Comparing the Effect of Training by Peer Groups versus Direct Instruction on Mechanisms to Counteract Cyberbullying among High School Male Students

Jan, 20, 2025

Abstract

Background: In recent years, the Internet and various virtual spaces have become an integral part of adolescents' lives, with teenagers spending a significant amount of their time online. Given the high prevalence of cyberbullying among adolescents, its dangerous consequences, and the importance of proposing solutions to this crisis, we decided to conduct this study.

Methodology: This quasi-experimental intervention study was conducted on 252 male students in the 9th, 10th, and 11th grades, studying in three high schools in Tehran . Initially, a 2-hour orientation class was held for school officials about cyberbullying and its consequences. Subsequently, 84 students from each school were randomly selected from the mentioned grades. In one group, a psychologist delivered six, two-hour social skills training sessions to students. These sessions focused on problem-solving, empathy, and stress management. In another group, a psychologist delivered the aforementioned curriculum to a smaller volunteer group (peer group) who then disseminated the knowledge to their peers. This peer-mediated intervention involved weekly progress reports submitted to the psychologist. A third group served as a control and received no training. A questionnaire, including the Bar-On Emotional Intelligence Questionnaire and questions on demographic information and experiences with cyberbullying, was completed by students from all three schools before the intervention (pre-test) and three months after the intervention (post-test). The data were then analyzed statistically.

Results: In this study, 252 students aged 15 to 20 years, with an average age of 16.492 years participated. The emotional intelligence scores of the students who volunteered in the peer training group were higher than those of the other two groups at the beginning of the study. Three months after the study and reassessment, the direct training group's emotional intelligence scores were higher than those of the other two groups. Three months after the intervention, the results showed a significant reduction in the number of cyberbullies in the direct training group. While there was a reduction in the number of virtual victims in the direct training group and both cyberbullies and victims in the peer group, this reduction was not statistically significant.

Conclusion: Social skills training has an impact on increasing emotional intelligence and reducing cyberbullying roles among adolescents. To achieve more precise and generalizable results, studies with larger sample sizes, including female students, and post-tests over longer periods are needed.

Keywords: Cyberbullying, Virtual victim, Social skills, Virtual space, Bar-On Questionnaire

Introduction

In recent years, alongside the rapid advancement of technology, a new form of bullying known as cyberbullying has seen a significant rise (1). Cyberbullying is a global problem (1), with approximately one-third of Internet users worldwide being children and adolescents under 18 years old (1, 2). According to UNICEF, no child is entirely safe from the digital world (1, 2). This type of bullying often occurs through electronic devices, the Internet, phones, and virtual spaces (3, 4), transcending geographical boundaries (1, 5). In a review study on 63 studies conducted between 2015 and 2019, the global prevalence of cyberbullying victims and perpetrators was reported to range from 13.99% to 57.5% and 6% to 46.3%, respectively (1). Studies conducted in Iran have

shown that over 30% of students have experienced being cyberbullying victims, and more than 27% have been cyberbullied (2), indicating a high prevalence compared to other countries (3, 4, 5, 6).

During adolescence, teenagers are often unable to fully assess the connection between behavior and its consequences (1). Thus, cyberbullying can lead to psychological consequences ranging from depression, anxiety, and withdrawal to suicide among adolescents (3, 7, 8). The incidence of suicide among cyberbullying victims is significantly higher compared with non-victims (9). Furthermore, compared to traditional (non-virtual) bullying, cyberbullying more frequently results in psychological issues such as depression, anxiety, and loneliness (1, 10). Various studies have highlighted factors like emotional intelligence in preventing the different roles of cyberbullying (cyberbully, cyber-victim) (1). The Bar-On Emotional Intelligence Questionnaire provides a good understanding of emotional intelligence and individuals' adaptability to various situations (3, 10). Low emotional intelligence leads to repeated victimization and poor adaptation and response in cyberbullying situations. Individuals with low emotional intelligence do not know how to recover after being victimized (3, 11). Studies have shown that cyberbullies are often deficient in certain dimensions of emotional intelligence, such as empathy (3, 12). However, some studies suggest that those who engage in bullying possess high emotional intelligence, as they are well aware of their victims' weaknesses (3). A study conducted in Iran by Razjouyan et al. (2023) in Tehran found no significant difference between the overall emotional intelligence scores of students and their different roles in cyberbullying. However, male victims were found to have higher emotional intelligence.

Several factors influence cyberbullying. Empathy, emotional intelligence, parent-child relationships, and the school environment are significant protective factors against cyberbullying (1). Additionally, studies have indicated the impact of social skills training on enhancing the subcomponents of emotional intelligence (13). Social skills training in schools has been recommended in various studies to prevent cyberbullying (14). Adolescents, in this age group, tend to seek help from their peers for individual problems, trust them more, and thus maintain their independence (10). Therefore, this study aims to compare the emotional intelligence and the incidence of different roles in cyberbullying among students before and after social skills training, delivered directly by a psychologist and through peer groups.

Method

This quasi-experimental study was conducted in schools of southern Tehran in 2019. After the necessary permissions were obtained from the education authorities and school security officials , three schools were selected. From each school, 84 students in the 9th, 10th, and 11th grades were randomly selected, making a total of 252 students. Initially, an orientation session was held with school officials to raise their awareness of the study's importance and to obtain permission to implement the project. Students in one school received direct social skills training from a psychologist over six 2-hour sessions. These skills included problem-solving, empathy, anger management, and stress management. In another school, nine volunteer students received the same training over a similar period, plus an additional session on how to teach their peers. These volunteers then transferred what they had learned to the selected students and reported their progress weekly to the psychologist. The third school served as the control group and received no

training. A questionnaire, including the Bar-On Emotional Intelligence Questionnaire and several questions assessing experiences of cyberbullying (cyberbully, cyber-victim), was completed anonymously by students from all three schools before the training (pre-test) and three months after the training (post-test). Parental consent was obtained for student participation. The study data (pre-test and post-test) were analyzed using SPSS software version 18.

Statistical Analysis

Descriptive statistics of quantitative variables were shown as minimum, maximum, mean, standard deviation (SD), median, and interquartile range (IQR). The normality of data was evaluated using Shapiro-Wilk test. Kruskal-Wallis test was used to assess the difference between emotional intelligence among study groups at baseline. In addition, nonparametric analysis of covariance (ANCOVA) was used to compare the emotional intelligence among study groups after the intervention by adjusting the values of baseline. *McNamara's* test was employed to compare the proportion of victims/cyberbullying at the baseline and after three months of intervention in the training group and peer group. Binary logistic regression model was also used to measure the odds of becoming a victim/cyberbullying for each study group with adjusting baseline values. $P < 0.05$ was regarded as statistically significant. Data analysis was done using SPSS software.

Results

A total of 252 male students aged from 15 to 20 years and with a mean age of 16.492were included in this study. Descriptive statistics of Baron questionnaire subscales for each study group at follow up intervals are shown in the supplementary file. The result of Kruskal-Wallis test for comparing emotional intelligence among study groups at baseline indicated that the three groups were significantly different in terms of emotional intelligence ($\chi^2(2) = 13.05$, $P = 0.001$) (Table 1).

Comparison of emotional intelligence among study groups within three months after the intervention was conducted by adjusting the emotional intelligence at baseline. For this purpose, nonparametric analysis of covariance was used to compare the emotional intelligence of study groups by adjusting the values of baseline and this analysis showed a significant difference between emotional intelligence of the study groups after three months of intervention ($F(2,240)= 8.384$, $P < 0.001$) (Table 1). Bonferroni test was used for pairwise comparisons among the three groups, and this post hoc test indicated that emotional intelligence of the training group was significantly higher than that of the peer group ($P <0.001$). In addition, this test showed that the control group had no statistically significant difference with the training group or the peer group ($P =0.054$ and $=0.274$, respectively).

The results of Table 2 show the comparison of the proportion of victims at the baseline and after three months of intervention in the training group and the peer group. According to this table, it can be concluded that there is no statistically significant difference between the proportion of victims before and after the intervention in the training group ($P =0.143$). This table also indicates that there is no statistically significant difference between the proportion of victims before and after the intervention in the peer group ($P =0.453$). However, the proportion of people who had

experienced threats and harassment through new communication technologies before intervention (training and being a peer) and did not have this experience after receiving training/being a peer was higher than the proportion of people who had not experienced threats and harassment before intervention and had this experience after receiving training/being a peer

The results of Table 3 indicate the comparison of the proportion of cyberbullying at the baseline and after three months of intervention in the training group and the peer group. According to this table, it can be concluded that there is statistically significant difference between the proportion of cyberbullying before and after the intervention in the training group (P = 0.004). The proportion of people who had experienced cyberbullying through new communication technologies before training and did not have this experience after training was significantly higher than the proportion of people who had not experienced cyberbullying before intervention and have this experience after training.

Table 3 also indicate that there is no statistically significant difference between the proportion of cyberbullying before and after the intervention in the peer group (P =0.057).

Binary logistic regression model was used to measure the odds of becoming a victim/cyberbullying by adjusting baseline values (Table 4). According to the results of this table, the odds of becoming a victim in control group is 3.012 (P = 0.066) time and 2.132 (P = 0.217) time in comparison to training and peer groups, respectively. This model also showed that odds of becoming a victim in peer group is 1.415 time in comparison to training group (P = 0583).

Data from Table 4 revealed that students in the control group were significantly more likely to experience cyberbullying compared to those in the training and peer-mediated intervention groups. Specifically, the odds of becoming a cyberbully in the control group were 8.696 times higher (p = 0.002) compared to the training group, and 6.061 times higher (p = 0.01) compared to the peer-mediated intervention group. Binary logistic regression model showed that there is no statistically significant difference between training and peer groups (OR = 1.432, P = 0.65)

Tables

Table 1. Comparison of emotional intelligence in study groups before and after the intervention

Time	Group	Minimum	Maximum	Mean	Standard Deviation	Median	Interquartile Range	Statistics	P-value
Baseline	Control	122	388	300.12	52.36	301	60.50	$\chi^2(2) = 13.05$	0.001^*
	Peer	231	428	328.21	37.32	327	54.25		
	Training	78	399	306.30	54.43	312	55.50		
	Control	122	388	300.12	52.36	301	60.50		

Three months after the intervention	Peer	202	352	300.82	22.64	309.50	19.50	F (2,240)= 8.384	<0.001**
	Training	210	394	315.99	31.86	315	32.25		
*: Kruskal-Wallis test **: Nonparametric analysis of covariance									

Table 2. Comparison of the proportion of victims at the baseline and after three months of intervention in the training group and the peer group.

Baseline / After intervention		Yes	No	P-value*
Training group	Yes	5	5	0.143
	No	12	60	
Peer group	Yes	7	2	0.453
	No	5	63	
*: *McNemar's* test				

Table 3. Comparison of the proportion of cyberbullying at the baseline and after three months of intervention in the training group and the peer group.

Baseline / After intervention		Yes	No	P-value*
Training group	Yes	1	1	0.004

	No	3	59	
Peer group	Yes	1	3	0.057
	No	11	60	
*: *McNemar's* test				

Table 4. Comparison between the odds of becoming a victim among study group by adjusting status of victim/cyberbullying at baseline.

Outcome	Group	Odds Ratio (OR)	95% Confidence Interval	P-value**
Victim	Training	0.332	(0.102 – 1.077)	0.066
	Peer	0.469	(0.141 – 1.558)	0.217
	Control*			
cyberbullying	Training	0.115	(0.029 – 0.456)	0.002
	Peer	0.165	(0.042 – 0.648)	0.010
	Control*			
*: *Reference category* **: *Binary logistic regression model*				

Discussion

Adolescents' frequent engagement in virtual spaces unfortunately coincides with a rise in cyberbullying among this age group. Various factors such as social skills, emotional intelligence, parent-child relationships, and the school environment have been reported to affect cyberbullying

(1). Along this line of research, this study aimed to evaluate an educational intervention approach to combat cyberbullying among male high school students in Tehran in 2019.

In this study, based on the research conducted by Palladino and colleagues in 2016 in Italy (15), social skills such as problem-solving, anger management, and stress coping were selected for the educational intervention for the students. The study compared the effects of the training of these social skills on cyberbullying through direct instruction by a psychologist in one group and through peer volunteers in another group (peers who had previously been trained by the same psychologist). The third group, the control group, received no training. A questionnaire assessing experiences of cyberbullying (cyber-victim, cyberbully) and the Bar-On Emotional Intelligence Questionnaire were completed by the students before the intervention (pre-test) and three months after the intervention (post-test). The findings were analyzed using statistical methods.

Our results showed that the emotional intelligence scores of the three groups were different before the training, with the direct training group's scores being significantly lower than those of the peer group, and the peer group's scores being significantly higher than those of the control group. The emotional intelligence scores of the direct training group were higher than those of the control group, but this difference was not statistically significant. Emotional intelligence assessments conducted three months' post-intervention revealed a difference among the groups, with the direct training group achieving the highest emotional intelligence scores compared to the other two groups. Notably, this difference was statistically significant when compared to the peer group (Table 1). This difference between the direct training and peer groups could be due to the greater expertise of the psychologist in conveying educational concepts. However, the emotional intelligence of the control group did not differ significantly from that of the other two groups.

Indicating an increase in emotional intelligence scores and a reduction in cyberbullying (both cyberbully and cyber-victim roles) after social skills training, the findings of this study are somewhat similar to those of Palladino and colleagues in Italy. In their study, social skills training increased positive adaptation and reduced cyberbullying, although this reduction was not statistically significant (4, 10, 15). However, in studies conducted by Razjouyan and Tafi et al., no correlation between emotional intelligence scores and different roles in cyberbullying was observed (3, 16). Since Razjouyan's study did not involve an educational intervention, it is possible that in our study, the mentioned training effectively reduced the occurrence of different roles in cyberbullying without a significant increase in emotional intelligence scores.

According to the findings, there was no significant difference in the proportion of cyber-victims before and after the training in both intervention groups (Table 2). However, in both groups, after the intervention, the proportion of students who experienced cyberbullying before the training and did not experience it afterward decreased. In the direct training group, the proportion of cyberbullies before and after the training showed a significant difference, with a higher proportion of students not experiencing cyberbullying after the training. However, no significant difference was observed in the reduction of cyberbullying experience before and after the training in the peer group. This result is somewhat similar to a study conducted in 2012 in Italy on 231 peer group adolescents, where social skills training did not significantly reduce cyberbullies but significantly reduced cyber-victims (4).

In our study, the odds of being a cyber-victim in the control group were 3.012 times higher (p=0.066) than those in the direct training group and 2.132 times higher (p=0.217) compared with the peer group. Additionally, the odds of being a cyber-victim in the peer group were 1.415 times higher (p=0.583) than those in the direct training group. The odds of being a cyberbully in the control group were significantly 8.696 and 6.061 times higher than those in the direct training group and the peer group, respectively. However, there was no significant difference in the odds of being a cyberbully between the peer group and the direct training group. Therefore, it can be inferred that the mentioned training somewhat effectively reduced cyberbullying (both cyberbullies and cyber-victims).

Our study did not find evidence for the peer group's more effective role compared to the direct training by a psychologist in coping mechanisms against cyberbullying and consequently reducing its occurrence among students. In contrast, a larger study by Palladino and colleagues in Italy in 2016 focused on peer group training with an emphasis on problem-solving and empathy for defensive mechanisms against cyberbullying. They used support from the Italian cyber police and implemented structured programs, gathered student groups on Facebook, and provided better Internet access outside school hours. Their study showed a significant positive impact of peer groups in reducing all roles of cyberbullying among students (15). The difference in outcomes between our study and theirs may be due to differences in sample sizes, methodological designs, and/or the longer duration of their study. Additionally, in our peer group, the number of individuals who did not record their status regarding cyber-victim or cyberbullying was higher than that in the direct training group, which may have affected the proportions of cyber-victims or cyberbullies before and after the intervention. Removing missing data from the analysis reduces the sample size and test power, preventing the discovery of significant differences between proportions. Also studies involving peer groups are influenced by various factors such as the personal characteristics of the peer group (17), the peer trainer's personal experiences, their perceived proximity to others, their credibility or alienation among students, their changes during initial training, their involvement with others' problems, and ultimately their accessibility (4, 15).

Limitations and recommendation

Due to the COVID-19 pandemic and early school closures in Iran, we could not evaluate the long-term impact (six months of post-study). We lacked access to students outside school hours. This study was conducted only in boys' schools. Given the increasing annual access of adolescents and children to virtual spaces, ongoing studies in this field are recommended for both girls' schools and over longer periods. Collaboration with cyber police for better access to adolescents outside school hours through virtual spaces is suggested to propose effective solutions for addressing cyberbullying among adolescents.

Conclusion: Social skills training has an impact on increasing emotional intelligence and reducing cyberbullying roles among adolescents. To achieve more precise and generalizable results, studies with larger sample sizes, including female students, and post-tests over longer periods are needed

Acknowledgments

We express our gratitude to the authorities of Tehran Education Office, school officials, and the participating students for their cooperation in this study.

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