



Research Article

Effectiveness of Cyberbullying/Victimization prevention package on Self-esteem and cognitive flexibility of adolescents

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Abstract

This study aimed to assess the impact of a cyberbullying and victimization prevention program on the self-esteem and cognitive flexibility of adolescents in Osku City Iran. The research followed an experimental design with a pre-test and post-test approach. The study included all female junior high school students in Osku City during the academic year 2023-2024, selected through convenience sampling. Thirty students who had experienced cyberbullying and victimization were randomly assigned into two groups: an experimental group (15 students) and a control group (15 students). Data collection tools included a questionnaire on self-esteem, cognitive flexibility, and experiences of cyberbullying and victimization. The experimental group attended 10 sessions, each lasting 75 minutes, to receive training through the prevention program. Both groups took a pre-test before the sessions and a post-test after the training. The data were analyzed using inferential statistics and covariance analysis, which indicated that the cyberbullying and victimization prevention program effectively improved students' self-esteem and cognitive flexibility. With all research hypotheses confirmed, the strategies and skills taught to address cyberbullying and victimization contribute to enhancing the self-esteem and cognitive flexibility of students. It is recommended that educational administrators, particularly school counselors, organize workshops on cyberbullying and victimization prevention to improve the self-esteem and cognitive flexibility of adolescents.

Keywords: Cyber victimization and bullying, Self-esteem, Cognitive flexibility

Introduction

During the school years, social, emotional, and cognitive skills play a relevant role in how students face the challenges and demands of life and education, especially during adolescence. In adolescence period, students go through different emotional and cognitive stages related to learning, which play a decisive role in their personal and academic growth and lead to the configuration of adult personality ([Supervía et al., 2023](#)). As a result of these changes, adolescents develop new competencies and social roles ([Solmi et al., 2022](#)), making their self-evaluation difficult and turning adolescence into a key period for self-esteem development ([Banstola et al., 2020](#)).

Self-esteem is an intra-individual assessment of characteristics and skills ([Orth & Robbins, 2013: 10](#)). According to Detrich & Ferguson, self-esteem consists of two main dimensions: personal valuation

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(evaluation of a person according to his self-concept) and evaluation of personal capacity (a person's realistic expectations about his abilities to perform tasks effectively) ([Detrich & Ferguson, 2020](#)). Self-esteem is a construct that depends on the result of an action, whether successful or not, and it motivates the person to act. This highlights the practical importance of self-esteem in promoting the healthy development of adolescents ([Banstola et al., 2020](#)). Furthermore, self-esteem is associated with a range of positive and adaptive outcomes, such as mental well-being ([Liu et al., 2023](#)) and life satisfaction ([Fekih-Romdhane et al., 2023](#)). Conversely, its absence is linked to various negative mental health consequences, including higher levels of depression ([Choi et al., 2019](#)), anxiety ([Liu et al., 2022](#)), social phobia ([Edwards et al., 2010](#)), social media addiction ([Akar et al., 2022](#)), loneliness ([Lopez et al., 2022](#)), and negative social relationships ([Harris & Orth, 2020](#)).

A review of the research background shows that various studies have examined the factors affecting adolescents' self-esteem, among which the social dimension has special importance because it is assumed that self-esteem is based on pleasant social experiences ([Casino-García et al., 2021](#)). The role of the quality of relationships with peers in the development of self-esteem has been emphasized ([Perinelli et al., 2022](#)), and the ability to create friendly relationships has been considered as one of the factors affecting self-esteem ([Price et al., 2010](#)). Thus, socialization, family, and communication with the peer group strongly influence the individual's lifestyle, beliefs, and values, which act as a basis for developing this structure ([Massenzana, 2017](#)).

Looking at the role of experiences, especially social experiences, in the development of self-esteem, we find that adolescence is a time when many things, including relationships with peers and obedience to parents, have changed significantly, and with the transition to secondary education, the demands in these areas have also changed. It changes fundamentally, which in turn can affect the adolescent's self-esteem. Furthermore, the changes above require flexible adaptation to new requirements, separation from the previous context, and involvement in new goals. The inability to adapt may cause social exclusion, dropping out of school, or even mental disorders, and therefore, adolescents need to have high resilience as well ([Crone & Dahl, 2012](#)). Thus, preliminary evidence also considers cognitive flexibility as one of the factors that play an effective role in social behavior and providing adaptive behaviors of adolescents ([Lan, 2022](#)).

Cognitive flexibility refers to the ability to adapt one's thoughts and behavior to changes in one's environment and context ([Duraja & Fendt, 2022](#)), and as a higher-order cognitive process, enables efficient and purposeful behavior ([Mike et al., 2000](#)). The ability to flexibly adapt responses to meet situational demands and personal goals represents the key contribution of cognitive flexibility to well-being. Thus, negative feelings, thoughts, or interpretations do not by themselves create a risk for psychopathological development. Still, the flexible processing of emotions and cognitions may determine a proper fit for context and situational demands. This means that a deficiency in cognitive flexibility in a changing context can lead to the development of psychopathological symptoms and maladaptive behaviors ([Morris & Mansel, 2018](#)). Therefore, the assumption that a lack of resilience is meta-diagnostically related to psychopathology has received strong support ([Coenye et al., 2022](#)). Furthermore, a deficiency in resilience correlates with adverse circumstances and negative emotions, such as social media addiction ([Tenhan et al., 2021](#)), and obsessive-compulsive disorder ([Rosa-Alcázar et al., 2020](#)).

In the meantime, the emergence and development of technology have set the stage for new experiences in adolescence, which has affected their self-esteem. As a new experience and background, the need for cognitive flexibility is already felt. The rapid advancements of the modern era suggest that technology and the internet have made previously unattainable resources more accessible. Consequently, users find it increasingly difficult to disconnect from the internet ([Utami, 2021](#)). Therefore, in line with the development of the Internet, the extraordinary growth of social networks has occurred in all age groups, including young people, teenagers, parents, and even children. Teenagers, in particular, perceive cyberspace as a viable medium for social communication, supplementing their traditional face-to-face or offline interactions. They possess greater ease of access to these networks, fostering the potential for unlimited social connections. However, this increased exposure to social media platforms, including the sharing of images, videos, and self-related status updates, places them at a heightened risk of engaging in cyberbullying ([Arato et al., 2022](#)). Cyberbullying can be defined as an aggressive and intentional act by a group or individual, using electronic

forms of contact, repeatedly and over time against a victim who cannot easily defend themselves ([Savage & Tokunga, 2017](#)). Cyberbullying has various forms, such as online harassment, cyber threats, online defamation, and cyber rejection ([Wójcik & Rzeńca, 2021](#)). Parallel to the increase in the use of technologies such as mobile phones, social networking websites, and the Internet, the prevalence of cyberbullying has increased. Cyberbullying has seen a marked increase among teenagers in recent years, with this demographic experiencing the highest rates of occurrence ([Hui-Fen et al., 2020](#)). In Iran, Arabshahi et al.'s research showed that 11.1% of boys and 4.4% of girls experienced cyberbullying, and 18.9% of boys and 2.2% of girls were cyber victims ([Arabshahi et al., 2019](#)). According to what has been said, cyberbullying has significant consequences and long-term detrimental effects on the mental health of young people, both bullies and victims, which has become an important public health concern from this point of view.

Studies consistently demonstrate that students targeted by cyberbullying from classmates exhibit heightened concerns regarding others' evaluations, which negatively impacts their self-esteem and self-confidence ([Garaigordobil & Navarro, 2022](#)). Conversely, students with deficient social skills often struggle in peer interactions, leading to diminished self-esteem and an elevated susceptibility to cyber victimization ([Touloupis & Athanasiades, 2022](#)). Also, the lack of cognitive flexibility has a negative relationship with victimization and cyberbullying. This cognitive flexibility not only serves a protective function but also is essential for disrupting the cycle of bullying and cyber victimization ([Jenkins et al., 2018](#); [Morea & Calvete, 2022](#)). Cognitive flexibility facilitates the generation of diverse responses in situations involving cyberbullying ([Diamond & Ling, 2020](#)), situations such as asking for help instead of remaining silent or reacting aggressively, which can perpetuate victimization to reduce cyberbullying and break the mentioned cycle ([Morea & Calvete, 2022](#)).

According to the explanations above, self-esteem plays a key role in cyberbullying, and cyberbullying can be a catalyst for disrupting mental health and reducing the self-esteem and self-confidence of adolescents ([Alsawalqa, 2021](#)). Also, in such situations, adolescents with a lack of cognitive flexibility, in addition to experiencing the continuation of psychological damage, are caught in the cycle of bullying and victimization. Therefore, it is necessary to improve the self-esteem and cognitive flexibility of teenagers to deal with this phenomenon and its potential consequences by teaching the required skills and solutions while preventing bullying and cyberspace victimization. As a result, the current research seeks to answer the following questions:

Does the cyberbullying and victimization prevention package have a positive effect on the self-esteem of adolescents?

Does the cyberbullying and victimization prevention package have a positive impact on the cognitive flexibility of adolescents?

Methodology

Before the intervention sessions, the researcher explained the research objectives, the confidentiality of information, and the right to leave the training course to the subjects and obtained their written consent to participate in the training course. Finally, the data were analyzed using covariance analysis and the SPSS software version 21. The study's statistical population to determine the effectiveness of the cyberspace victimization and bullying prevention program on self-esteem and cognitive flexibility included all female middle school students who were studying in the city of Osku in the academic year 2023-2024. Middle school was chosen because it marks the onset of adolescence and the initiation of new social experiences. To determine the sample, a girl's school was selected with the convenience sampling method, and then using the bullying and victimization questionnaire, the students of the school were screened, and based on the minimum number of people required for experimental projects ([Delaware, 2021](#)), 30 students who scored above 12 in each section of the cyberbullying and victimization questionnaire were selected and randomly assigned into two experimental and control groups. The experimental group received ten 75-minute training sessions with pre-test and post-test, and the control group did not receive any training. Participants were included in this research if they had experienced bullying or cyber victimization, were enrolled in early secondary school, provided informed consent, and expressed a desire to participate. Exclusion criteria consisted of mental illnesses, absence from more than two training sessions, lack of interest in continuing the program, and participation in similar interventions.

Research tools

The tools used in the research include the Rosenberg Self-Esteem Questionnaire (1965), the Cognitive Flexibility Questionnaire (2010), the Cyber Bullying and Victimization Experience Questionnaire (2016), and the intervention program, which is explained in detail below.

Rosenberg's Self-Esteem Scale (RSES): In this research, Rosenberg's self-esteem scale was used. This scale consists of 10 items in which the subject is asked to answer questions such as (I have a positive attitude towards myself) on a 4-point Likert scale from strongly agree to strongly disagree. The first five questions of this scale are designed positively and the second five questions are designed negatively. The range of scores on this scale is from 10 to 40, and high scores indicate higher self-esteem (Rosenberg, 1965). The reliability of this scale using Cronbach's alpha method was reported as 0.83 (Joshani & Ghaedi, 2008), Creed et al estimated the reliability coefficient of this scale as 0.84 (Creed et al., 2005). Also, the divergent validity of this scale with symptoms of the general performance evaluation scale disorder was 0.21 (Li et al., 2018). Cronbach's alpha coefficient in the present study was also 0.93, which indicates the good reliability of this tool.

Cognitive Flexibility Questionnaire (CFI): This questionnaire was developed by Dennis & Vander Wal to evaluate a person's progress in flexible thinking in the form of a 20-question self-report scale. A higher score indicates more cognitive flexibility and a lower score indicates lower cognitive flexibility. In the study of Dennis & Vander Wal, the concurrent validity of this questionnaire with Beck's depression scale was equal to ($r = 0.39$), and its convergent validity with Martin & Rubin cognitive flexibility scale ($r = 0.75$). with Cronbach's alpha method, in their research, reliability was 0.91, 0.91, and 0.84 respectively for the whole scale, perception of control, and perception of different options (Dennis & Vander Wal, 2010). In Iran, Shareh et al have examined the psychometric properties of this questionnaire, which found the internal consistency through Cronbach's alpha to be 0.90 for the entire questionnaire and for the subscales of perception of controllability, perception of different options, and perception of behavior justification, respectively 0.87, 0.89 and 0.55 reported (Shareh et al., 2014). Also, the construct validity of the questionnaire using the exploratory factor analysis method led to the extraction of three factors that together explain 56% of the variance of the questions. In addition, the concurrent and convergent validity of the questionnaire has been confirmed by estimating the correlation with the scale of resilience ($r = 0.67$) and depression ($r = 0.50$). In the present study, Cronbach's alpha coefficient was 0.88, which indicates the good reliability of the instrument.

Cyber Bullying and Victimization Experience Questionnaire (CBVEQ-G): This questionnaire was designed and validated by Antoniadou et al, to investigate the cyberbullying and victimization experience among teenagers. The scoring method of this questionnaire is a 5-degree Likert scale from never=1, once or twice=2, sometimes=3, most of the time=4 to every day=5. This questionnaire has two factors of cyber victimization and cyber bullying and each factor contains 12 questions. The result of Antoniadou et al's research showed that this questionnaire has good validity. Also, the results of their research showed that this questionnaire has a Cronbach's alpha coefficient of 0.89 for cyberbullying and 0.80 for cyber victims and has good validity (Antoniadou et al., 2016). In Iran, this questionnaire was translated and standardized by Basharpour and Zardi. Their findings showed that Cronbach's alpha coefficient for cyberbullying factor, cyber victim, and the whole scale was 0.75, 0.78, and 0.79 respectively (Basharpour and Zardi., 2019). In the present study, Cronbach's alpha coefficient is 0.79. It was found that it indicates the good reliability of this tool.

Method of research

Before conducting the research, the participants were assured about the confidentiality of the information, and their consent to participate in the study was obtained. The experimental group, comprised of students with experience in cyberbullying and victimization, participated in 10 sessions of a researcher-designed and validated cyberbullying and victimization prevention training program, as summarized in Table 1. To

establish the content validity of the prevention program, the Lawshe model was employed. This involved a panel of 11 experts and the calculation of two quantitative coefficients: the content validity ratio (CVR) and the content validity index (CVI) (Lawshe, 1975). As a result, experts considered the content of all meetings necessary to obtain the content validity ratio. Also, 84% assigned their answers to the completely relevant option and 16% to the relevant but needing revision option to obtain the content validity index (Alipour et al., 2024). The training sessions were conducted once a week by the researcher.

Table 1. Description of intervention sessions for the prevention of bullying and victims of cyberspace

meeting	Description of the session
1	Getting to know the participants, establishing initial communication and preparing for treatment sessions, introducing and explaining the concept of cyberbullying and cyber victimization, defining the consequences of cyberbullying and cyber victimization for teenagers
2	Introducing online self-expression in cyberbullying and its relationship with cyberbullying and victimization, discussing and teaching the number of hours and how to be in virtual networks and its relationship with cyberbullying and victimization, stating the laws and cybercrimes in the Islamic Republic of Iran, and presenting homework
3	Getting feedback from completing the assignments of the last session, discussing the sensitivities and moral norms in Iranian culture, and introducing its deactivating mechanisms, including cognitive reconstruction of harmful behavior, distortion or reduction of the effect of cyber harassment behaviors, underestimating one's role in causing harm and blaming and or devaluing the victims, discussion the role of social media and cyberspace advertising regarding beauty criteria and comparing these criteria with existing realities to foster a positive body image by confronting numerical thinking (calories, height, and weight) in realistic contexts.
4	Introducing emotional intelligence as an influential factor in cyberbullying and victimization, expressing its impact and application in social relationships, how to identify emotion in others, discussing and training intrapersonal emotional intelligence as an increase in the ability to establish and maintain mutually satisfactory relationships with a focus on self-esteem, self-actualization, and independence
5	Teaching how to express feelings, beliefs, and thoughts openly, learning ways to solve emotional problems and appropriate and controlled expression of emotions, and training to defend one's right without violence and aggression with the help of scenario implementation and educational clips
6	Reviewing the previous session and introducing self-control and self-restraint as an internal brake and temptation control factor against cyber violence, A preventive factor mitigating legal deviations within cyberspace, orientation, and impulse control training, discovering anger triggers by teenagers, practicing calm strategies when angry, anger control technique and presenting assignments
7	Getting feedback from the assignments of the previous session, teaching problem-solving skills in the typical situation of being bullied and being a victim of cyberspace for students, and presenting a worksheet to familiarize them with the steps of problem-solving, discussion, and dialogue about negative and positive self-talk and the need to recognize negative self-talk and trying to correct negative self-talk through positive internal dialogue
8	It will express the concept of the continuation of victimization and the cycle of turning a victim into a bully in cyberspace, implement the technique of paying attention to awareness and training, and express the logic of using fault strategies and their role in cognitive flexibility
9	Reviewing the contents of the previous session, teaching the concept of empathy as a conscious recognition and understanding of other people's feelings and reflective evaluation or experience of another situation or situation according to Iranian culture, teaching and expressing the logic of applying contextualization strategies, teaching and expressing the logic of clarifying values and committed action in the path values
10	Review the contents of the previous sessions and provide a worksheet to recall the contents, practice the learned skills, and answer questions and doubts

Findings

The participants in the present study included 30 female students who experienced cyberbullying and cyber victims, 15 of whom were assigned to the experimental group and 15 to the control group. The average age

of participants in the experimental group was 15, with a standard deviation of 0.4, while the control group also had an average age of 15, but with a standard deviation of 0.2. Regarding academic performance, the experimental group had a mean GPA of 17.6 and a standard deviation of 1.72, compared to the control group's mean GPA of 17.5 and a standard deviation of 1.73. The mean and standard deviation of the variables of self-esteem and general cognitive flexibility and its components are presented in Tables 2 and 3. **Table 2** .Comparison of the mean and standard deviation of the experimental and control groups in the variable of self-esteem in the pre-test and post-test stages.

Group	Pre-test			Post-test		
	Number	Mean	SD	Number	Mean	SD
Experimental Group	15	30	1.16	15	33.73	0.86
Control Group	15	30	1.77	15	28.40	1.86

Table 2 shows the self-esteem status of the students before and after the training course. As can be seen, the average scores of the experimental group's self-esteem variable have increased in the post-test stage compared to the control group.

Table 3. Mean and standard deviation of pre-test and post-test scores of cognitive flexibility and its subscales in two experimental and control group

Variable	Group	Pre-test			Post-test		
		Number	Mean	SD	Number	Mean	SD
Perception of different options	Experimental	15	50.86	3.20	15	60.80	1.07
	Control	15	50.33	2.47	15	54.13	2.66
Perception of controllability	Experimental	15	29.4	1.30	15	36.73	2.20
	Control	15	32.80	1.54	15	33.86	1.76
Perception of behavior justification	Experimental	15	8.83	1.12	15	12.06	0.30
	Control	15	9.33	0.77	15	9.93	0.77
Cognitive flexibility	Experimental	15	92.86	4.11	15	115.33	1.95
	Control	15	103.20	3.95	15	101.13	4.11

Table 3 showed that the average cognitive flexibility scores of the experimental group members increased in the post-test stage and after receiving the intervention in all subscales.

Univariate and multivariate covariance analysis tests were used to investigate the effectiveness of the cyberbullying and victimization prevention package on dependent variables. Before performing the analysis, the assumptions of the test, including the absence of outlier data and the normality of the distribution of the variables, were checked using the Kolmogorov-Smirnov and Shapiro-Wilks tests. This index was not significant for any of the variables at the 0.05 level. To check the homogeneity of variances, Levene's Test was used. The results showed the homogeneity of variances ($P > 0.05$). Also, the non-significant interaction effect between the correlation coefficient and the independent variable indicated compliance with the

assumption of homogeneity of the regression slopes among the groups. Due to the collection of pre-test scores before the implementation of the cyberbullying and victimization prevention package, it was ensured that the Covariate scores were not affected by the independent variable. Finally, the presumption of equality of covariances between two groups was done using the M-box test. According to the results of the M-box test, it was not significant for any of the variables ($P > 0.05$). Therefore, after meeting the defaults, covariance analysis was performed.

Table 4. Results of univariate covariance analysis of self-esteem scores in two experimental and control groups

Variable	Source of changes	sum of squares	df	mean square	F	Eta	sig
	Pre-test	778.33	1	778.33	291.08	.91	0.001
self-esteem	Between groups	218.19	1	218.19	81.60	.75	0.001
	Error	72.19	27	2.67			
	Total	30018	30				

As the results of Table 4 showed, there is a significant difference in self-esteem between the two experimental groups and the control group ($P < 0.05$). Therefore, the comprehensive training on the prevention of cyberbullying and victimization prevention has increased the self-esteem of students.

Table 5: Results of multivariate covariance analysis of cognitive flexibility scores and its subscales in two experimental and control groups

Effect	Test	Value	F	Hypothesis df	Error df	sig	Eta	Test power
	Pillai's Trace	.75	16.18	4	21	0.001	0.75	1
Group	Wilks' Lambda	.24	16.18	4	21	0.001	0.75	1
	Hotelling's Trace	3.08	16.18	4	21	0.001	0.75	1
	Roy's Largest Root	3.08	16.18	4	21	0.001	0.75	1

As seen in Table 5, statistical tests of multivariate covariance analysis show that these groups have significant differences in at least one of the dependent variables. As a result, it is appropriate to use covariance analysis. A statistical power of 1, along with a significance level of $P < 0.05$, illustrates the test's high accuracy and confirms that the sample size is sufficient. Next, to determine the significant difference between the groups, the between-subject effect test was performed, and the results of this test are shown in Table 6.

Table 6. The results of the between-subject effect test in cognitive flexibility scores and its subscales

Source	Variable	sum of squares	df	mean square	F	Sig	Eta	Test power
Group	Perception of different options	574.08	1	574.08	19.10	0.001	0.44	0.98
	Perception of controllability	384.91	1	384.91	30.76	0.001	0.56	1
	Perception of behavior justification	41.78	1	41.78	12.64	0.001	0.34	0.92
	Cognitive flexibility	2919.25	1	2919.25	60.15	0.001	0.71	1
Error	Perception of different options	721.26	24	30.05				
	Perception of controllability	272.18	24	11.34				
	Perception of behavior justification	79.32	24	3.30				
	Cognitive flexibility	1164.70	24	48.52				
Total	Perception of different options	101146	30					
	Perception of controllability	31181	30					
	Perception of behavior justification	3808	30					
	Cognitive flexibility	357333	30					

Table 6 showed that there is a statistically significant difference in the scores of cognitive flexibility and all its subscales between the experimental and control groups ($P < 0.05$). Therefore, the training of anti-bullying and cyber victimization is effective in increasing cognitive flexibility and its components.

Discussion and conclusion

The present study aimed to determine the effectiveness of the cyberspace bullying and victimization prevention package on the self-esteem and cognitive flexibility of female junior high school students. The findings of this research indicated that the objectives of the research were achieved and showed that the intervention program for preventing cyberbullying and victimization had a positive effect on the cognitive flexibility and self-esteem of female first-grade junior students and had favorable effectiveness. The findings of the current research were in line with the research of Aizenkot & Kashy-Rosenbaum, Garaigordobil & Martínez-Valderrey and Morea & Calvete ([Morea & Calvete, 2022](#); 2020; [Garaigordobil & Martínez-Valderrey, 2015](#); [Morea & Calvete, 2022](#)).

As mentioned, training on the prevention of cyberspace bullying and victimization is effective in increasing self-esteem. In explaining this finding, it can be said that self-esteem refers to the self-evaluation of a person's social role and has the potential to influence behavioral development ([Rosenberg, 1965](#)). A considerable body of collected evidence supports the effect of cyberbullying on self-esteem because Rosenberg defines self-esteem as "a favorable or unfavorable attitude toward oneself" ([Rosenberg, 1965](#)). In addition, Leary & Downs consider self-esteem to be an internal representation of social acceptance and rejection and a psychological evaluation that monitors one's degree of participation versus exclusion by others ([Leary & Downs, 1995](#)). These two concepts emphasize the fact that self-esteem is an individual's perception and belief in his worth and is influenced by the individual's participation in the social world. So, when victims of cyberbullying are often faced with a barrage of hurtful and derogatory messages that result in a negative impact on their self-perception. This overwhelming exposure to negative interactions and experiences can destroy the self-esteem of teenagers and disrupt their self-confidence ([Latif et al., 2023](#)). However, the exact reasons for the relationship between self-esteem and victimization are much less agreed upon and clear. It may be that the experience of victimization lowers a person's self-esteem or that those with low self-esteem are more likely to be targeted ([Agustiningsih et al., 2023](#); [Patchin & Hinduja, 2015](#)). As

well, most researchers consider low self-esteem as a factor in cyberbullying ([Ding et al., 2018](#)). According to social bonding theory, low self-esteem weakens social bonding and further causes individual behaviors to be less consistent with social rules, resulting in cyberbullying ([Donnellan et al., 2005](#)). Additionally, some other researchers have argued that an overemphasis on self-esteem may lead to negative outcomes, including narcissism, extreme self-interest, self-centeredness, and loss of interest in others. According to the theory of threatened egoism, people who show a tendency to have a very favorable self-evaluation show characteristics such as an unrealistic and very strong self ([Baumeister et al., 1996](#)). They are encouraged to engage in cyberbullying to reaffirm their self-esteem ([Bussey et al., 2015](#)). Therefore, one should not forget that self-esteem is a mental construct and does not necessarily reflect the objective characteristics and competencies of a person. Therefore, it is necessary to distinguish self-esteem from narcissism; because, both constructs include positive self-evaluations (Orth et al., 2016). While self-esteem refers to the feeling of self-acceptance and self-respect, narcissism is characterized by feelings of superiority, grandeur, entitlement, and self-centeredness ([Ackerman et al., 2011](#)).

By explaining the mentioned relationships, it is clear that the dominant common denominator of concepts related to self-esteem includes a set of cognitive representations that a person has about himself ([Greenwald et al., 2002](#)). For example, in the associative knowledge structure, self-concept arises from cognitive associations between the self and one or more characteristics. In contrast, self-esteem arises from the association of the self with the emotional evaluation of such associations. Therefore, people with low self-esteem, in addition to the vague or unfavorable opinions they have about themselves, feel that they are incompetent and undervalued. Therefore, it is obvious that repairing and correcting cognitive representations plays an important role in people's self-esteem. Also, according to social cognitive theory, challenging or reflecting on negative or unhelpful thoughts may help a person feel better and respond to situations more effectively; because, by challenging these beliefs, they develop a new set of thoughts ([Louis & Reyes, 2023](#)). Therefore, cognitive theories help to recognize negative self-talk when it occurs and choose a more realistic and reflective thinking about the situation ([Ge et al., 2019](#)). Therefore, it can be concluded that negative thoughts and negative self-talk are a favorable environment for negative cognitive representations and a precursor for low self-esteem, and it is necessary to try to improve self-esteem based on the principles of cognitive reconstruction ([Louis & Reyes, 2024](#)). Generally, the development of communication skills facilitates healthy and stable social interactions among adolescents through adherence to social norms within cyberspace, so that in addition to the perception of self-control in social relationships, with an accurate and positive self-evaluation, they can experience favorable self-esteem. In addition, by teaching them to recognize negative self-talk and evaluations and how to correct this self-talk in different situations, they can maintain their overall and favorable self-esteem. This study also revealed that training in the prevention of cyberspace bullying and victimization significantly increases students' cognitive flexibility. In explaining this finding, it can be said that cognitive flexibility is the ability to change cognitive cues to adapt to changing environmental stimuli ([Dennis & Vander Wall, 2010](#)). This factor requires the ability to communicate with the present and the ability to separate one's inner thoughts and experiences ([Moitra & Gaudiano, 2016](#)). Cognitive flexibility is the ability to adapt to current situations and utilize opportunities to pursue goals, even when faced with challenging or unwanted psychological events, enabling individuals to manage pressures, challenges, and other emotional and social issues. Be suitable and efficient ([Qiao et al., 2020](#)). In the meantime, one should not forget that flexibility requires knowing all the capacities and abilities and getting help from them to deal with the situations and challenges ahead ([Kiarsmati et al., 2022](#)). In this regard, one of the most important factors that can be effective in improving the cognitive flexibility of adolescents and can be used as the capacity and ability of adolescents to deal with situations is the use of active coping skills. One of the basic areas of cognitive flexibility is the ability to produce multiple solutions to solve challenging events. Accordingly, the created solutions must be among solutions or active coping strategies that create a foundation for improving cognitive flexibility. Therefore, it can be said that by teaching active coping strategies in the field of cyberspace bullying and victimization, such as problem-solving, emotion regulation, cognitive reconstruction, and receiving social support, students acquire the ability to produce effective solutions in the face of cyberspace bullying and victimization. In this way, the component of perception of different options and in general their cognitive flexibility is improved ([Asıcı & Sari, 2021](#)).

In general, it can be concluded that by informing and teaching appropriate strategies in the form of a program to prevent and fight against cyberbullying, teenagers can be helped to avoid aggressive behavior by considering different alternatives for a situation or problem, which is the main characteristic of cognitive flexibility. In addition, the psychological consequences of being a victim of cyberbullying become more severe when the victimization continues over time (Rose & Tynes, 2015). Consequently, identifying the mechanisms through which victimization persists over time is imperative. One potential perpetuation mechanism of victimization is through internalizing symptoms. Victimization by cyberbullying can lead to depressed mood in victims (Kowalski et al., 2014), which in turn makes them more vulnerable to further victimization (Gomez-Guadex, 2014). Another potential mechanism is that adolescents who experience cyber-aggression from other adolescents, may perceive this aggression as inappropriate or unjustified and seek revenge and react aggressively towards their perpetrators, putting their perpetrators at the risk of future victimization (Calvete et al., 2019); thus, through the mechanism mentioned above, adolescents can be trapped in a spiral in which victimization, bullying perpetration influence each other, making it difficult to break the cycle of cyberbullying (Gómez-Guadix et al., 2014).

Meanwhile, in cyberbullying scenarios, cognitive flexibility provides greater ease in issuing alternative responses (Diamond & Ling, 2020), and facilitating the production of adaptive responses to the situation, such as asking for help instead of remaining silent or reacting aggressively, can perpetuate victimization and reduce bullying in cyberspace by the aforementioned mechanisms. (Marea and Calvete, 2022). In the meantime, the missing link to prevent teenagers from becoming victims of cyberbullying is cognitive flexibility. Adolescents who have high cognitive flexibility, respond to cyberbullying victimization with more useful strategies that can reduce the negative impact of cyberbullying and, as a result, help them prevent victimization over time (Diamond & Ling, 2020). In addition, cognitive flexibility with the possibility of considering different alternatives to cyber violence plays a protective role (Morea & Calvete, 2022). In general, Teenagers should be supported through the development of essential coping mechanisms, including problem-solving, emotion regulation, coping strategies, mindfulness, value-driven action, and flexible thinking. Individuals, by perceiving the controllability of a situation as a component of cognitive flexibility, can avoid aggressive behavior and prevent the continuation of cyber victimization and the severity of psychological injuries through flexible responses.

The present study also encountered limitations such as single-gender, minimum number, and age range of participants. Considering the mentioned limitations, researchers are suggested to implement the effectiveness of the mentioned package among male students with a larger number of participants and in the age ranges of children and youth. Besides, according to the results, it is suggested that educational administrators, especially school counselors, try to improve students' self-esteem and cognitive flexibility by holding group training sessions while dealing with cyberbullying and victimization.

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