

SMART-C Intervention to Reduce Anxiety in Elementary School Students Experiencing Cyberbullying

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Abstract. This study was conducted to examine the effect of the SMART-C (Safe, Meeting, Accepting, Reliable, Tell-Children) intervention on reducing anxiety among elementary school students who had experienced cyberbullying. The research employed a quasi-experimental design with a one-group pretest-posttest approach, and the sample consisted of 20 participants who had been victims of cyberbullying. Parental consent was also obtained before allowing the participation of children in the intervention. The results showed that SMART-C training was effective in reducing anxiety ($Z = -2.317$, $p < .03$). The reduction was observed in overall ($Z = -1.975$, $p < .04$) and separation anxiety ($Z = -2.420$, $p < .01$). However, there was no significant change in the bullying condition before and after intervention. A significant difference also existed in anxiety scores between males and females after the treatment ($t = 4.10$; $p < .05$). Female children showed more significant decrease in anxiety ($M = 18.57$) compared to male ($M = 17.15$). Further studies on community intervention should be carried out to enhance digital literacy, involving children parents, teachers, and the community.

Keywords: SMART-C, anxiety, elementary school students, cyberbullying

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Introduction

Elementary school students are vulnerable to experiencing cyberbullying when using gadgets (Aizenkot, 2020; Wright & Wachs, 2023). Moreover, survey data gathered from teachers shows that a significant majority (86%) view cyberbullying as a pressing issue within educational settings (Wright & Wachs, 2023). Cyberbullying is defined as repeated intentional and harmful behavior that occurs through the use of computers, mobile phones, and other electronic devices (Kowalski et al., 2014). It includes (1) spreading threatening or embarrassing messages and photos about the target individual, (2) flaming, which involves using antagonistic symbols as a form of argumentative communication, such as the middle finger, fist, or multiple question marks, (3) online slamming refers to a phenomenon where individuals who witness acts of bullying online become a collective group supporting the bullying behavior, (4) unauthorized control of someone else's account with the aim of spying, and (5) relational aggression, which involves spreading rumors or creating fake accounts (Iqbal & Jami, 2022). Cyberbullying experienced by elementary school students can be caused by online

self-disclosure and the developmental stage of individuals without sufficient knowledge of their behavior (Aizenkot, 2020).

Students who experience cyberbullying have been reported to endure detrimental consequences, with heightened anxiety (Tolia, 2016; Vaillancourt et al., 2017). The repercussions of such mistreatment can extend beyond the online realm and significantly impact individuals. The potential for news to go viral and reach people from various locations amplifies the negative impacts, which can be severe, including extreme cases such as instances of suicide (Kowalski et al., 2014). In more severe cases, anxiety experienced can lead to the emergence of depression and stress, which are associated with physical and psychological disorders.

Cyberbullying can have lasting impacts on adulthood when left unaddressed (Scott et al., 2016). One strategy aimed at alleviating the consequences endured by individuals who fall victim to bullying entails providing backing for mental health services within educational institutions (National Association of School Psychologists, 2015). National Association of School Psychologists (2015) highlighted forms of

school-based mental health, which include intervention through positive behavior support, active students engagement, and intervention fostering strong relationships with teachers.

A systematic review by [Lattie et al. \(2019\)](#) found that digital mental health intervention effectively reduced anxiety levels and improved psychological well-being. The use of technology as a learning tool for children can also be used and has various advantages, such as easy access to information and the ability to create a pleasant learning environment ([Pertiwi & Prakosa, 2021](#); [Shatri, 2020](#); [Suzana et al., 2020](#)).

The use of technology as a means of intervention has been explored in previous studies. It has been deemed effective in reducing anxiety, including Web-Based Group Cognitive Behavioral Therapy Intervention ([Bantjes et al., 2021](#)), Web-Based Mindfulness Virtual Community Intervention ([El Morr et al., 2020](#)), and Cyberbullying Media-Based Prevention Intervention ([Kutok et al., 2021](#)). However, no digital-based intervention has been reported to reduce anxiety, in Indonesian students experiencing cyberbullying ([Makkatenni et al., 2021](#)). Providing intervention that enhance competencies to improve protective factors and reduce risk factors for the emergence of anxiety problems is also vital ([Kaloeti, 2016](#)). Utilizing media that resonates with children can significantly enhance their engagement in intervention. By leveraging technology-based media and promoting the cultivation of positive digital competencies, students can develop resilience when confronting the potential risks associated with anxiety problems ([Kaloeti, 2016](#)). Moreover, they can cope with pressure, and bounce back from difficult and traumatic experiences ([Wu et al., 2020](#)). The study developed SMART-C intervention (Safe, Meeting, Accepting, Reliable, Tell-Children) based on resilience factors according to [Reivich and Shatte \(2002\)](#), which include emotional regulation, impulse control, optimism, causal analysis, empathy, and reaching out. Intervention uses digital media and is based on a resilience approach to teach emotional, and social skills, as well as digital literacy competencies. This study examines the effects of SMART-C intervention on reducing anxiety in elementary school students with cyberbullying experiences.

Methods

Study Design

This study was based on a quasi-experimental design known as a one-group pretest-posttest. The selection of this design was due to the limited number of participants who met the inclusion criteria, which required having experience with cyberbullying and obtaining parental consent to participate in intervention.

Study Target

This study used purposive sampling, where the inclusion criteria were as follows (a) elementary school students with experience of cyberbullying, (b) parental consent for their child to participate in intervention. In the first stage, 10 school in Semarang were selected based on a preliminary study using the PECK (Personal Experience Checklist) to identify cyberbullying experiences ([Kurnia & Kaloeti, 2019](#)). School was identified as having the highest number of cyberbullying cases and was selected as intervention site. In the second stage, the identified students who experienced cyberbullying were approached, and the parents were asked for their consent. Examples of cyberbullying experiences include writing offensive words or messages, using derogatory terms to humiliate others (such as replacing the word "idiot" with "nob," meaning stupid, ignorant, or unintelligent), spreading threatening information, and humiliating others on social media platforms such as Facebook or Instagram.

Data Collection Technique

The measurement tools used were the SCARED (Screen for Child Anxiety-Related Emotional Disorders) and PECK. SCARED was initially developed by [Birmaher et al. \(1999\)](#) and used to screen for anxiety disorders in children and adolescents. It consist of 5 dimensions (41 items), namely panic disorder or significant somatic symptoms (13 items), generalized anxiety disorder (9 items), separation anxiety disorder (8 items), social anxiety disorder (7 items), and school avoidance (4 items) (example item: "When I'm scared, my head feels dizzy/aching"). Furthermore, participants indicated the extent each statement in the scale reflected their experience, ranging from "never" (0) to "often" (2). The interpretation involved summing up all the items, and a total score above 25 indicated the presence of anxiety disorder. The reliability coefficient of the scale was .813. Individuals who obtained a score above 30 were further identified regarding the specific anxiety disorder possessed, according to the criteria in [Table 1](#).

PECK was used to explore the experiences of bullying and cyberbullying in children and adolescents, consisting of 32 items (example item: "Friends say bad things about me on social media"). These consisted of four factors, namely relational-verbal bullying, cyberbullying, physical bullying, and bullying based on culture ([Hunt et al., 2012](#)). Participants responded also on a 5-point Likert scale (never, rarely, sometimes, once a week, almost every day). The responses were categorized into five levels of bullying and cyberbullying experiences (not at all, slightly bad, bad, very bad, and terrible), and the reliability coefficient of the scale was .988.

Table 1
Scoring for Specific Anxiety Disorders on the SCARED Scale

Specific Anxiety Disorders	Minimum Score Obtained	Number of Items
Panic Disorder or Significant Somatic Symptoms	7	1, 6, 9, 12, 15, 18, 19, 22, 24, 27, 30, 34, 38
Generalized Anxiety Disorder	9	5, 7, 14, 21, 23, 28, 33, 35, 37
Separation Disorder	5	4, 8, 13, 16, 20, 25, 29, 31
Social Disorder	8	3, 10, 26, 32, 39, 40, 41
Significant School Avoidance	3	2, 11, 17, 36

Study Procedure

SMART-C was intervention based on resilience factors, according to Reivich and Shatte (2002), which included emotional regulation, impulse control, optimism, causal analysis, empathy, and reaching out. Specifically, d’Haenens et al. (2013) described three dimensions of online resilience, namely (1) Digital literacy, which encompassed attitudes and abilities to use digital technology and communication tools appropriately, (2) Emotional literacy, the ability to recognize, understand, manage, and express emotions accurately, and (3) Coping strategy, involving specific cognitive and behavioral efforts to alleviate or reduce discomfort and different pressures in digital activities. Based on these factors, SMART-C was implemented through eight sessions, namely (1) Digital self, (2) Digital footprint, (3) Recognizing emotions, (4) Virtual emotions, (5) Cyberbullying, (6) Sources of support, (7) Self-control, and (8) Upstander or Bystander. A detailed explanation of SMART-C training sessions can be found in Table 2.

This study was subjected to ethical review by the study ethics committee of the Faculty of Public Health, Universitas Diponegoro, with certificate number 34/EA/KEPK-FKM/2021. Before intervention, expert judgment on SMART-C module was carried out, involving elementary school teachers, guidance and counseling teachers, and clinical psychologists. The validation included the module's content and presentation as well as language suitability, while media validation focused on the accessibility of tools and materials, safety, content, and language appropriateness. The validation results for each assessment component were analyzed by summing up the assessment scores, ranging from 1 (very poor) to 4 (excellent).

Table 2
SMART-C Training Session

Session	Session Name	Objective
Session 1	Digital Self	Understanding oneself and others and developing a positive and honest online and offline identity
Session 2	Digital Footprint	Knowing the limits of information, the impact of sharing information, and its relevance to the ability to differentiate between positive and negative online interactions
Session 3	Recognizing Emotions	Recognizing one's emotions and the emotions of others and developing skills to express emotions proportionally and appropriately, especially when faced with negative situations or situations that trigger anxiety
Session 4	Virtual Emotions	Understanding the differences between online and offline emotions, developing skills to validate positive and negative emotions in online interactions
Session 5	Cyberbullying	Understanding the definition and types of cyberbullying, raising awareness of the negative impact of cyberbullying
Session 6	Source of Support	Introducing ways to seek support, assistance, and immediate adaptive responses when facing cyberbullying
Session 7	Self-Control	Introducing self-control skills when dealing with anxiety-provoking situations in online interactions
Session 8	Upstander or Bystander	Enhancing understanding of the roles of Bystanders and Upstanders in cyberbullying and teaching skills to become an Upstander in online and offline interactions

The results showed that SMART-C module received a good rating from the clinical psychologist and an excellent rating from elementary school teachers and guidance and counseling teachers. The validation sheet also included recommendations and

suggestions from the experts. The suggestions provided were related to improving the layout of the module cover to make it vibrant, providing necessary tools for each session, and adding additional activities to certain sessions. After going through expert judgment, the module was pilot-tested with five elementary school students to assess the content, language, and duration suitability. After the pilot testing process, the module was revised and ready for implementation.

Coordination was carried out with the guidance and counseling and homeroom teachers regarding intervention program provided to students. Intervention was also given to students who obtained parental consent. Each participant completed a questionnaire before intervention (pretest). SMART-C consisted of 8 sessions conducted over four consecutive days, with two sessions per day, lasting 60-75 minutes. Intervention was conducted in a classroom setting, involving a psychologist as the trainer. After the completion of SMART-C intervention, the participants filled out the questionnaire (posttest), as shown in Figure 1.

Data Analysis

Data analysis was conducted using the Wilcoxon Signed-Rank Test to examine the differences in anxiety levels before and after intervention. Additionally, anxiety disorder scores between males and females were compared as supplementary data.

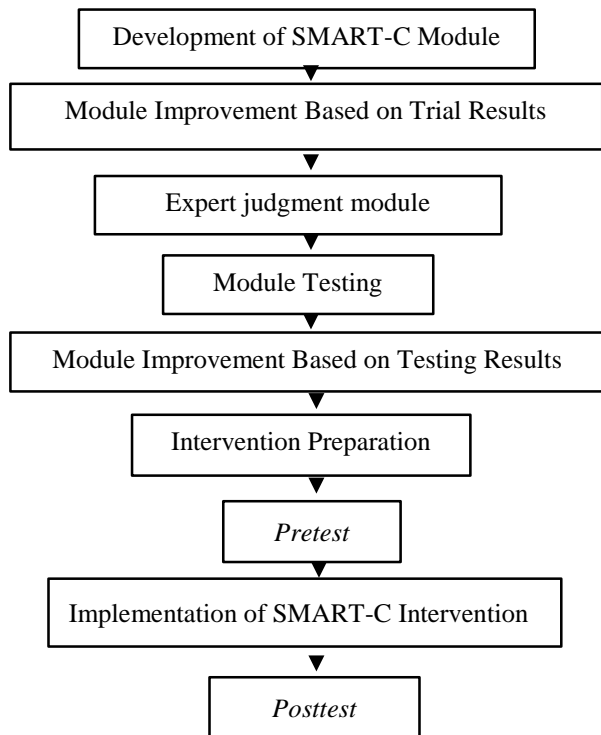


Figure 1. Study Procedure

Results and Discussion

Result

Participant Demographics

The study subjects were 20 individuals, with 13 males and 7 females comprising the group. Furthermore, the subjects were social media users. Most participants were 11 years old (45%), and YouTube was the most frequently used platform (50%). The study subjects had experienced bullying and cyberbullying ranging from slight to very bad, and the demographic data can be seen in Table 3.

Statistical Description

Based on the statistical description analysis in Table 4, there was a decrease in the minimum and maximum values for anxiety scores.

Table 3 Demographic Data

Category	Frequency	Total	
		Frequency	%
Gender			
Male	13		65
Female	7		35
Age			
11	9		45
12	8		40
13	3		15
Child Number-			
First	6		30
Second	9		45
Third	5		25
Social Media User			
Yes	20		100
No	0		0
Social Media Access per Day			
Rarely (1-5 times)	9		45
Sometimes (6-10 times)	7		35
Frequently (>10 times)	4		20
Most Frequently Used Social Media			
Youtube	10		50
Instagram	5		25
WhatsApp	1		5
Others (Tiktok, Facebook)	4		20
Experience with Bullying and Cyberbullying			
Not at all	0		0
Slightly bad	8		40
Bad	9		45
Very bad	3		15
Terrible	0		0

Table 4 Statistical Description

	N	Min	Maks	Statistik	Mean	
					Std. Error	Std. Dev
Pretest Scared	20	10	36	22.25	1.80	8.05
Posttest Scared	20	4	31	17.65	1.61	7.21
Pretest PECK	20	1	47	17.40	2.87	12.86
Posttest PECK	20	1	54	18.25	2.83	12.65

Table 5
Results of the Wilcoxon Signed-Rank Test

Pretest-Posttest Scale/Subscale	Z	Asymp. Sig. (2-tailed)
SCARED (Anxiety Disorder)	-2.137 ^b	.033
Panic Disorder	-1.201 ^b	.230
Generalized Anxiety Disorder	-1.975 ^c	.048
Separation Anxiety Disorder	-2.420 ^c	.016
Social Anxiety Disorder	-1.230 ^c	.219
Significant School Avoidance	-.903 ^c	.366

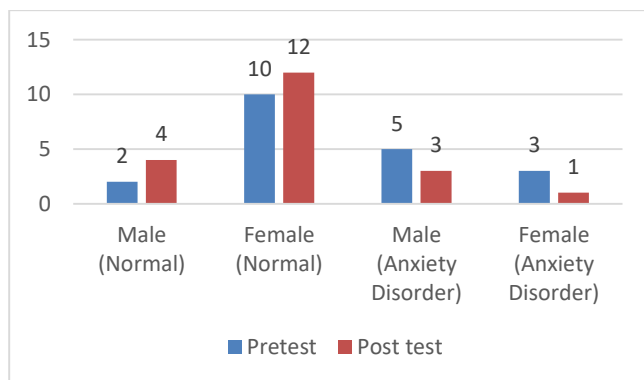


Figure 2. Anxiety Levels at Pretest and Posttest

Anxiety Conditions Before Intervention

The SCARED had a cutoff point of 25, meaning individuals who scored above 25 indicated anxiety disorder condition.

Differential Test of Anxiety Levels Before and After Intervention

This study hypothesized that SMART-C intervention reduced anxiety levels of elementary school students with cyberbullying experiences. Based on Table 5, SMART-C training had a significant effect on reducing anxiety ($Z = -2.317, p < .03$). The reduction occurred in overall ($Z = -1.975, p < .04$) and separation anxiety ($Z = -2.420, p < .01$). However, the condition of bullying before and after intervention did not experience significant changes.

Table 6
Results of the SCARED and PECK Comparison Test based on Gender

	Variable	T	df	Sig.	Mean Difference	Mean Male	Mean Female
SCARED	Equal variances assumed	.410	18	.007	1.418	17.15	18.57
	Equal variances not assumed	.336	7.573		1.418		
PECK	Equal variances assumed	-.171	18	.550	1.043	18.61	17.57
	Equal variances not assumed	-.171	16.987		1.043		

Comparative Analysis of SCARED and PECK Based on Gender.

Analysis results showed a significant difference in anxiety scores between males and females after the treatment ($t = .410; p < .05$). Female children reported anxiety reduction ($M = 18.57$) compared to males ($M = 17.15$). However, the condition of bullying experience did not show a significant difference from before to after the treatment, as seen in Table 6.

Discussion

The popularity of digital media and its applications was responsible for bringing significant changes to different aspects of human life. Children were also significantly impacted by the pervasive utilization of technology. Among the adverse effects observed were instances of bullying behavior and a decline in psychological well-being (Ibrahim, 2019; Wood & Bhatnagar, 2015).

The results indicated that SMART-C training effectively reduced individual anxiety. The training focused on providing resilience skills to individuals to cope with unpleasant situations when experiencing cyberbullying. Furthermore, the resilience skills possessed by children assisted them in adapting to changes or events encountered during online interactions. The ability to adapt and anticipate unpleasant situations was one of the coping mechanisms for stress to reduce anxiety. In addition, Bérubé et al. (2013) found that resilient individuals had a high adaptive ability to stress and anxiety (Osório et al., 2017). This was because individuals with resilience skills were trained to have effective coping strategies in improving psychological well-being independently (Mayordomo-Rodríguez et al., 2015).

SMART-C intervention also provided students with skills and education to behave appropriately when using digital media, taught them how to accept and forgive cyberbullying experiences, educated students on the appropriate responses, and encouraged them to stand up against cyberbullying by promoting positive behavior among their peers (tell-children). Previous studies showed that children with self-help skills experienced increased self-confidence in facing daily

challenges, improved mental health, and reduced social media dependency (Hou et al., 2022).

SMART-C was developed using digital media to teach emotional, social, and digital literacy competencies. Despite having negative impacts, the use of technology was considered to have different positive effects on children. Pertiwi and Prakosa (2021) explained that technology use in education created an enjoyable learning environment through audio and visual elements. Furthermore, Suzana et al. (2020) showed that technology, such as gadgets, was beneficial for children's development. This was because of stimulation from teachers and the reduction of boredom in children. Based on these findings, online resilience was necessary for individuals to cope with the negative impacts and optimize the positive effects. This study proposed five factors that could enhance online resilience in individuals. First, "best digital self" referred to having a positive self-image consistent online and offline. This aligned with the study by Rozika dan Ramdhani (2018), where a positive self-image enhanced resilience in individuals. Second, "self-management" involved recognizing, managing, and expressing emotions appropriately while using media. This was supported by Mayordomo-Rodríguez et al. (2015) with 890 respondents, where good self-management in expressing emotions improved psychological well-being and enhanced resilience. Third, "relationship skills" included fostering healthy offline and online friendships. Previous studies showed that relationship skills, such as interpersonal relations (Lee et al., 2021), listening (Brown et al., 2021), and communication (Pasandideh & Keramat, 2020), contributed to increased resilience. Fourth, "responsible decision-making" involved developing skills to use media appropriately. This skill was crucial and should be cultivated from elementary school due to its significant impact on future life (Dotsenko et al., 2020). Problem-solving skills were also considered to enhance resilience (Coşkun et al., 2014). Fifth, "managing conflict" referred to the ability to handle conflicts and seek help when facing conflict situations. Wood and Bhatnagar (2015) found that coping strategies, including conflict management, influenced resilience levels and reduced individuals' vulnerability to stress. These five factors for enhancing online resilience in individuals encompass personal and social competencies to improve resilience (Sun et al., 2022).

The results showed that female participants experienced a higher decrease in anxiety levels compared to males. Even though females experiencing stress tend to exhibit atypical symptoms, such as weight gain, increased appetite, and increased sleep, they were more adaptive in coping with stressful situations (Monteiro et al., 2014). Females were considered more capable of expressing emotions, more

inclined to seek social support, and more sensitive to their problems (Monteiro et al., 2014).

Traumatic experiences, such as bullying had long-lasting effects and contributed significant risk factors to the development of children, including disrupted mental and physical health, brain development, and psychosocial well-being (National Academies of Sciences, Engineering, 2016). These conditions were not resolved in a single intervention since bullying victims required a process of adaptation. Additionally, bullying and cyberbullying experiences involved external factors, such as the conditions of the individuals engaging in the behavior (the bullies). Given these circumstances, a multidimensional approach was needed to address them. Therefore, intervention should be focused on the victims and the bullies. A systemic approach involving various disciplines was also necessary.

This study had several limitations, including (1) the program implementation was only focused on children, while enhancing digital literacy required the involvement of different stakeholders, such as parents, teachers, and the community, (2) the study was conducted with only 20 participants from one educational level, making it difficult to generalize the findings. Further studies on community intervention to enhance digital literacy involving children, parents, teachers, and the community were also crucial. Increasing the sample size, including participants from different educational levels and diverse socio-economic backgrounds provided a deeper understanding of the impacts of cyberbullying and the generalizability of intervention. Demographic characteristics should also be considered when developing programs, such as incorporating specific sessions on the differential effects of digital bullying and the skills needed to address the situations.

Conclusion

In conclusion, the results showed that SMART-C training was effective in reducing individual anxiety scores. Female participants also experienced a higher anxiety score reduction than males. Even though intervention did not show a significant decrease in bullying experiences, it highlighted the importance of collaboration between students, school, families, and the community in maintaining mental health. The study underscored the importance of school-based resilience intervention that focused on instructing individuals in the effective use of digital technology or social media, mitigating the occurrence of risky incidents. The integration of psychological programs, such as positive intervention, into the learning process served as an important stepping stone for structured and comprehensive follow-up efforts in creating mentally healthy digital generations.

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