing that cyberbullying is correlated with low self-esteem. Moreover, Estévez and his collaborators (2019) demonstrated that self-esteem, in the case of victims, is lower compared to self-esteem in the case of aggressors.

The data collected also support hypothesis 3. There is a statistically significant negative relationship between self-esteem and emotional state. In other words, adolescents with high self-esteem have lower scores of emotional state and adolescents with low self-esteem have high scores of emotional states. The data collected by Goodman and Whitaker (2002) also advocate these hypotheses.

Hypothesis 4 was supported by statistical data, too. In all four cases, self-esteem has a partial mediating role in the relationship between cyberbullying (aggressor, victim) and emotional state (anxiety, depression). In other words, although initially self-esteem (mediator) was caused by cyberbullying (independent variable) and was the cause of emotional state (dependent variable), now, when self-esteem is included in the model, the independent variable loses its significance. Thus, when self-esteem interferes with the relationship, its effect is only part of the total effect.

Limits

Like any other research, this one is not perfect either and includes a series of limits that are worth mentioning. Among them, it is the fact that all data were collected by self-reporting. Thus, the study aggregated only the opinions of adolescents about cyberbullying, emotional state and self-esteem. These results may be subject to evaluation **bias**. For example, participation in cyberbullying as an aggressor could be underreported due to the tendency of individuals to provide socially desirable responses.

Another limit is that the results cannot be generalized, because the sample is not randomized or very large.

The third limit is related to the fact that this study is not able to ensure an adequate temporal ordering of independent and dependent variables (see also Patchin & Hinduja, 2010). We do not know if adolescents with high emotional states and low self-esteem are more often targeted or involved in cyberbullying or whether the experience of cyberbullying increases the emotional state (anxiety, depression) and decreases the level of self-esteem.

Also, the study did not consider how cyberbullying was manifested. It is not known whether these adolescents were initially victims and later became aggressors, or if they were aggressors at first and later became victims of bullying.

Future directions

A larger sample would allow the study of the effect of gender and age on the relationship between cyberbullying (aggressor, victim), emotional states (anxiety, depression) and self-esteem, with sufficient statistical and methodological rigor.

It would be interesting for this study to be extended to primary or higher education students, in order to make evolutionary comparisons.

Also, a more dynamic approach, using longitudinal data, would make it possible to monitor how emotional symptoms evolve in adolescents involved in cyberbullying.

Another future direction lies in the possibility of investigating other mediating variables or by investigating and analyzing more deeply the variable self-esteem.

Practical implications

This paper provides additional evidence that electronic forms of adolescent bullying require the attention of teachers and adults who contribute to their development.

Bullying prevention programs incorporated into school curricula should also include basic information about cyberbullying. Because we know from various studies (e.g., Kowalski et al., 2014) that experiencing cyberbullying is linked to anxiety and depression, intervention efforts could target these variables and help schools and communities cope better to manage them more effectively.

Moreover, because the mediating effect of self-esteem in the studied relationship has been proven, this indicates that, if cyberbullying was taken into account in prevention or intervention programs, the effects of this phenomenon of online bullying could be diminished. Thus, interventions on adolescents' self-esteem would be more than welcome and effective. Certain activities could be organized, leading to an increased self-esteem and **improvement**. It is very important to emphasize that interventions on this phenomenon must take into consideration all actors involved (aggressor, victim, witness), in order for this behavior to be managed as effectively as possible.

*
* *

References

Brighi, A., Ortega, R., Pyzalski, J., Scheithauer, H., Smith, P. K., & Tsormpatzoudis, H. (2012). European cyberbullying intervention project questionnaire – ECIPQ. *[Unpublished questionnaire]*.

Burton, P., & Mutongwizo, T. (2009). Inescapable violence: Cyber bullying and electronic violence against young people in South Africa. *Centre for Justice and Crime Prevention, 8*, 1-12.

Cénat, J. M., Hébert, M., Blais, M., Lavoie, F., Guerrier, M., & Derivois, D. (2014). Cyberbullying, psychological distress and self-esteem among youth in Quebec schools. *Journal of Affective Disorders, 169*, 7-9.

Del Rey, R., Casas, J. A., Ortega-Ruiz, R., Schultze-Krumbholz, A., Scheithauer, H., Smith, P., & Guarini, A. (2015). Structural validation and cross-cultural robustness of the European Cyberbullying Intervention Project Questionnaire. *Computers in Human Behavior, 50*, 141-147.

Dempsey, A. G., Sulkowski, M. L., Nichols, R., & Storch, E. A. (2009). Differences between peer victimization in cyber and physical settings and associated psychosocial adjustment in early adolescence. *Psychology in the Schools, 46*(10), 962-972.

Estévez, E., Estévez, J. F., Segura, L., & Suárez, C. (2019). The influence of bullying and cyberbullying in the psychological adjustment of victims and aggressors in adolescence. *International journal of environmental research and public health, 16*(12), 2080.

Fan, C. Y., Chu, X. W., Zhang, M., & Zhou, Z. K. (2019). Are narcissists more likely to be involved in cyberbullying? Examining the mediating role of self-esteem. *Journal of interpersonal violence, 34*(15), 3127-3150.

Golu, F. (2015). *Manual de psihologia dezvoltării. O abordare psihodinamică (Developmental psychology manual. A psychodynamic approach)*. Iași: Editura Polirom.

Goodman, E., & Whitaker, R. C. (2002). A prospective study of the role of depression in the development and persistence of adolescent obesity. *Pediatrics, 109*, 497-504.

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach.* Guilford Publications.

Hinduja, S., & Patchin, J. (2009). *Bullying Beyond the Schoolyard: Preventing and Responding to Cyberbullying.* Thousand Oaks: Sage Publications (Corwin Press).

Kline, R. B. (2011). *Principles and practice of structural equation modeling (3rd ed.).* New York, IL: The Guilford Press.

Kovacs, M. (1983). The Children's Depression Inventory: A self-rating depression scale for school-aged youngsters. Unpublished manuscript. *(Available from Maria Kovacs, University of Pittsburgh School of Medicine, Western Psychiatric Institute and Clinic)*.

Kowalski, R. M., & Limber, S. P. (2007). Electronic bullying among middle school students. *Journal of adolescent health, 41*(6), S22-S30.

Kowalski, R. M., Giumetti, G. W., Schroeder, A. N., & Lattaner, M. R. (2014). Bullying in the digital age: A critical review and meta-analysis of cyberbullying research among youth. *Psychological Bulletin, 140*(4), 1073-1137.

Lampridis, E. (2015). Stereotypical Beliefs about Cyber Bullying: An Exploratory Study in terms of Myths. *Universal Journal of Educational Research, 3*(2), 135-147.

Livingstone, S. (2008). Taking risky opportunities in youthful content creation: teenagers' use of social networking sites for intimacy, privacy and self-expression. *New Media Soc, 10*(3), 393-411.

Livingstone, S., Haddon, L., & Görzig, A. (2011). Risks and safety on the internet: The perspective of European children. *Lse, 170*.

March, J. S., Parker, J. D., Sullivan, K., Stallings, P., & Conners, C. K. (1997). The Multidimensional Anxiety Scale for Children (MASC): factor structure, reliability, and validity. *Journal of the American academy of child & adolescent psychiatry, 36*(4), 554-565.

Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. (2001). Bullying behaviors among US youth: Prevalence and association with psychosocial adjustment. *Jama, 285*(16), 2094-2100.

Patchin, J. W., & Hinduja, S. (2010). Cyberbullying and self-esteem. *Journal of school health, 80*(12), 614-621.

Rosenberg, M. (1965). *Society and the Adolescent Self-Image.* Princeton: Princeton University Press.

Smith, P. K., del Barrio, C., & Tokunaga, R. S. (2012). Definitions of Bullying and Cyberbullying: How Useful Are the Terms?. *In Principles of cyberbullying research*, 54-68.

Smith, P. K., Mahdavi, J., Calvalho, M., Fisher, S., Russell, S., & Tippett, N. (2008). Cyberbullying: Its nature and impact in secondary schools. *The Journal of Child Psychology and Psychiatry, 49*(4), 376-385.

Tennant, J. E., Demaray, M. K., Coyle, S., & Malecki, C. K. (2015). The dangers of the web: Cybervictimization, depression, and social support in college students. *Computers in Human Behavior, 50*, 348-357.

Tokunaga, R. S. (2010). Following you home from school: A critical review and synthesis of research on cyberbullying victimization. *Computers in Human Behavior, 26*(3), 277-287.

Whitson, S. (2017). *Fenomenul bullying: 8 strategii pentru a-i pune capăt (8 keys to end bullying. Strategies for parents and schools).* București: Editura Herald.

Willard, N. (2005). *Educator's guide to cyberbullying and cyberthreats: responding to the challenge of online social aggression, threats and distress.* Center for Safe and Responsible Use of the Internet.

Willard, N. (2007). *Cyberbullying and cyberthreats: Responding to the challenge of online social aggression, threats, and distress.* Research press.

Williams, K. R., & Guerra, N. G. (2007). Prevalence and predictors of internet bullying. *Journal of adolescent health, 41*(6), S14-S21.