Do Anti-bullying Programs Reduce Depression and Anxiety Experienced by Students? – A Systematic Review

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***Abstract*— Bullying prevention interventions have been devised to reduce peer victimization and its negative effects on victims. Many primary research studies have examined the effectiveness of these programs, including some that investigated whether programs enhanced the self-esteem and overall mental well-being of students who participate in the programs, including those who have and have not been victimized. Several systematic reviews (analyses of secondary data) have assessed the overall effectiveness of these interventions. However, no systematic reviews analyzed the effect of anti-bullying programs on depression and anxiety among program participants. This review was the first systematic review to develop a comprehensive portrayal of the effect of bullying prevention programs on mental health, particularly depression and anxiety. This review was a meta-analysis of the effects of bullying prevention programs on the depression and anxiety of participants. Studies were selected by conducting literature searches on the following electronic databases: ERIC, PsycINFO, PsycARTICLES, Pubmed, Scopus, Web of Science, and Google Scholar. Only randomized clinical trials and pretest-posttest studies measuring the effect of these programs on the participants were included. A single effect size type, Cohen's d, was chosen, and any different effect size-types used in the studies were converted. All primary studies that met the selection criteria were coded for effect size. The weighted-mean effect size revealed a negligible effect of these programs in reducing the depression and anxiety levels of the students.**

***Keywords*—** *Anti-bullying Programs, Bullying Prevention Programs, Depression, Anxiety*

I. Do Anti-bullying Programs Reduce Depression and Anxiety Experienced by Students? – A Systematic Review

A. Bullying and Anti-bullying Programs

Bullying became a prime area of research interest around the 1980s in Western countries due to the mass number of suicides attempted by young boys in Norway because of the increased victimization experienced by them (Olweus, 1993). Bullying is an aggressive behavior characterized by three core features: (1) an intent to harm someone; (2) repetition; and (3) a power imbalance between victim and perpetrator (Olweus, 1991). In other words, it repeatedly involves acting aggressively towards a victim who is weaker regarding their social status, physical size, or other factors. The power imbalance between a bully and a victim is a defining characteristic that allows a bully to exploit a victim (Olweus, 1991).

With rising awareness about bullying and its negative consequences, several anti-bullying interventions have been developed in schools (Smith et al., 2005). Individualized anti-bullying interventions focus on either the bully or the victim in the bullying situation. Social skills training, anger management and assertiveness training taught in these interventions are intended to help the bully manage their externalizing problems (gaining back the respect of their peers and teachers), the victim manage their internalizing problems (any psychological struggle such as feeling depressed or anxious), and both mend their relationship (Smith et al, 2003). Peer-led anti-bullying interventions involve conflict resolution or teaching peers how to help the victims in bullying situations with empathy, active listening and problem-solving (Cowie & Olafsson, 2000). These interventions aim to improve communication rather than blaming others, make students more responsible, and create roles that make peers more empathetic (Cowie & Olafsson, 2000). These interventions benefit adolescents who tend to defy authority figures and are keener on listening to younger individuals such as their peers (Salmivalli, 2001). Additionally, one of the reasons for bullying behaviors is bystanders showing a lack of support for the victims and encouraging the bully's behaviours (Saarento et al., 2015). Therefore, teaching peers to be empathetic can help alter the course of bullying.

Bullying prevention programs or anti-bullying programs are intervention programs that aim to reduce the prevalence rates of bullying and alter any attitudes or behaviours that support it (Hallford et al., 2006). Usually, these programs employ a whole-school approach and assume bullying to be a systemic problem (Richard et al., 2011). Therefore, most anti-bullying or bullying prevention programs are directed toward the whole school community (Smith et al., 2005). Some of the anti-bullying strategies that these programs use are: (a) punitive approaches, such as informing students of the consequences of any bullying behavior; (b) non-punitive approaches, such as parent training, (c) student committees; and (d) student intervention approaches which focus on peer relationships and seeking help from support groups (Moore & Woodcock, 2016).

B. Victimization and Mental Health Effects of Bullying

According to Olweus (2001), victimization takes place when a student is repeatedly exposed to the negative actions of one or more students. In victimization the focus lies on victims in the bullying situation. Frequent victimization in the long term can be deleterious to health. It is correlated with severe mental health problems such as increases in depression, anxiety, academic distress, increased risk of self-harm, and suicide (Kelly et al., 2015). Another study reported similar results where victimization was significantly

correlated with depression and anxiety, as well as with related constructs such as low self-esteem, neuroticism, emotional sensitivity, and poor social skills (Casper & Card, 2017). Studies have also revealed that victimization is not only associated with an increased risk of depression and low self-esteem (Juvonen & Graham, 2014), but also with other behavioral conditions such as conduct problems, delinquency and aggression in the future (Farrington et al., 2012).

Bullying can be associated with psychological problems for the bullies, the victims, as well as the bystanders (Ttofi et al., 2014). For example, bullies are often rejected by their peers and are at a greater risk of dropping out of school, being unemployed and engaging in substance abuse in the future (Warden & MacKinnon 2003). Children who bully others usually get bullied themselves (Smokowski & Kopasz, 2005). Victims, on the other hand, tend to suffer from several physical and mental health issues, perceive themselves to be socially isolated, and experience lesser school well-being (Bouman et al., 2012). Lastly, even the witnesses of bullying situations are at a greater risk of suffering from anxiety and depression, social adjustment problems, and feeling uncomfortable at school (Nishina & Juvonen 2005; Rivers et al., 2009; Werth et al., 2015).

C. Theoretical Background

Several theories explain why those associated with bullying might be experiencing its negative consequences. The person-group dissimilarity model suggests that group norm deviation produced by bullying leads to negative judgment by peers, ultimately leading to negative health consequences (Wright et al., 1986). Evaluation of one's behavior is dependent on the group and the norms in which they are embedded (Wright et al., 1986). Group norms direct the group and prescribe which behaviors are appropriate or inappropriate. Such norms can then be related to bullying and victimization (Huitsing et al., 2012). Focusing on victimization in bullying and intervention programs makes the victims and bullies deviate from the group. For example, the victims and the bullies face negative health consequences for being involved in bullying when no one else is (Huitsing et al., 2019). When their behaviors do not match the group norms, they are negatively evaluated and treated by others, further impacting their adjustment (Huitsing et al., 2019). Another theory, the social comparison theory, postulates that humans evaluate themselves by comparing themselves to others (Festinger, 1954). For those involved in bullying contexts (whether it be the victims, the bullies, or the bystanders), the referent group is their friends. Comparison with the better-off friends may further provoke those involved in bullying to negatively evaluate themselves. (Huitsing et al., 2019).

D. The Need to Assess Mental Health

Several school-based anti-bullying programs have been developed to combat bullying (Smith et al., 2004). However, evaluations of these programs based on several meta-analyses have repeatedly shown that they have produced only modest gains in helping combat bullying (Ttofi & Farrington, 2011). This could be because factors other than victimization may be involved, which could help reduce bullying. Bullying is believed to be more than a bully-to-victim relationship, and a variety of social contexts influence it (Saarento et al., 2015). A study conducted by Valenzuela et al. (2022) highlighted the need to evaluate the effect of anti-bullying programs on other outcomes, such as school membership and mental health, in different periods and contexts. This is evidenced by the claim that anti-bullying programs like KiVa did not affect secondary outcomes such as children's mental health or their academics (Valenzuela et al., 2022). Another study conducted by Salmivalli (2018) suggested that it is important to understand the negative consequences of victimization, especially those on victims' mental health in schools that support the reduction of victimization. Therefore, using only victimization as a criterion may not be appropriate for measuring the effectiveness of anti-bullying programs. The dearth of literature assessing mental health outcomes of anti-bullying programs suggests that there is a need to evaluate the impact of these programs on the mental health of students.

Considering that the victims, bullies, and bystanders bear the negative mental health consequences of bullying (Ttofi et al., 2014), and it is widely known that victimization is associated with outcomes such as anxiety and depression (Casper & Card, 2017; Kelly et al., 2015), it would only make sense to evaluate the effectiveness of these programs by measuring both victimization as well as associated mental health outcomes. Based on the literature reviewed, it can be concluded that little is known about the effects of these programs on the mental health of the students, which is equally important. It is not clear whether these programs are just successful in reducing victimization or whether they can reduce the mental health problems that come along with bullying. If anti-bullying programs do not serve their stated purpose of improving children's mental health, then they would be an impractical solution for combating bullying. Schools implementing and buying these anti-bullying programs will be wasting resources if these programs do not serve their purpose. Perhaps a better solution to combat bullying could be to teach students how to exercise social and emotional well-being with each other. For example, a study conducted at the Why the Cliff Education Center in Canada revealed that having a deep-rooted ethic of care in the school helped children develop positive attitudes toward the school, feel passionate about care, and improve their well-being (Mare, 2011).

Though bullying can occur in different contexts, such as in schools, in the workplace, and online, most school children often report being bullied at least ten to twenty percent of their school time (Rigby & Smith, 2011). Therefore, the present review is concerned only with bullying that occurs between four-to-eighteen-year-old school children. The present systematic review is the first to focus on the extent to which these school-based anti-bullying programs reduce the mental health problems of school students aged 4-18 years, specifically their effects on depression and anxiety.

II. METHODS

A. Systematic Review

Inclusion Criteria: Before conducting a literature search strict inclusion and exclusion criteria were established to be included in the present meta-analysis. Studies that met

the following conditions were included in the present review: (1) studies evaluating only school-based anti-bullying programs/interventions conducted between ages 4 to 18 years, (2) studies measuring depression, anxiety, or both after the implementation of a bullying prevention intervention, (3) studies employing either the randomized controlled trial (RCT) or pretest-posttest method, and (4) studies which were conducted on typically developing children. There were no restrictions regarding the publication date to get as many studies as possible for the analysis. However, some additional conditions for research to be included in the analysis were (5) studies should be written in English, (6) studies should be empirical in nature and (7) studies should be published in peer-reviewed journals.

Exclusion Criteria: Studies that met the following conditions were not part of the analysis: (1) Research that employed any other method apart from RCT or the pretest-posttest method such as a meta-analysis, (2) Any research conducted evaluating the effects of any other type of bullying programs apart from school-based ones, (3) Studies involving students with developmental disabilities, (4) Unpublished thesis or dissertations and (5) Studies written in any other language other than English.

Information Sources and Search Strategy: For conducting literature searches, electronic searches were conducted using PsycINFO, PsychARTICLES, ERIC, Pubmed, Scopus, Web of Science, and Google Scholar research databases during April 2024. Specific descriptors were used to gather as many studies as possible. The present review used the following descriptors for conducting literature searches: anti-bullying programs, bullying prevention programs, anti-bullying intervention, depression, anxiety, depressive symptoms, anxiety symptoms, anxiousness, depression scale, depression inventory, and anxiety scale.

Study Selection and Data Collection Process: The present review also included a rigorous screening procedure. Studies were initially screened based on their titles and abstracts. Further detailed screening was done based on the full text review.

III. Results

A. Study Selection

Based on the initial literature search on titles and abstracts, 17 studies (PsycINFO, *n*=1; PsychARTICLES, *n*=0; ERIC, *n*=0; Pubmed, n=7; Scopus, n= 4; Web of Science, n=0 and Google Scholar, n=5) were screened in total. Based on the full text review, four studies found on Google Scholar were eliminated because they did not measure mental health outcomes such as depression and anxiety but rather victimization after implementing anti-bullying programs. Three studies found on Scopus and one study found on Pubmed were eliminated on the grounds of not implementing an anti-bullying program, instead just focusing on the relationship between victimization and depression and anxiety. No unpublished or non-English research was found, even in the initial screening. Despite rigorous search efforts, only nine studies (PsycINFO, *n*=1; Pubmed, n=6; Scopus, *n*=1 and Google Scholar, *n*=1) could meet the review's eligibility criteria. Out of these nine, seven were randomized clinical trials and two were pretest-posttest studies without a control group. Though one of these studies was qualitative in nature, it was still included in the analysis since it provided sufficient descriptive statistics data for calculating the effect sizes.

B. Study Characteristics

Specific characteristics of each study included in the analysis are mentioned in Table 1, Appendix A. In total, three studies assessed both depression and anxiety, five studies assessed only depression, and one study assessed only anxiety. Studies included in the analysis followed a set format where they conducted these programs on all students and analyzed the data based on the baseline and post-intervention measurement of victimization and other related variables such as depression and anxiety. Only one study was conducted on the perpetrators, which assessed the impact of an anti-bullying school camp on the perpetrators.

The sample (32,396 school children, sample range: 16-8732 students) was comprised of school children who were part of different anti-bullying programs/interventions. The types of bullying prevention programs included the KiVa Program, Olweus Anti-bullying Program, Bystander Bullying Prevention Program, Bullying Victim Psychoeducation Intervention, and an anti-bullying school camp for the perpetrators in one of the studies. Most studies were conducted on third to sixth grade students, except for two studies that were conducted on high school students. All studies included both males and females. However, many differences in the sizes of control and treatment groups could be observed, the specific values are mentioned in Table 1, Appendix A. The data included information from six countries: the Netherlands, Australia, Finland, Korea, the United States and Indonesia. Only two studies provided demographic data for the socioeconomic status of the student population and included schools that were part of the lower-income socioeconomic status. The rest of the studies did not mention this information.

C. Risk of Bias in Studies

Except for one, all studies employed the random stratified sampling technique, which is a probability sampling technique. Only one study employed a convenience sampling technique (Lee et al., 2021). Three studies included in the analysis had a very low sample size compared to others (Firmawati & Sudirman, 2020; Lee et al., 2021; Midgett et al., 2020). Due to these two sampling limitations, there might be some risk of bias involved in these studies.

D. Results of Individual Studies

Results of individual studies such as their characteristics and the effect sizes calculated for each of them are included in Appendix A and B.

E. Results of Syntheses

Based on the statistical data mentioned in these studies, Cohen's d was chosen as an appropriate effect size measure. For studies in which means and standard deviations were provided, Cohen's d was calculated directly. For studies that did not mention the descriptive statistics but mentioned correlations or regression coefficients or the F or T values, these values were converted to Cohen's d using the Campbell

Effect Size Calculator. Calculated effect sizes are shown in Figure 1, Appendix B. After the calculation of the effect sizes for all the studies, a weighted mean effect size was calculated separately for depression ($d=0.034$, $p<0.05$) and anxiety ($d=-0.049$, $p<0.05$). Both of these values are found to be not significant ($d<0.2$). According to Cohen, any effect size value smaller than 0.2 depicts an effect size value that is not significant (Sullivan & Feinn, 2012). The positive weighted mean effect size of depression indicates an overall increase in depression, whereas the negative weighted mean effect size of anxiety indicates an overall decrease in anxiety.

F. Reporting Bias and Certainty of Results

Very few studies included information on means and standard deviations for depression and anxiety (Firmawati & Sudirman, 2020; Midgett et al., 2020; Pearl & Dulaney, 2006). However, some studies provided correlations (Rapee et al., 2020), F values (Lee et al., 2021; Williford et al., 2012), or regression coefficients (Fekkes et al., 2006, Huitsing et al., 2019; Juvonen et al., 2016&). For these studies, Cohen's D had to be calculated by converting these values using the Campbell Effect Size Calculator. This made the calculation of effect sizes more complex and because of highly varied statistical techniques used in these studies, Cohen's D was chosen as the appropriate measure for calculating the effect sizes for this review. Using different formulas and converting values for finding the effect sizes might have influenced the results.

IV. Discussion

This review aimed to assess the effect of anti-bullying programs in helping reduce depression and anxiety symptoms among school students. Independent effect sizes revealed that large sample size studies ($N = >3500$) had a small negative effect size, showing a lesser reduction in depression and anxiety (Fekkes et al., 2006; Huitsing et al., 2018; Juvonen et al., 2016; Rapee et al., 2020; Williford et al., 2012). When the experimental group's mean is smaller than the control group's mean, it produces a negative effect size, indicating a decrease in an outcome after an intervention (Caye, 2017). The small sample size studies ($N = <300$) showed a large positive effect size, showing an increase in depression and anxiety levels (Firmawati & Sudirman, 2020; Lee et al., 2021; Midgett et al., 2020; Pearl & Dulaney, 2006). When the experimental group's mean is greater than the control group's mean, it produces a positive effect size, indicating an increase in an outcome after an intervention (Caye, 2017). It can be supposed that if the small sample size studies increased their sample, their effect sizes would also change since they show a greater variability in their effect sizes compared to large sample size studies (Geiser, 2024). Small sample size studies include more sampling errors, wider confidence intervals, and a narrow sampling distribution (Geiser, 2024). Therefore, when the sample size is increased, the number of sampling errors is reduced, and there is a wider sampling distribution, causing the effect sizes to change (Geiser, 2024). However, what is crucial in these findings is that the effect of these programs was not significant in decreasing anxiety and depression levels. Calculated weighted mean effect sizes for depression ($d=0.034$, $p<0.05$) and anxiety ($d=-0.049$, $p<0.05$) were found to be not significant ($d<0.2$). This is because an effect size smaller than 0.2 is not significant according to Cohen (Sullivan & Feinn, 2012). Unlike anxiety, the weighted mean effect size for depression was positive, which shows an increase rather than a decrease in depression.

Though the weighted mean effect size for anxiety was negative, showing a decrease in anxiety levels, the number of studies measuring anxiety was only four. Even if anxiety does decrease with these programs, the effect size value is too small to be significant. However, just based on the signs of average effect sizes measured, one can see an increase in depression and a reduction in anxiety levels among students after participating in these programs. Another limitation of this review is that the class intervals for these samples were not calculated, which would have revealed some significant details. Class intervals help estimate effect sizes more accurately and explain a deeper relationship between the variables than p values (Nakagawa & Cuthill, 2007). Research papers included in the review did not segregate the victims and the non-victims. Only a single review was conducted on the perpetrators (Lee et al., 2021).

Considering that the entire purpose of these programs is to help a variety of students, this categorization is crucial and should be the norm in all future studies. Future researchers are also recommended to use randomized clinical trials, which is considered a gold standard for measuring cause-and-effect relationships. They should also segregate the victims and the non-victims and evaluate the impact of the interventions separately for both populations. To make the sample more representative, efforts should also be made to conduct more research in the Global South countries. All psychological variables vary in different cultures, so having a sample that does not include these countries limits the generalizability of the findings and the diversity of the sample (Henrich, 2020). It can also lead to sampling bias (Henrich, 2020). To ensure that samples within studies from the Global North are representative of its population and include people from different socio-economic statuses, more studies with a more diverse sample are needed. Contrasting results between two cultures may mean further analysis is required for better conclusions. Overall, more studies are needed to evaluate whether anti-bullying programs cause a reduction in depression and anxiety levels.

Measurement of victimization can only help assess the degree to which unwarranted aggressive behaviour is shown toward the victims (Hawker & Boulton, 2000). Most programs only use a reduction in victimization as the gold standard for measuring their effectiveness (Klocek et al., 2024). However, the aim of these programs should not only be reduction or eradication of bullying but also mitigation of the adverse effects of bullying on the mental health of students. Therefore, the effectiveness of these programs should also be measured by assessing the mental health outcomes after their implementation. Both victimization and mental health are equally important and should be assessed to evaluate the overall impact of these programs.

It could be possible that even years after bullying, its effects still outlast school children. After the implementation of bullying prevention programs, those part of the bullying

incident may face subtle forms of exclusion due to negative evaluations from their peers (Huitsing et al., 2019). Since bullying and bullying prevention programs involve a multitude of factors, such as anxiety and depression (Juvonen & Graham, 2014), the effects of these programs are more complex than understood before. These effects cannot be measured only through victimization but by measuring all the other associated factors, such as personality and mental health outcomes. Perhaps a deeper focus of these programs could be to ensure that the mental health of those involved in bullying situations is on par with those who are not involved. Efforts need to be made by program developers to either make those involved in the bullying context less salient or manage the unavoidable negative mental health effects that come along with these programs.

It is also necessary to develop more adaptive and newer approaches to deal with bullying, which could include having a school culture deeply rooted in care. Studies have shown that having a school culture and a student-teacher relationship based on care and compassion helps increase social skills and reduce aggressive behaviours among students (Mayseless, 2016). Focusing on the strengths and interests of students instead of their weaknesses also helps reduce violent and aggressive behavioural problems among them (Mare, 2011). Lastly, the root cause of bullying is considered to be microaggressions, which are subtle, brief exchanges that are meant to demean someone either intentionally or unintentionally (Nadal & Griffin, 2012). Therefore, spreading more awareness about identifying and confronting microaggressions can also help combat bullying (Nadal & Griffin, 2012). To conclude, the aim of bullying prevention programs should be to reduce victimization and mental health problems associated with bullying, such as depression and anxiety, and enhance mental health benefits, such as increased self-esteem and positive peer evaluations and support. These recommendations and study might help improve the mental health and well-being of school children and help create a safer school environment that prioritizes mental health.

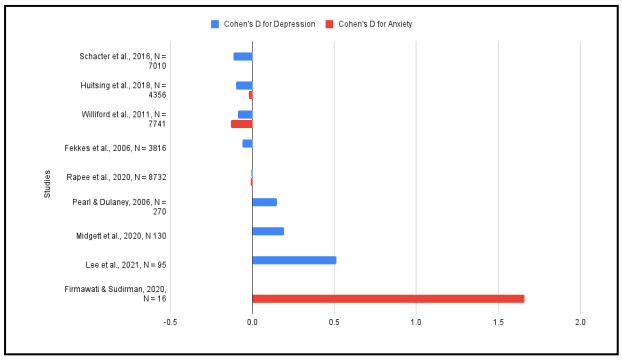
APPENDIX A

TABLE I. SPECIFIC CHARACTERISTICS OF THE STUDIES INCLUDED

Study	Sample size	Gender distribution	Age range and mean Age	Scale used to measure depression	Scale used to measure anxiety
Fekkes et al., 2006	3816 (Control group=2602; Experimental group=1214)	50% females	Range=9-12; M=10.1	Short Depression Inventory for Children	N/A
Firmawati & Sudirman, 2020	16 (Control group=0; Experimental group=16)	75% females	Range=15-18; M=17	N/A	Hamilton Anxiety Rating Scale
Huitsing et al., 2019	4356 (Control group=1402; Experimental group=2954)	51% females	Range=9-10; M=N/A	Major Depression Disorder Scale	Social Phobia Questionnaire
Juvonen et al., 2016	7010 (Control group=3,235; Experimental group=3,775)	50.6% females	Range=N/A; M=11.2	Beck Depression Inventory	N/A
Lee et al., 2021	95 perpetrators (Control group=0; Experimental group=95)	23.2% females	Range=N/A; M=15.7	Children's Depression Inventory	N/A
Midgett et al., 2020	130 (Control group=61; Experimental group=69)	57.4% females	Range=N/A; M=12.5	Depression Scale of the Behavior Assessment System for Children–Third Edition (BASC-3)	N/A
Pearl & Dulaney, 2006	270 (Control group=0; Experimental group=270)	147 females (54.4%)	Range=10-14; M=10.63	Children's Depression Inventory.	N/A
Rapee et al., 2020	8,378 (Control group=1573; Experimental group=6805)	50.6% females	Range=7–11; M = 9.5,	Short Mood and Feelings Questionnaire	Spence Children's Anxiety Scale
Williford et al, 2012	7,741 (Control group=3685; Experimental group=4056)	50.6% females	Range=N/A; M=11.2	Beck Depression Inventory	Fear of Negative Evaluation Scale, Social Avoidance and Distress Scale

APPENDIX B

Figure 1. *Effect Sizes for Depression and Anxiety*



Note: The y-axis shows the studies included and the x-axis shows the effect sizes. Cohen's d was the effect size measure that was used.

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