ORIGINAL ARTICLE

The Relationship Between Traditional and Cyber Bullying Victimization in Early Adolescence and Emotional Wellbeing: A Cross-Sectional, Population-Based Study

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Abstract

Despite the wealth of knowledge about the impact of bullying victimization, information gaps exist about how traditional and cyber bullying in early adolescence is associated with emotional wellbeing, namely, indicators of positive wellbeing. Therefore, this study investigated associations between different types of bullying victimization and positive and negative emotional wellbeing indicators, in addition to examining the prevalence of different types of bullying in conjunction with child, peer, and school factors. The study used data from an annual survey of student wellbeing conducted in South Australian schools. The sample comprised of 9019 grade 6 students aged 10–13 years (49.6% female). One-third of students experienced bullying victimization. Verbal bullying was most prevalent in this sample (24%), followed by social (21%), physical (10%), and cyberbullying (7%). Males were significantly more likely to experience physical and verbal bullying, and students living in more socioeconomically disadvantaged communities were significantly more likely to experience physical, verbal, social, and cyber bullying victimization. Additionally, all types of bullying victimization were significantly associated with lower scores on positive emotional wellbeing indicators (happiness, life satisfaction, and emotion regulation) and significantly higher scores on negative indicators (sadness and worries), all with small effect sizes after accounting for child-, peer-, and school-level factors. This research suggests that bullying is associated with both positive and negative aspects of emotional wellbeing, and both aspects of wellbeing are crucial to consider when developing school-based interventions.

Keywords Bullying · Early adolescence · Emotional wellbeing · Peer victimization · Cyberbullying

Bullying victimization is a topic of global public health concern and is marked by long-term psychological, social, and behavioral consequences (David-Ferdon et al., 2014). Bullying is defined as the negative actions one (or a group) inflicts on another to cause intentional harm or discomfort. These actions occur repeatedly, over time, and involve an imbalance of power (Hymel & Swearer, 2015; Olweus, 1994). Traditional bullying is experienced physically, verbally, and socially, and with the growing use of online means to interact, cyberbullying has become more common (Wolke & Lereya, 2015). Cyberbullying is a harmful form of online victimization that uses text, social networking sites, or other online mediums to inflict harm or discomfort on another individual and is often considered more pervasive than traditional forms due to its 24/7 nature (Hymel & Swearer, 2015). Previous work has used the term "bullying" to describe the actions of the perpetrator (bully), the outcomes for the victim, or to explain the experience of the "bully-victim" (one who is both a bully and a victim) (Zych et al., 2020a, 2020b). This study exclusively examines the experience for victims of physical, verbal, social, and cyber bullying.

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Prevalence of Traditional and Cyber Bullying Victimization

There is high variability in the reported prevalence rates of traditional and cyber bullying victimization for children and adolescents. Recent reviews indicate that rates of traditional bullying range from 8.4 to 45.1%, and rates of cyberbullying range from 1.0 to 61.1%, with these reported rates dependent on the age of the sample and the country where the study was conducted (Biswas et al., 2020; Brochado et al., 2017). These variations can also be partly explained by the lack of a consistent bullying measure, differences in students' understanding of what constitutes bullying as opposed to general violence or aggression, and the lack of a consensus in the literature regarding the definition, which raises issues regarding conceptualizing the construct (Jadambaa et al., 2019; Juvonen & Graham, 2014). Although prevalence rates vary for different types of bullying, a meta-analysis of 80 studies indicated that the prevalence of cyberbullying is lower than that of traditional bullying, with traditional bullying about twice as common; however, it should be noted that different types of bullying also often coexist, making it difficult to obtain precise prevalence estimates of specific types of bullying (Modecki et al., 2014; Thomas et al., 2017).

It is widely accepted that bullying victimization rates peak in early adolescence (10–12 years old) and decrease with age (Hong & Espelage, 2012; Saarento et al., 2013; Waasdorp et al., 2017). Early adolescence is a crucial developmental period with notable changes in the physical, social, and psychological domains. An individual's life experiences and expectations shape future behaviors and attitudes in later adolescence and adulthood (Beal et al., 2016). Relationships with family and friends are especially important during this stage (Kingery et al., 2011; McKinney & Renk, 2011). When these relationships are not constructive and positive for the formation of identities, this can contribute to the development of internalizing and externalizing behaviors (McKinney & Renk, 2011), poorer social and emotional wellbeing, and lower peer acceptance (Oberle et al., 2010), which are all considered risk factors for bullying (Cook et al., 2010; Zych et al., 2020a, b).

Although research has indicated that early adolescence is a time when bullying is most prevalent, a recent systematic review examining longitudinal studies found that different types of bullying (e.g., physical, verbal, social) are not always separately considered, and little is known about the longer-term impacts of experiencing cyberbullying during early adolescence (Halliday et al., 2021). Reviews have also highlighted that cross-sectional research on cyberbullying in adolescents under 13 years

old remains limited in comparison to adolescents over 13 years (Bottino, 2015; Kowalski et al., 2014). Possible explanations for a lack of research on cyberbullying in this age bracket include the belief that these young adolescents do not have access to a personal smartphone or device and that the minimum age requirement for creating accounts on many social media and online gaming websites is 13 years old (Rideout & Robb, 2019). However, one 2020 report ($n = 2,500$) found that one-third of children aged 6 to 13 years owned the smartphone they use (Roy Morgan Research, 2020), with another report ($n = 1,440$) finding 44% of children aged 0 to 8 years owned their own tablet (Rideout & Robb, 2020). More recently, results from a 2021 United States (US) survey ($n = 1000$) demonstrated that 45% of participants aged 9 to 12 years were using Facebook daily, 40% were using Instagram and Snapchat daily, 30% were using Twitter daily, 23% were playing the online game "Minecraft," and 22% were playing the online game "Fortnite" daily (Thorn, 2021). A total of 38% of participants in this study reported experiencing cyberbullying on these platforms (Thorn, 2021). These findings suggest that access to or ownership of personal devices that can access the internet is considerably prevalent; cyberbullying is indeed a concern during early adolescence, reinforcing the need for further study of the experiences of all forms of bullying (physical, verbal, social, cyber) during the critical early adolescent period.

Outcomes Associated with Bullying Victimization

Although victimization can be experienced in many ways, research suggests that the results are always adverse. Several systematic reviews have investigated the outcomes of traditional and cyber bullying, with findings suggesting associations with higher levels of depression, anxiety, psychological distress, internalizing problems, somatic problems, psychosis, suicidal ideation and self-harming injuries, lower levels of life satisfaction, lower school performance, lower grade point average (GPA), and lower levels of school belonging (Halliday et al., 2021; Juvonen & Graham, 2014; Kowalski et al., 2014; Moore et al., 2017; Schoeler et al., 2018; Wolke & Lereya, 2015; Zych et al., 2015).

While the World Health Organization (WHO) constitution states, "health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity" (World Health Organisation, 2018, p. 1), most studies investigating the impact of bullying victimization focus on negative outcomes (depression, anxiety, suicidal ideation), with limited research investigating the association with positive wellbeing indicators, such as happiness,

emotion regulation, and life satisfaction (Fullchange & Furlong, 2016; Schoeler et al., 2018). The Complete State Model of Mental Health considers mental health and mental illness to be related but distinct constructs, where individuals can experience high levels of positive mental health even with a diagnosis of a mental illness (Keyes & Lopez, 2002). The importance of considering positive wellbeing indicators is demonstrated in various studies in which adolescents who are free from mental illness but exhibit low levels of emotional wellbeing and positive functioning differ considerably from those who are free from mental illness and exhibit high levels of emotional wellbeing (Keyes & Lopez, 2002). For example, adolescents who do not have mental illness but have low levels of mental health are more likely to engage in more health risk behaviors such as increased alcohol intake, smoking cigarettes, and less exercise and sleep (Venning et al., 2013) and are more likely to be socially isolated (Knoesen & Naudé, 2018) than those who have low mental illness and high mental health. Studies have also established that students with low wellbeing have poorer academic outcomes than those with high wellbeing, even in the absence of mental illness. For example, Antaramian et al. (2010) found that adolescents who demonstrated low psychological distress (e.g., free from mental illness) but also low wellbeing (e.g., low levels of emotional wellbeing and positive functioning) had significantly lower GPAs than those with low psychological distress and high wellbeing, with a medium effect size ($d = 0.55$). These results suggest that both positive wellbeing and the absence of psychological distress are necessary for the most advantageous school performance. Given that mental health is not limited to the reduction of symptoms of mental ill-health, it is important to develop an understanding of how all forms of bullying can affect both positive and negative emotional wellbeing indicators to inform effective and holistic school prevention and intervention programs. In the current study, the term "emotional wellbeing" takes into account positive psychological indicators such as life satisfaction and happiness, as well as negative outcomes such as sadness and worries (Keyes, 2007).

Risk Factors Associated with Bullying Victimization

Longitudinal and trajectory studies indicate that individual risk factors associated with victimization include exhibiting internalizing and externalizing behaviors, increased depression and anxiety symptoms, social withdrawal, emotional dysregulation, and loneliness (Babarro et al., 2020; Paul & Cillessen, 2007; Zych et al., 2020a, b). Previous research suggests that boys are more likely to be victims of physical or verbal bullying, and girls are more likely to be victims of social bullying (Berkowitz, 2020; Hinduja & Patchin, 2014; Nabuzoka, 2003; Risser, 2013; Van der Wal et al., 2003). Peer and school risk factors associated with bullying include low-quality friendships, less supportive peers, the teacher's attitude towards bullying, and the school climate about bullying (Paul & Cillessen, 2007; Saarento et al., 2013; Zych et al., 2020a, 2020b).

One limitation of previous research, including reviews and meta-analyses, is that the effect of risk factors (referred to here as bullying risk factors) is rarely considered and discussed in relation to the different types of bullying. Instead, results for all types of bullying are generally grouped and analyzed as a whole (Cook et al., 2010; Ladd et al., 2017; Menesini & Salmivalli, 2017; Ttofi & Farrington, 2012; Zych et al., 2020a, b) or make reference to traditional and cyber bullying (Cappadocia et al., 2013; Li et al., 2019) or do not include all types of bullying (i.e., focus solely on cyber and social bullying) (Navarro et al., 2015a, b). Therefore, the current study was also motivated by this lack of existing work that distinguishes risk factors for physical, verbal, social, and cyber bullying victimization.

The Present Study

Despite extensive research establishing a range of negative impacts of bullying in later adolescence (Wolke & Lereya, 2015), some gaps in the literature need further attention. The gaps that will be addressed in the current paper include focusing on the early adolescent time period to examine the prevalence of different types of traditional bullying and cyberbullying victimization, examining emotional wellbeing outcomes using indicators of positive and negative wellbeing, and considering the school-level implications of addressing bullying during this age period. The research questions are as follows: (1) What is the prevalence of each type of bullying in a sample of early adolescent Australian students? (2) What are the risk factors (child, peer, and school level) for early adolescent traditional and cyber bullying victimization?, and (3) What is the association between different types of early adolescent bullying and positive and negative indicators of emotional wellbeing, before and after adjusting for a wide range of child-, peer-, and school-level covariates?

Methods

Data Source

The Wellbeing and Engagement Collection

The wellbeing and engagement collection (WEC) is an annual survey that has been administered to South Australian

students by the South Australian Department for Education since 2013. The WEC aims to capture the non-academic factors relevant to learning and participation in order to assist schools, community, and government to determine opportunities and resources that may help students reach their full potential (South Australia Department for Education, 2021). In 2016, 717 schools were invited to participate in the WEC; of the 500 schools who participated, 466 were South Australian government schools, 26 Catholic schools, and 8 independent schools (Gregory & Brinkman, 2020; Gregory et al., 2021). For the present study, student results from South Australian government schools were used, as this allowed WEC data to be linked to demographic characteristics collected as part of the school enrolment census.

The WEC measures four broad areas of a student's life: (1) emotional wellbeing, (2) engagement with school, (3) learning readiness, and (4) health and wellbeing out of school (Gregory & Brinkman, 2020). Some of the specific areas that are measured include students' breakfast and sleep habits, connectedness to others (teachers, adults, and peers at school), school climate, bullying victimization experiences, and levels of happiness, sadness, life satisfaction, and worries (Gregory et al., 2021; South Australia Department for Education, 2021). For additional details, see Gregory et al. (2021).

The Current Study

Participants

The sample for this study consisted of all grade 6 South Australian government school students, who completed the wellbeing and engagement collection in 2016 ($n = 10,061$). A total of 9109 students (82.4%) had complete data on all measures and formed the analysis sample for this study (see the "Statistical Analysis" section for information on missing data and a comparison of the response sample and the analysis sample). In the analysis sample ($n = 9109$), 49.6% were female, 70.8% were 12–13 years old, 4.4% identified as Aboriginal and Torres Strait Islander, and 26.2% lived in the most socioeconomically disadvantaged communities in the state (Table 1).

Measures

Bullying

The frequency of four different types of bullying victimization (physical, verbal, social, and cyber) was measured using a single item for each type of bullying. In 2016, students were asked "This school year, how often have you been bullied by other students in the following ways?"

Table 1 Demographic characteristics of participants (n = 9019)

Variable	n	%
Gender		
Male	4543	50.4
Female	4476	49.6
Age (years)		
10–11	2630	29.2
12–13	6389	70.8
Non-English speaking background		
No	6874	76.2
Yes	2145	23.8
Aboriginal and Torres Strait Islander		
Yes	396	4.4
No	8623	95.6
Socio-economic status (SES)		
1—Most disadvantaged	2366	26.2
2	1471	16.3
3	1438	15.9
4	1881	20.9
5—Most advantaged	1863	20.7

SES was measured using a community-level indicator (SEIFA = Socio-Economic Index for Areas) based on the postcode of residence of students. SEIFA is derived from Australian Bureau of Statistics census information that summarizes different aspects of socioeconomic conditions in an area

and then the type of bullying was provided along with a description. Physical bullying included the description "for example, someone hit, shoved, or kicked you, spat at you, beat you up, or damaged or took your things without permission." Verbal bullying was described as "for example, someone called you names, teased, humiliated, threatened you, or made you do things you didn't want to do." Social bullying included the following description: "for example, someone left you out, excluded you, gossiped and spread rumours about you or made you look foolish." Cyberbullying was described as "for example, someone used the computer or text messages to exclude, threaten, humiliate, or to hurt your feelings."

Responses were made on a Likert response scale with 1 indicating "not at all this school year," 2 "once or a few times," 3 "about every month," 4 "about every week," and 5 "many times a week." To meet the definition of bullying victimization relating to the experience of intentional harm inflicted by other students, victimization must be frequent and continuous (Olweus, 1994). Bullying victimization in the present study was, therefore, defined as the experience of bullying at least once every month (responses 3, 4, and 5). As the bullying measures were single item, a measurement of internal consistency could not be obtained (Wanous & Reichers, 1996).

Emotional Wellbeing

Emotional wellbeing was measured using five scales from the "Emotional Wellbeing" section of the WEC: life satisfaction, emotion regulation, happiness, sadness, and worries.

Life satisfaction was measured using the "Life satisfaction scale of 5 items—adapted for children" and included the following questions: "In most ways my life is close to the way I want it to be," "The things in my life are excellent," "I am happy with my life," "So far I have gotten the important things I want in life," and "If I could live my life over again, I would have it the same way" (Gadermann et al., 2010). Response options ranged from 1 "disagree a lot" to 5 "agree a lot."

Emotion regulation was measured using the cognitive reappraisal scale of the "Emotion Regulation Questionnaire for Children and Adolescents" and encompasses the following questions: "When I want to feel happier, I think about something different," "When I want to feel less bad (e.g. sad, angry, or worried), I think about something different," "When I'm worried about something, I make myself think about it in a different way and that helps me feel better," "I control my feelings about things by changing the way I think about them," and "When I want to feel less bad (e.g. sad, angry, or worried), I change the way I think about it" (Gullone & Taff, 2012). Responses for each item ranged from 1 "strongly disagree" to 5 "strongly agree."

Happiness was measured using the five-item scale from the "EPOCH Measure of Adolescent Wellbeing," with students responding to the following questions: "I feel happy," "I have a lot of fun," "I love life," and response options ranging from 1 "almost never" to 5 "almost always," and "I am a cheerful person" answered on a response scale from 1 "not at all like me" to 5 "very much like me" (Kern et al., 2015).

Sadness was measured using the "Middle Years Development Instrument," with students answering the following questions: "I feel unhappy a lot of the time," "I feel upset about things," and "I feel that I do things wrong a lot" (Schonert-Reichl et al., 2013).

Finally, worries were measured using the "4-item Worries scale" and included "I worry a lot about things at home," "I worry a lot about things at school", "I worry a lot about mistakes that I make," and "I worry about things" (Gregory et al., 2016). Response to items in both the sadness and worries scales ranged from 1 "disagree a lot" to 5 "agree a lot."

For each of the five emotional wellbeing measures, a scale score (1–5) was calculated by taking the mean of all items within the scale. The psychometric properties of these five emotional wellbeing scales have been established previously (see Gregory and Brinkman (2020)). Within the current sample, all scales had good internal reliability, as shown by Cronbach's alpha values for sadness ($\alpha = 0.80$), happiness ($\alpha = 0.82$), worries ($\alpha = 0.84$), emotion regulation ($\alpha = 0.86$), and life satisfaction ($\alpha = 0.87$).

Child-, Peer-, and School-Level Covariates

Demographic information on age, gender, Aboriginal and Torres Strait Islander status, and language spoken at home were obtained from school census records held by the South Australian Department for Education, completed by parents/guardians at school enrolment, or questions at the beginning of the WEC. Socio-economic status (SES) was measured using the 2016 Socio-Economic Indexes for Areas (SEIFA) Index of Relative Disadvantage based on the child's postcode of residence (Australian Bureau of Statistics, 2018). Additionally, sleep quality was included as a child-level covariate, as poor sleep has been linked to both lower emotional wellbeing (Baum et al., 2014; Newsom, 2020; Shin & Kim, 2018) and to bullying victimization (Donoghue & Meltzer, 2018). Sleep quality was measured by a single question asking, "How often do you get a good night's sleep?," with students required to answer on a Likert scale from 1 "never" to 8 "every day." As sleep quality was assessed using a single-item measure, a measurement of internal consistency could not be determined (Wanous & Reichers, 1996).

Peer-level covariates were assessed through the friendship intimacy and peer belonging questions in the WEC (Gregory & Brinkman, 2020; Schonert-Reichl et al., 2013). Peer belonging comprised of three questions, "I feel a part of a group of friends that do things together," "I feel that I usually fit in with other kids around me," and "When I am with other kids my age, I feel I belong." Friendship intimacy included the questions, "I have at least one really good friend I can talk to when something is bothering me," "I have a friend I can tell everything to," and "There is somebody my age who really understands me." For both scales, response options ranged from 1 "disagree a lot" to 5 "agree a lot," and the score was calculated by taking the mean of the three items within each scale.

School-level covariates were measured using the emotional engagement with teachers scale and the school climate scale in the WEC (Gregory & Brinkman, 2020). Questions about emotional engagement with teachers included "I get along well with most of my teachers," "Most of my teachers are interested in my wellbeing," "Most of my teachers really listen to what I have to say," "If I need extra help, I will receive it from my teachers," and "Most of my teachers treat me fairly." The school climate scale included the following items: "Teachers and students treat each other with respect in this school," "People care about each other in this school," and "Students in this school help each other, even if they are not friends." For the school climate scale, the response

options ranged from 1 "disagree a lot" to 5 "agree a lot," and for the emotional engagement with teachers scale, the responses ranged from 1 "strongly disagree" to 4 "strongly agree." For both scales, the score was calculated by taking the mean of all items within each scale. Covariate measures of more than one item demonstrated high internal reliability within the current sample, as shown by Cronbach's alpha values for school climate ($\alpha=0.82$), peer belonging ($\alpha=0.84$), friendship intimacy ($\alpha=0.86$), and emotional engagement with teachers ($\alpha=0.86$). Further reliability and validity statistics for all WEC measures can be obtained from Gregory and Brinkman (2020).

Statistical Analysis

The prevalence of different types of bullying victimization was reported for the total sample and for students with different demographic characteristics (Table 2). Chi-square analyses were conducted to test the association between the different types of bullying and the following variables: age group, gender, socio-economic status, and English vs non-English speaking background. To reduce the risk of a type 1 error, a conservative Bonferroni correction was used to adjust for multiple comparisons. The raw p-value ($p=0.05$) was divided by the number of tests run (16), and the adjusted significance criterion was established at $p_{altered}=0.003125$ (or $p_{altered}=<0.01$).

To examine the association between peer- and school-level variables and bullying victimization, the mean scores for peer and school measures were compared for children who did and did not experience each type of bullying (Table 3). Again, independent sample t-tests were conducted with a conservative Bonferroni correction used to adjust for multiple comparisons. The raw p-value ($p=0.05$) was divided by the number of tests performed (40), and the adjusted significance criterion was set at $p_{altered}=0.00125$ (or $p_{altered}=<0.001$).

To examine the association between bullying victimization (physical, verbal, social, and cyber) and emotional wellbeing, mean scores for each emotional wellbeing outcome were compared for children who did and did not experience each type of bullying (Table 3). Independent sample t-tests were conducted with a Bonferroni correction applied to adjust for multiple comparisons, with the adjusted criterion for significance set at $p_{altered}<0.001$ (Table 3). Finally, a series of linear regression models were run to explore the association between bullying victimization and emotional wellbeing outcomes before and after adjusting for the set of covariates defined a priori. For each bullying type (e.g., physical bullying) and each emotional wellbeing outcome (e.g., happiness), two linear regression models were run. The first was an unadjusted linear regression analysis to estimate the raw association between bullying and emotional

wellbeing outcomes, and the second was adjusted for the child-, peer-, and school-level covariates (Table 4). Cohen's (1988) guidelines were employed to interpret the size of effects in this study. These guidelines indicate a standardized coefficient of $\beta=0.02$ represents a small effect, $\beta=0.15$ represents a medium effect, and a large effect is represented by $\beta=0.35$ (Cohen, 2013).

Missing Data

Of the 10,061 students in the response sample, a total of 9019 respondents (82.4%) had complete data on all variables (see Supplementary Table S1 for full descriptive results). The data were not missing completely at random (Little's Missing Completely at Random (MCAR) test (Little, 1988)). The highest rates of non-responses were for the bullying victimization questions (ranging from 2.0 to 2.9%) and various covariate measures including sleep (4.6%), emotional engagement with teachers (1.9%), and peer belonging (1.9%). Non-responses were more likely for those who were male, those living in communities with lower SES, and those who identified themselves as Aboriginal and/or Torres Strait Islander. As individuals who identify as being male, Aboriginal and/or Torres Strait Islander, and/or of lower SES are at an increased risk of bullying victimization (Coffin et al., 2010; Cook et al., 2010; Zych et al., 2020a, b), this sample bias may lead to an underestimation of the prevalence of bullying victimization.

Results

Research Question 1: What is the Prevalence of Early Adolescent Physical, Verbal, Social, and Cyber Bullying Victimization?

Prevalence rates were examined to establish overall occurrences and to determine the pervasiveness of each type of bullying (Table 2). Most of the students in the sample (67.7%) did not experience any type of bullying in the school year. Of the 32.3% of students who reported experiencing bullying, 13.5% experienced one type of victimization, 10.0% experienced two types, 5.8% experienced three types, and 3.0% experienced all four types. Verbal bullying was the most commonly experienced (24.0%), followed by social bullying (21.2%). Physical bullying (10.2%) and cyberbullying (7.2%) were considerably less common.

Demographic Characteristics of Bullying Victims

Students identifying as male were more likely to experience physical ($\chi^2(1)=83.46$, $p_{altered}=<0.001$) and verbal bullying

Table 2 Prevalence of different types of bullying for total sample and for children with different demographic characteristics

Type of bullying	N	Physical n (%)	Verbal n (%)	Social n (%)	Cyber n (%)
Total	9019	947 (10.5)	2163 (24.0)	1916 (21.2)	652 (7.2)
Gender					
Male	4543	612 (13.4)	1197 (26.3)	930 (20.5)	335 (7.4)
Female	4476	335 (7.5)	966 (21.6)	986 (22.0)	317 (7.1)
Age (years)					
10–11	2630	297 (11.3)	666 (25.3)	555 (21.1)	177 (6.7)
12–13	6389	650 (10.2)	1497 (23.4)	1361 (21.3)	475 (7.4)
Non-English speaking background					
No	6874	768 (11.2)	1742 (25.3)	1551 (22.6)	530 (7.7)
Yes	2145	179 (8.3)	421 (19.6)	365 (17.0)	122 (5.7)
Socio-economic status (SES)					
1—Most disadvantaged	2366	298 (12.6)	625 (26.4)	537 (22.7)	243 (10.3)
2	1471	175 (11.9)	361 (24.5)	322 (21.9)	113 (7.7)
3	1438	157 (10.9)	354 (24.6)	325 (22.6)	105 (7.3)
4	1881	180 (9.6)	442 (23.5)	392 (20.8)	119 (6.3)
5—Most advantaged	1863	137 (7.4)	381 (20.5)	340 (18.3)	72 (3.9)

SES was measured using a community-level indicator (SEIFA = Socio-Economic Index for Areas) based on the postcode of residence of students. SEIFA is derived from Australian Bureau of Statistics census information that summarizes different aspects of socioeconomic conditions in an area

$(\chi^2(1) = 28.10, p_{altered} = < 0.001)$ than female students, with no significant gender differences for social and cyber bullying. Students living in more socioeconomically disadvantaged communities were more likely to experience physical $(\chi^2(4) = 35.73, p_{altered} = < 0.001)$, verbal $(\chi^2(4) = 21.24, p_{altered} = < 0.001)$, social $(\chi^2(4) = 15.10, p_{altered} = < 0.01)$, and cyber $(\chi^2(4) = 66.82, p_{altered} = < 0.001)$ bullying than children living in less socioeconomically disadvantaged communities. Students who identified English only as their language background were more likely to experience physical $(\chi^2(1) = 13.91, p_{altered} = < 0.001)$, verbal $(\chi^2(1) = 29.29, p_{altered} = < 0.001)$, social $(\chi^2(1) = 30.07, p_{altered} = < 0.001)$, and cyber $(\chi^2(1) = 9.97, p_{altered} = < 0.01)$ bullying than children of a non-English speaking background. There were no significant differences in the prevalence rates of any type of bullying for children aged 10 to 11 years compared to those aged 12 to 13 years.

Research Question 2: What are the Risk Factors (Child, Peer, and School Level) for Traditional and Cyber Bullying Victimization?

Analysis of the mean differences between students who reported bullying and those who did not report bullying indicated that physical, verbal, social, and cyber bullying was associated with significantly lower scores in all included covariate measures at the child, peer, and school level (emotional engagement with teachers, friendship intimacy, peer belonging, school climate, and sleep) (see Supplementary Table S3 for full results).

Research Question 3: What is the Association Between Types of Bullying and Emotional Wellbeing Outcomes, Before and After Adjusting for Covariates?

The association between bullying victimization and indicators of emotional wellbeing was examined (Table 3). First, analysis of the mean differences between students who did and did not report victimization indicated that bullied individuals scored significantly lower on measures of emotion regulation, happiness, and life satisfaction and significantly higher on measures of sadness and worries than non-bullied individuals across all types of bullying (for full results, see Supplementary Table S2). In addition, the correlations between emotional wellbeing and the covariates are presented in Supplementary Table 2. Peer belonging and school climate were most strongly correlated with the measures of emotional wellbeing.

Table 3 Mean scores on emotional wellbeing and peer- and school-level factors (covariates) for children who did and did not experience bullying

Type of bullying	Physical		Verbal		Social		Cyber	
	Y *M(SD)*	N *M(SD)*	Y *M(SD)*	N *M(SD)*	Y *M(SD)*	N *M(SD)*	Y *M(SD)*	N *M(SD)*
Outcomes								
Emotion regulation	3.26 (.92)	3.56 (.81)	3.31 (.91)	3.59 (.79)	3.30 (.92)	3.58 (.79)	3.30 (.92)	3.54 (.82)
Happiness	3.45 (.99)	3.93 (.87)	3.51 (.99)	4.00 (.83)	3.50 (.97)	3.98 (.84)	3.41 (1.02)	3.92 (.87)
Life satisfaction	3.33 (1.09)	3.81 (.94)	3.36 (1.09)	3.89 (.89)	3.33 (1.09)	3.88 (.90)	3.27 (1.10)	3.80 (.95)
Sadness	3.09 (1.12)	2.46 (1.03)	3.04 (1.10)	2.37 (1.00)	3.09 (1.09)	2.38 (1.00)	3.15 (1.13)	2.48 (1.04)
Worries	3.43 (1.09)	2.86 (1.12)	3.40 (1.08)	2.77 (1.11)	3.47 (1.06)	2.78 (1.11)	3.51 (1.11)	2.88 (1.12)
Covariates								
Emotional engagement with teacher	2.86 (.70)	3.15 (.58)	2.90 (.69)	3.19 (.55)	2.91 (.69)	3.17 (.56)	2.85 (.73)	3.14 (.58)
Friendship intimacy	3.92 (1.21)	4.30 (.96)	4.00 (1.18)	4.34 (.91)	3.99 (1.19)	4.33 (.92)	4.00 (1.16)	4.28 (.98)
Peer belonging	3.35 (1.20)	3.99 (.97)	3.40 (1.17)	4.09 (.90)	3.28 (1.18)	4.10 (.89)	3.41 (1.16)	3.97 (.99)
School climate	3.08 (1.08)	3.68 (.93)	3.13 (1.04)	3.76 (.89)	3.14 (1.05)	3.74 (.90)	3.20 (1.10)	3.65 (.95)
Sleep	4.10 (2.44)	4.99 (2.13)	4.24 (2.36)	5.10 (2.07)	4.20 (2.36)	5.08 (2.09)	3.82 (2.54)	4.98 (2.12)

9019 total participants. Sleep variable measures the mean number of days per week (0–7) that the student reported getting a good night's sleep. Scores on all other measures in this table range from 1 to 5

Table 4 displays the results of linear regression analyses exploring the association between bullying victimization and emotional wellbeing, before and after adjusting for a range of covariates (gender, age, language background, Aboriginal and Torres Strait Islander status, SES, emotional engagement with teacher, friendship intimacy, peer belonging, school climate, and sleep). Standardized beta coefficients indicate how much higher or lower students who experience bullying scored on emotional wellbeing outcomes compared to children who did not experience bullying. Negative standardized coefficient values (<0) indicate that students who were bullied experienced lower levels of the emotional wellbeing outcome compared to those students who had not experienced bullying. Positive standardized coefficient values (>0) indicate that students who were bullied experienced higher levels of the emotional wellbeing outcome than students who were not bullied.

Victimization was associated with significantly lower levels of emotion regulation, happiness, and life satisfaction and significantly higher levels of sadness and worries for all types of bullying (Table 4). The unadjusted effects ranged from 0.08 to 0.27 (i.e., medium effects), with the strongest effects observed for the association between verbal and social bullying and the outcomes of sadness and worries. Once adjusted for child-, peer-, and school-level covariates, effects were reduced to a small effect size. All types of bullying showed stronger associations with negative emotional wellbeing (sadness and worries) than with positive emotional wellbeing (life satisfaction, emotion regulation, and happiness).

The full regression results with effect estimates for all covariates are presented in Supplementary Table S4. The amount of variance explained by the type of bullying victimization and the factors at the child, peer, and school level for each emotional wellbeing variable ranged from 17 to 40%, tended to be higher for indicators of positive emotional wellbeing than negative emotional wellbeing, with the highest being happiness and life satisfaction (see Supplementary Table S4 for detailed results).

Table 4 Beta estimates from linear regressions exploring the association between bullying victimization and emotional wellbeing

	Unadjusted β	Adjusted β
Emotion regulation		
Physical bullying	− .11***	.01
Verbal bullying	− .15***	.03
Social bullying	− .14***	.04***
Cyberbullying	− .08***	.02
Happiness		
Physical bullying	− .16***	− .02
Verbal bullying	− .23***	− .04***
Social bullying	− .22***	− .02
Cyberbullying	− .15***	− .03***
Life satisfaction		
Physical bullying	− .15***	− .02

Table 4 (continued)

	Unadjusted β	Adjusted β
Verbal bullying	− .24***	− .04***
Social bullying	− .23***	− .03***
Cyberbullying	− .14***	− .03***
Sadness		
Physical bullying	.18***	.08***
Verbal bullying	.27***	.12***
Social bullying	.27***	.12***
Cyberbullying	.16***	.07***
Worries		
Physical bullying	.16***	.08***
Verbal bullying	.24***	.13***
Social bullying	.25***	.13***
Cyberbullying	.15***	.08***

9019 total participants. ***$p < .001$. $\beta =$ standardized beta coefficients. Adjusted models accounted for the following covariates (gender, age, language background, Aboriginal and Torres Strait Islander status, socio-economic status, emotional engagement with teacher, friendship intimacy, peer belonging, school climate, and sleep)

Discussion

The primary goal of this paper is to address aspects of early adolescent bullying victimization overlooked in previous literature. The current study provides robust population estimates for the prevalence of all types of bullying, examines risk factors for all bullying types in an Australian context, and provides a comprehensive understanding of the relationship between victimization and both positive and negative aspects of emotional wellbeing.

Overall, the present study shows one-third of students experience bullying, reflecting similar results from previous Australian-based reviews examining victimization among children and adolescents (Jadambaa et al., 2019). Similar to other Australian (Cross et al., 2009; Jadambaa et al., 2019) and international (Modecki et al., 2014; Salmivalli et al., 2013) studies using comparable adolescent age groups, traditional forms of victimization are more prevalent than cyberbullying, with physical bullying much less prevalent than social and verbal forms. Previous community-based studies on bullying in Australia show that physical bullying is less common than social and verbal bullying, and it is suggested that it may be due to the positive impact of school-level prevention programs designed for physical bullying (Kennedy, 2020). Alternative explanations relate to the cognitive and social functioning associated with school transitions and the early adolescent period more generally (Björkqvist et al., 1992; Monachino et al., 2021; Sanders, 2013). For example, social and verbal bullying may be more common than physical bullying due to social skills increasing and social relationships becoming more important during school transitions (Monachino et al., 2021).

The lower prevalence of cyberbullying relative to traditional bullying in the current sample may reflect the fact that it included those under 13 years of age, who are therefore below the eligibility age of many social media and gaming sites. A unique finding is that although cyberbullying was less prevalent than traditional forms of bullying in the current sample, we found that more students reported experiencing cyberbullying (7.2%) than in previous Australian (3.45%) (Jadambaa et al., 2019) and international (1%) (Wolke et al., 2017) studies with similar age groups. Determining whether these students were "pure" cyber victims was not the focus of this study and is a recommendation for future work. The results suggest that it is important for future research on cyberbullying to include children in this younger age group, given that it occurs and is harmful to future mental health (Wolke & Lereya, 2015).

This study also identifies risk factors for all types of traditional and cyber bullying victimization. Males are significantly more likely to experience physical and verbal bullying than females, which is consistent with previous studies (Hinduja & Patchin, 2014; Nabuzoka, 2003; Van der Wal et al., 2003). Students coming from a more socioeconomically disadvantaged background are also significantly more likely to experience physical, verbal, social, and cyber bullying, supporting previous work identifying an association between victimization and poor parental education, economic disadvantage, and poverty (Tippett & Wolke, 2014). Interestingly, students from a non-English speaking background were less likely to experience all types of bullying than their English-only speaking peers. This finding is inconsistent with other studies that have shown that students from minority groups are often at a higher risk of bullying (Xu et al., 2020) and, thus, warrants further investigation. By identifying those at increased risk, school psychologists and counselors may be able to implement preventative measures to ensure those at increased risk receive the appropriate attention. For example, all students may benefit from anti-bullying programs, but male students may benefit from additional focused information on verbal and physical bullying. At a system level, education departments may want to supplement universal bullying prevention programs provided to all schools, with additional targeted supports to schools located in communities with high levels of socio-economic disadvantage.

Notably, all types of bullying victimization are significantly associated with higher levels of sadness and worries and lower levels of happiness, emotion regulation, and life satisfaction with all results persisting after accounting for covariates. Similar to previous investigations on traditional bullying and indicators of positive wellbeing, we find physical, social, and verbal bullying to be associated with reduced life satisfaction, while controlling for demographic characteristics (Flaspohler et al., 2009). We are able to expand on

this and determine a significant association with reduced happiness and emotion regulation and traditional forms of bullying, while controlling for a wide range of confounders. This is of note, as lower levels of emotion regulation are now identified as a risk factor and an outcome of bullying, which makes this another factor, along with showing symptoms of sadness and worries, that can result in a cycle of victimization for the individual (Morelen et al., 2016).

A particularly unique focus of the present study is the investigation of positive and negative indicators of emotional wellbeing associated with early adolescent cyberbullying victimization, while controlling for relevant confounders. Cyberbullying and indicators of positive wellbeing have been less studied in the existing literature, and current evidence is conflicting. One study suggests that there is no significant association between cyberbullying and life satisfaction after controlling for demographics (Moore et al., 2012), while another suggests there are significant associations between cyberbullying victimization and life satisfaction while controlling for gender and grade (Navarro et al., 2015a, b). The results of the present paper support the latter findings and, to our knowledge, provide the first evidence that cyberbullying victimization in early adolescence is significantly associated with reduced emotion regulation and happiness, as well as life satisfaction, after controlling for a wide range of child-, peer-, and school-level factors. This suggests that early adolescent traditional and cyber bullying victimization is broad reaching and shows an association with both positive and negative emotional wellbeing indicators for children in the preteen years.

Implications for Future Research and Practice

In schools around the world, there is a wide range of interventions designed to address student wellbeing. A recent review conducted by the Australian Council for Educational Research found 57 global interventions that focused on improving the mental wellbeing of students, with all having a small to moderate effect on factors including social-emotional adjustment, behavioral adjustment, cognitive adjustment, and internalizing symptoms compared to control groups (Dix et al., 2020). Among the studies, only one Australian-based wellbeing intervention was included, indicating a lack of high quality, robust wellbeing programs specific to Australian students (Dix et al., 2020). Regarding bullying interventions in schools, recent evidence suggests mixed results, with educators divided in their opinions on the effectiveness of current interventions (Hall, 2017; Vreeman & Carroll, 2007). Some policies have been shown to reduce physical and verbal bullying, but not social bullying (Hall, 2017), and there are barriers to obtaining effective results due to inconsistencies in implementation and lack of participation of school staff (Vreeman & Carroll, 2007). It is widely

recommended that addressing bullying requires a whole-school intervention that actively involves parents, teachers, and peers (Cantone et al., 2015; Vreeman & Carroll, 2007). Furthermore, Cross et al. (2018) suggest that intervention during the time of school transitions can reduce victimization and have a positive effect on depression, anxiety, feelings of loneliness, and perceptions of school safety. Therefore, by producing anti-bullying programs that are delivered during school grades aligning with early adolescent students and school transitions and that aim to address and modify behaviors of the wider school population, it is believed that the school culture around bullying can change and bullying behaviors can be counteracted on several fronts (Cantone et al., 2015).

Another strategy to reduce bullying in schools is to encourage peer support. In the present study, statistical adjustment for a range of child-, peer-, and school-level variables led to a reduction in the strength of the relationship between bullying and emotional wellbeing. Although most child-level variables (e.g., demographics) are fixed, many of the peer- and school-level factors are modifiable and provide a possible mechanism to reduce the negative association between bullying and emotional wellbeing. For example, previous work suggests that positive peer relationships have an instrumental impact on dealing with the negative outcomes of bullying victimization (Davis et al., 2019; Halliday et al., 2021; Hodges et al., 1999; Kingery et al., 2011). Taking into account the results of previous meta-analyses (Ng et al., 2020; Ttofi & Farrington, 2011) and the current study, future efforts should focus on designing whole-school interventions, which are delivered in classrooms by teachers. These programs should aim to improve student wellbeing and reduce adverse bullying outcomes, with specific supports for those children identified as at increased risk of victimization. School-wide interventions should also focus on increasing knowledge and skills for reducing feelings of sadness and worries, feelings of happiness and life satisfaction, and skills in emotion regulation. Such programs can assist students to learn the skills to build resilience against victimization and encourage the development of supportive peer relationships to reduce negative outcomes of victimization, while also facilitating appropriate and healthy development.

Limitations

The WEC survey is designed to be delivered to a large number of children from a wide range of backgrounds and ages. For practical purposes, some measures, notably those for capturing experience of bullying, are restricted to single items, and the lack of multi-item bullying scales is a study limitation. Furthermore, the response options for bullying victimization included "once or a few times (in the school year);" across physical, verbal, social, and cyber bullying, an average of 29% of students identified this response. Those

respondents were included in the "no" category for bullying victimization. This was due to our definition including the criterion of victimization occurring at least once per month, in line with Olweus (1994). Thus, we may be underreporting bullying victimization rates. Additionally, victims are often experiencing more than one type of bullying at a time. In the current study, of the students who reported being victimized, 10% experienced two types, 5.8% experienced three types, and 3.0% experienced all four types. We did not examine the associations between experiencing more than one type of bullying and emotional wellbeing as it was beyond the scope of the study. This would be a worthwhile research question for the future. Furthermore, the WEC survey measures instances of bullying victimization and does not take account of bullying perpetration. Those identified as bully-victims (perpetrator and victim) can often experience poorer adjustment (Wolke & Lereya, 2015), and future work examining this group of early adolescent individuals would be worthwhile. Lastly, while student-level participation rates in the WEC are high, there is some sample bias with students from more socioeconomically disadvantaged communities less likely to participate in the survey (Gregory et al., 2021). Given that children from more disadvantaged communities are at higher risk of bullying, the estimates of bullying prevalence from this study may underestimate those in the population of interest.

Conclusions

This study addresses multiple areas of bullying victimization research neglected in past literature. It contributes to the current understanding by determining prevalence rates for all types of early adolescent bullying victimization; identifying child, peer, and school factors; and examining both negative and positive emotional wellbeing variables. Students who experience bullying victimization, regardless of bullying type, can experience poorer emotional wellbeing (emotion regulation, happiness, life satisfaction, sadness, and worries) than those who do not experience bullying. This association remains significant, albeit with a small effect size, after accounting for a comprehensive set of child-, peer-, and school-level confounders. Future interventions should focus on increasing students' skills to improve their emotional wellbeing and work to enhance peer- and school-level supports to act as a buffer to the negative effects of bullying.

Declarations

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