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Internalising Symptoms: An Antecedent or Precedent in Adolescent Peer Victimisation

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The transition period from primary to secondary school is a critical time in adolescent development. The high prevalence of adolescent mental health problems makes understanding the causal pathways between peer victimisation and internalising symptoms an important priority during this time. This article utilises data collected from self-completion questionnaires four times over 3 years from 3,459 students' aged 11–14 to examine directional relationships among adolescents as they transition from primary to secondary school, and investigates gender differences in these associations. The findings suggest depression in males is both a precedent and antecedent for victimisation over the transition period, whereas for females depression is an antecedent only. Anxiety is both a precedent and antecedent for victimisation for males and females. To maintain emotional wellbeing and prevent peer victimisation, interventions prior to and during this transition period are critical, especially among adolescents experiencing symptoms of depression and anxiety.

■ **Keywords:** school bullying, victimisation, depression, anxiety, internalising symptoms

Approximately one in every four to five young people will suffer from at least one mental health problem or substance use disorder in any given year (Patel, Flisher, Hetrick, & McGorry, 2007). Moreover, many mental health problems place young people at an increased risk for difficulties that persist into adulthood (Sawyer et al., 2000). The most common mental health problems among Australian adolescents are depression and anxiety (Rickwood, White, & Eckersley, 2007), with an estimated 24% of young people 12–25 years suffering from mental health problems (Access Economics, 2009).

The onset for many depressive and anxiety disorders is around age 13, with the incidence of depression and anxiety increasing and peaking in adolescence (Hankin & Abramson, 2001) and persisting into early adulthood (Klomek, Sourander, & Gould, 2011). Importantly, gender differences start to emerge around

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early adolescence. Prevalence rates of depression for girls are higher than for boys (25–40% compared to 20–35%), with girls' depressive symptoms and depressive mood increasing after age 13, whereas boys' symptoms and mood remain constant (Hankin & Abramson, 2001). In their summary of gender differences in adolescence, Perry and Pauletti (2011) stated adolescent girls report increased stress, eating disorders, non-suicidal self-injury and greater depressogenic thoughts (such as self-blaming and negative social comparison) and maladaptive coping compared to males, whereas males are more likely to exhibit more school problems (Hui, 2000), externalising behaviours (Compas, Orosan, & Grant, 1993) and conduct disorders (Bartlett, Holditch-Davis, & Belyea, 2005) than females.

The age of onset for depression and anxiety disorders relates to pubertal development (Hankin & Abramson, 2001), and for many students this timing also coincides with the transition from primary to secondary school. A major change in social structure occurs during the primary–secondary school transition period, with adolescents often having to develop new friendships and lose friends at a time when great importance is placed on peer relationships. These changes often result in increased feelings of isolation (Pellegrini & Bartini, 2000), can manifest in frustration and anxiety, and are associated with negative and disruptive behaviours (e.g., aggression; Cohen & Smerdon, 2009). Students who are socially isolated and lonely may be more likely to be targets for being bullied (Nansel et al., 2001).

The seriousness and negative impacts of school bullying — a type of repeated aggressive behaviour involving the systematic abuse of power through unjustified acts intended to inflict harm (Smith, 2004) — on the mental health of young people is well documented. Strong evidence from longitudinal studies show that peer victimisation was associated with depression (Bond, Carlin, Thomas, Rubin, & Patton, 2001; Hawker & Boulton, 2000; Kaltiala-Heino, Rimpela, Rantanen, & Rimpela, 2000; O'Brennan, Bradshaw, & Sawyer, 2009; Roland, 2002; Sweeting, Young, West, & Der, 2006; Ybarra & Mitchell, 2004), anxiety (Kaltiala-Heino et al., 2000; Salmon, James, & Smith, 1998), psychosomatic complaints (Fekkes, Pijpers, & Verloove-Vanhorick, 2004; Kaltiala-Heino et al., 2000) and suicidal ideation (Kaltiala-Heino, Rimpela, Marttunen, Rimpela, & Rantanen, 1999; Rigby & Slee, 1999; Salmon, James, Cassidy, & Javaloyes, 2000).

Although the prevalence of bullying peaks at ages 10 and 13 (Cross et al., 2009) there are specific times of high risk. For example, an increase in bullying occurs following the transition from primary school to secondary school (Cross et al., 2009; Rigby, 1994). This increase was associated with various social factors, including social comparisons between peers, the number and quality of friends, being disliked by peers, and the establishment of hierarchies and new social roles in new social groups contributing to victimisation (Pellegrini, 2002; Pellegrini & Bartini, 2000).

While the prevalence of depression among adolescents ranges from 4–8% (Nair, Paul, & John, 2004; Sawyer et al., 2000), the prevalence of anxiety and depression among adolescents who are victims of bullying ranges from 16–38% for depression (Kaltiala-Heino et al., 2000; Pranjić & Bajraktarević, 2010; Riittakerttu, Fröjd, & Marttunen, 2010) and from 6–11% for anxiety (Kaltiala-Heino et al., 2000). This suggests victimisation may exacerbate depressive symptoms, and the more ways an adolescent is victimised, the higher the risk of depression (Klomek,

Marrocco, Kleinman, Schonfeld, & Gould, 2008). Moreover, the transition period is a socially tumultuous time that can exacerbate feelings of loneliness or depression, which in turn can impact experiences of victimisation, as in the transactional model (Rudolph et al., 2000). This model emphasises the reciprocal influences between children and their environments rather than children being passive recipients of experiences. Rudolph and colleagues (2000) found depression and externalising psychopathology were associated with self-generated stress: depressed children precipitated stressful events and circumstances in their lives.

Drawing on 20 years of cross-sectional studies, Hawker and Boulton (2000) examined the relationship between peer victimisation and psychosocial maladjustment. The authors concluded that victimisation is most strongly related to depression and least strongly related to anxiety. As presented above, anxiety rates for victims and non-victims are similar. Hawker and Boulton concluded that while the association between victimisation and psychosocial adjustment has been established in cross-sectional research, further longitudinal research investigating causality (i.e., internalising symptoms are antecedents or precedents of victimisation) is necessary.

Evidence of causal relationships in primary school children is supported by several longitudinal studies indicating peer victimisation may play a causal role in the development of depressive symptoms (Arseneault et al., 2008; Gazelle & Ladd, 2003; Goodman, Stormshak, & Dishion, 2001; Hanish & Guerra, 2002), while reciprocal relationships between victimisation and depression (where depression is both a cause and consequence of victimisation) have also been found (Hodges & Perry, 1999; Nishina, Juvonen, & Witkow 2005). In general, the limited longitudinal research conducted with secondary students is contradictory. Only two studies involving adolescents investigated the direction of the relationship between victimisation and depression. Sweeting et al. (2006), assessed victimisation and depression at ages 11,13 and 15. Victimisation was reported as a stronger predictor of depression than depression was of victimisation at age 13. At age 15, a significant path existed between depression to victimisation for boys but not for girls. Riittakerttu and colleagues (2010) assessed students at age 15 and 17 and found for boys, victimisation at age 15 predicted later depression at age 17, whereas for girls, depression predicted subsequent victimisation. This study suggested experiences of bullying victimisation for boys was a risk factor for later depression whereas for girls, prior depression was a stronger risk factor of subsequent depression than peer victimisation. The noted gender differences raise important issues in relation to the temporal sequencing of post-victimisation mental health problems. Importantly, the impact of the transition experience on how male versus female students cope with victimisation has not yet been examined.

Given the importance of social relationships to adolescent development, and since victims of school bullying have a greater risk of manifesting anxiety and depressive disorders in adulthood (Menesini, 2009), understanding the temporal sequence of the relationship between victimisation and internalising behaviours is crucial to ensuring that intervention efforts and support services are introduced in the appropriate context, at the appropriate time and consider the potential influence of previous or concurrent mental health problems.

This study aimed to determine the direction of causality between victimisation, depression and anxiety and investigate if gender differences occur in these

associations using data obtained from a longitudinal study of students transitioning from primary to secondary school.

Methods

The data in this study was taken from a larger longitudinal study, the Supportive Schools Project (SSP) conducted in Perth, Western Australia, which aimed to enhance the capacity of secondary schools to implement a whole-of-school bullying reduction intervention. The Edith Cowan University Human Research Ethics Committee granted ethics approval for this project. As is the procedure, the Catholic Education Office approved project staff to approach school principals.

Sampling and Data Collection

To reduce the rate of transition attrition as students move from primary (Grade 7) to secondary schools (Grade 8), Catholic schools were recruited to the study. Students within Australian Catholic schools are more likely than students attending non-Catholic schools (e.g., government schools) to move in intact groups. Cohort data were collected during the SSP from 3,462 students from 21 of the 28 Catholic secondary schools in Perth, Western Australia. Schools were stratified according to the total number of students enrolled at the school and each school's Socio-Economic Status (SES) and were randomly selected and randomly assigned to an intervention or comparison group.

Data used in this article were collected from students in four waves from 2005 to 2007. To collect data relating to pretransition experience, all Grade 7 students with parental consent who were enrolled to commence Grade 8 in 2006 at each of the 21 participating secondary schools received a baseline survey in 2005 while in Grade 7 at their primary school. The potential student cohort at the start of the study were enrolled at almost 400 primary schools. In 2006, parents of Grade 8 students at the 21 secondary schools who had not been recruited in Grade 7 as they were not on the school enrolment lists, were approached for consent for their child's participation.

In the final year of primary school (Grade 7, mean age 11 years) the student cohort were mailed a self-administered questionnaire to complete at home. Students also completed questionnaires after the transition to secondary school (the beginning of Grade 8), end of Grade 8 (13 years old) and end of Grade 9 (14 years old). Trained researchers administered the surveys to the Year 8 and 9 students in classrooms during class time following a strict procedural and verbal protocol. Students not participating (i.e., no parental consent) completed alternate learning activities.

In total, 3,462 (92% of the total recruited) students completed questionnaires at least at one time point, with 3,123 (90%) responding to at least three of the four data collection points. One half of the students surveyed were male and 70% attended a co-educational secondary school versus single sex secondary school. Table 1 describes the students by gender and data collection point.

As the evaluation of the intervention and comparison groups is not the focus of this article, responses from all students are used in the analyses and study condition is included as a covariate and controlled for in the calculation of the results.

TABLE 1

Prevalence and Descriptive Statistics of Victimization, Depression and Anxiety at Four Time Points

	End of Grade 7	Start of Grade 8	End of Grade 8	End of Grade 9
Average age	11	12	13	14
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Total sample	2077	3314	3259	3020
Male	1003(48.3)	1675(50.5)	1651(50.7)	1542(51.1)
Female	1074(51.7)	1639(49.5)	1608(49.3)	1478(49.9)
Victimised ^a	1418(68.3)	2054(62.0)	2252(69.2)	2106(69.7)
Uninvolved	486(23.4)	989(29.9)	726(22.3)	622(20.6)
Victimised students				
Victimisation (1–5) Mean (<i>SD</i>)	1.23(0.40)	1.17(0.32)	1.25(0.42)	1.33(0.64)
Depression (0–21) Mean (<i>SD</i>)	5.01(7.17)	6.67(8.79)	6.30(9.21)	7.46(10.28)
Anxiety (0–21) Mean (<i>SD</i>)	4.34(5.88)	5.78(7.63)	4.99(7.69)	5.82(8.73)
Depressive symptoms ^b	168(12.0)	375(18.7)	377(17.2)	434(21.3)
Male	84(12.2)	218(19.8)	186(16.6)	207(19.9)
Female	84(11.9)	157(17.3)	191(17.9)	227(22.7)
Anxious symptoms ^b	223(16.0)	440(21.9)	394(18.0)	438(21.5)
Male	108(15.7)	244(22.1)	216(19.3)	218(21.0)
Female	115(16.2)	195(21.5)	178(16.7)	220(22.0)
Uninvolved students				
Depression (0–21) Mean (<i>SD</i>)	1.56(3.62)	2.10(5.38)	1.84(5.44)	2.06(5.71)
Anxiety (0–21) Mean (<i>SD</i>)	1.52(3.36)	2.42(5.18)	1.77(4.96)	1.82(4.76)
Depressive symptoms ^b	13(2.7)	40(4.1)	27(3.8)	29(4.8)
Male	3(1.4)	20(5.0)	16(5.0)	11(4.0)
Female	10(3.8)	20(3.5)	11(2.9)	18(5.4)
Anxious symptoms ^b	16(3.3)	61(6.3)	33(4.7)	27(4.5)
Male	6(2.8)	32(8.0)	19(5.9)	11(4.0)
Female	10(3.8)	29(5.1)	14(3.7)	16(4.8)

Note: ^aIncludes students who are victims and bully-victims.^bPercentage of students classified as having moderate or more severe depression or anxiety scores.

Active consent (where parents gave written permission for their child to participate) was requested from all parents. If any parents did not respond to this active consent approach up to two follow-up letters were sent to parents requesting their passive consent where they were asked to opt-out if they did not wish their child to participate (Ellickson & Hawes, 1989). This two layered consent process resulted in ninety-three percent of parents whose children were enrolled in the 21 recruited secondary schools consenting to their child participating in the study.

Measures

Victimisation: To assess physical, relational, verbal and cyber victimisation, a nine-item categorical index adapted from items/scales developed by Rigby and Slee (1998), Olweus (1996) and the 2004 Youth Internet Survey (Ybarra & Mitchell, 2004) were used. The items assessed various forms of bullying experienced in the

previous school term: physical (hit, kicked and pushed around; had money or other things broken or taken away from them; made to feel afraid they would get hurt), verbal (made fun of and teased in a hurtful way; called mean and hurtful names), relational (students ignored them, didn't let them join in, or left them out on purpose; students told lies about them and tried to make other students not like them) and cyberbullying (sent mean and hurtful messages via text [SMS] or over the Internet). Students were given a definition and illustrations of different forms of bullying and were asked to indicate how often they were bullied using a five-point scale ranging from 1 = *never*, to 5 = *most days*. A victimisation mean score was calculated at each time point (average alpha = 0.80), with a higher score representing greater victimisation.

Depression and anxiety. Self-reported depression and anxiety were assessed using the Depression Anxiety Stress Scale (Lovibond & Lovibond, 1995) which comprised seven items relating to depression and seven items related to anxiety measured on a four point scale (scores ranged from 0 = *not at all* to 3 = *applied to me very much, or most of the time*). A depression score and an anxiety score were calculated at each time point for each student by adding the items, with higher scores reflecting greater feelings of depression (average alpha = 0.89) and anxiety (average alpha = 0.82). For descriptive analyses, as recommended by the authors of the scale, students classified as having moderate, severe or extremely severe depression (scores above 14) or anxiety scores (scores above 10) were classified as having depressive or anxious symptoms.

Statistical Analysis

Analyses were conducted using MPlus v6 and PASW v19. Cross-lagged models were used to model causal paths, between victimisation (mean scores) and depression and anxiety (total scores) with longitudinal data collected over and following the transition period from primary to secondary school. All four time-points were represented in all models tested to determine the direction of the causation between depression, anxiety and victimisation as observed at a later time point. Missing data at each time point were handled through Full Information Maximum Likelihood (FIML) estimation in Mplus v 6 enabling the use of all students with at least one valid score in the analyses.

Results

The prevalence of victimisation ranged from 62% to 69% over the three study years with the lowest prevalence at the start of secondary school (Grade 8; see Table 1). Average depression and anxiety scores were higher for victimised (i.e., those who reported being involved in at least one incident of victimisation in the previous three months) than non-involved students, as were the prevalence of depressive and anxious symptoms. There were no significant differences in the prevalence for depressive and anxious symptoms between males and females for victimised and non-involved students. A significant increase in the proportion of victimised students with depressive symptoms ($\chi^2 = 75.738, p < .001$) and anxious symptoms ($\chi^2 = 66.153, p < .001$) occurred over the transition period from primary (end of grade 7) to secondary school (beginning of grade 8).

Causal Pathways

Cross-lagged models that assess causal direction across time were used to examine causal pathways between victimisation and depression scores from Grade 7, the last year of primary school (11 years of age), to the end of Grade 9 (14 years of age) and victimisation and anxiety scores across the same period. The fit indices indicated good model fit for the model of victimisation and depression as well as that for victimisation and anxiety (both $CFI \geq 0.9$; both $RMSEA < 0.08$). Models were tested for gender and study group invariance using the Satorra Bentler Scaled chi-square, with results indicating that significant parameter differences existed in the causal pathways between males and females for depression scores but not anxiety scores. Hence victimisation and depression were modelled separately for males and females. Figures 1 and 2 show the relevant path coefficients for the causal pathways between victimisation and depression, and victimisation and anxiety. Significant paths are indicated by solid lines.

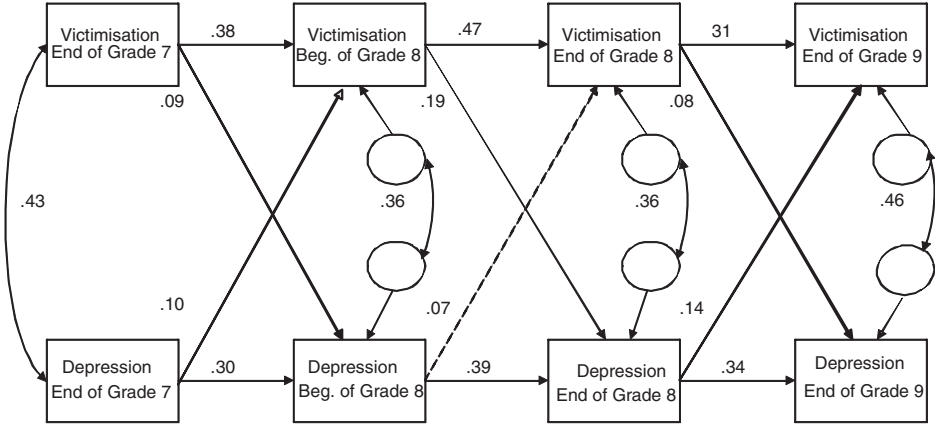
Over the transition period (end of Grade 7 to start of Grade 8), a reciprocal relationship exists for males with increased depression associated with increased victimisation ($\beta = .10$) and increased victimisation associated with increased depression ($\beta = .09$). For females, over the transition period, increased victimisation is associated with increased depression ($\beta = .14$) but the association in the opposite direction is not significant. Over the first year of secondary school (beginning to end of Grade 8), increased victimisation is associated with increased depression for males whereas a reciprocal relationship exists for females, although the path is stronger from victimisation to depression. A reciprocal relationship exists for males and females over the second year of secondary school (Grade 8 to 9), with stronger paths existing between increased depression leading to increased victimisation than for increased victimisation leading to increased depression.

There were no significant differences in the causal pathways between victimisation and anxiety for males and females. Reciprocal relationships between victimisation and anxiety existed at all time points. Over the transition period ($\beta = .15$) and first year of secondary school ($\beta = .18$) the path was strongest from victimisation to anxiety whereas over the second year of secondary school the path was strongest from anxiety to victimisation ($\beta = .13$).

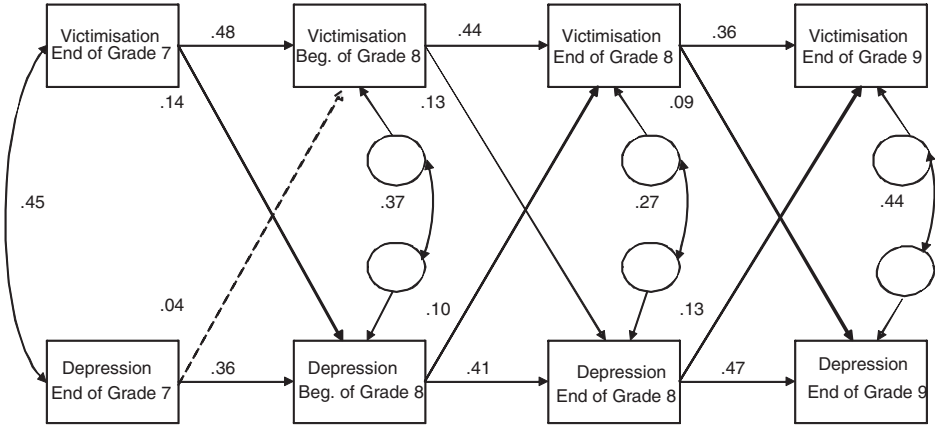
Discussion

Bullying is a risk factor associated with the high prevalence of mental health problems within the adolescent community. Given that for many adolescents (average age 13 years) the onset of adolescent depression and anxiety disorders coincides with the transition from primary into secondary school, this study investigated the relationship between depression, anxiety and victimisation during this period to inform the development of effective interventions, especially those targeting higher risk students who experience harm from peer victimisation. Evidence of a causal relationship between victimisation and depression among adolescents is scarce and contradictory leaving the direction of causality open (Riittakerttu et al., 2010). This study identified among adolescents, causal relationships over four time points between depression, anxiety and victimisation using cross-lagged models.

Male



Female



Y-B χ^2 (df=24) = 302.524 CFI=0.889 RMSEA=0.082

FIGURE 1

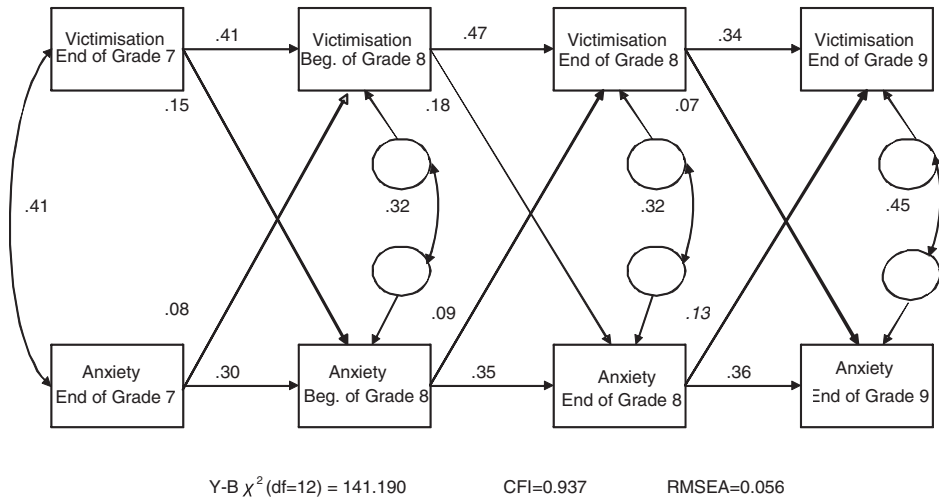
Cross-lagged model for victimisation and depression.

Note: Straight single arrows represent causal paths modelled. The corresponding numbers are standardised regression coefficients. Broken lines are used for paths with a corresponding $p \geq .05$. The curved line between variables represents a correlation; the number is the corresponding correlation coefficient. Small circles represent residual paths; the number is the corresponding correlation coefficient.

Y-B χ^2 is the Yuan-Bentler-scaled chi-square which adjusts for non-normal data.

CFI Comparative Fit Index, values > 0.90 indicates good model fit RMSEA (root mean square error of approximation), values < 0.08 indicating acceptable, and < 0.05 good fit of the residuals.

The prevalence of depressive (3–5%) and anxious symptoms (3–6%) among those not exposed to victimisation found here was similar to previous Australian research where 4% of youth 13–17 years were found to have depressive or anxious symptoms (Sawyer et al., 2000). However, the prevalence of depressive symptoms

**FIGURE 2**

Cross-lagged model for victimisation and anxiety.

among those students who were victimised (12–21%) was lower than in previous research (16–38%; Kaltiala-Heino et al., 2000; Pranjić & Bajraktarević, 2010; Riittakerttu et al., 2010) while the prevalence of anxiety symptoms in victimised students (16–22%) was higher than found previously (6–11%; Kaltiala-Heino et al., 2000). The differences may be due to participants in this study being younger (11–14 years compared to 14–17 years) or that victimisation was measured differently in each of the studies. In this study, victimisation was measured on a nine item scale rather than using a single global bullying question, with analysis reflecting those who had been victimised regardless of frequency. This set of victimisation responses may have resulted in higher prevalence rates than what is usually reported in Australian literature.

Increased victimisation at the end of primary school led to increased depression at the beginning of secondary school for both males and females, while increased depression at the end of primary school led to increased victimisation at the beginning of secondary school for males. Although a reciprocal relationship existed between victimisation and anxiety over the transition period, the strongest path existed between increased victimisation at the end of primary school leading to increased anxiety at the beginning of secondary school. These results suggest that while bullying is a risk factor for mental health problems, mental health problems may also be a risk factor for bullying.

Prior studies of primary school children revealed that those with internalising problems and depressive symptoms are at increased risk of being victimised, as their behaviour may indicate a vulnerability, rewarding their attackers with a sense of power (Fekkes, Pijpers, Fredericks, Vogels, & Verloove-Vanhorick, 2006). Also, these students may be unable or less capable to defend themselves or ward off aggressors or report the incident to others (Hodges & Perry, 1999), making

them an easier target. In a longitudinal study of over 1,000 children, Fekkes and colleagues (2006) investigated whether victimisation precedes psychosomatic and psychosocial symptoms or whether these symptoms precede victimisation. The authors reported that victims of bullying had significantly higher chances of developing new psychosomatic and psychosocial problems, while children with depressive symptoms and anxiety had a higher chance of being newly victimised. Physical health symptoms did not elevate the risk for bullying victimisation with the authors suggesting children may consider it more permissible to bully those who are psychologically fragile (e.g., depressed) and non-assertive than those with physical ailments. An alternative explanation offered by the authors was that children with depressive or anxiety symptoms may have the tendency to experience things more negatively and be more inclined to perceive experiences as victimisation.

Over the first year of secondary school (12–13 years of age), victimisation was a precedent of depression for males while a reciprocal relationship between victimisation and depression existed for females (i.e., depression was an antecedent and a precedent of victimisation). Consistently, Sweeting and colleagues (2006) reported a reciprocal relationship between victimisation and depression in 13-year-old males and females. Depression could be an antecedent of victimisation caused by the traumatisation of victimisation and lowering of self-esteem (Riittakerttu et al., 2010; Sourander, Helstelä, Helenius, & Piha, 2000) and loneliness (Sourander et al., 2000), or a precedent due to the impairment of social skills and self-assurance, and inability to defend themselves (Riittakerttu et al., 2010). This was supported by the crosslag models which are largely showing this reciprocal cyclical pattern. Additionally, this study found a cycle between victimisation and anxiety over the first two years of secondary school, where during the first year of secondary school, victimisation led to anxiety and over the second year, anxiety led to victimisation.

The increase in the prevalence of depressive and anxious symptoms over the transition period for students who were victimised indicates the additional impact of being bullied. Adolescents who experience both direct (overt) and indirect (covert, relational) forms of bullying experience higher levels of depression, loneliness, externalising problems, and lower self esteem (Prinstein, Boergers, & Vernberg, 2001) along with social avoidance and fear of negative social evaluation (Storch, Brassard, & Masia-Warner, 2003). Males are more likely to experience direct victimisation and females indirect victimisation (Pepler, Jiang, Craig, & Connolly, 2008) with a higher prevalence of victimisation reported by males over females during the transition from primary to secondary school (Cross et al., 2009). Social relationships dominate the school transition experience (Pereira & Pooley, 2007) with adolescents often needing to develop new friendships when great importance is placed on peer relationships (Pellegrini & Bartini, 2000). Social withdrawal, as a result of depression (Riittakerttu et al., 2010), appears to increase the risk of victimisation (Egan & Perry, 1998). Social pressure combined with the onset of puberty over the transition period, may contribute to an increase in depression and anxiety, highlighting this as a critical time to intervene.

Understanding the temporal relationship between victimisation and internalising symptoms enables the appropriately timed delivery of interventions to those

involved in victimisation to reduce the risk of the development of psychological problems (Hampela, Manhalb, & Hayera, 2009). This study showed depression and anxiety to be both an antecedent and precedent for victimisation during the transition to and first 2 years in secondary school. This reciprocal cyclical pattern between internalising symptoms and victimisation support the transactional model of developmental psychopathology which emphasises the reciprocal influences between an individual and their environments rather than individuals being passive recipients of experiences (Rudolph et al., 2000). Successful transition programs recognise the challenges and anxieties that accompany transition, and see this phase as an ongoing process (Mizelle, 2005). Programs that effectively transition students from primary to secondary school with minimal negative impacts on mental health address curriculum, facilities, safety and discipline (Mac Iver, 1990) and information about the academic, social, and organisational similarities and differences between primary and secondary school (Mizelle & Irvin, 2000). Prior to and during the primary to secondary school transition period is a critical and opportune time to intervene with targeted social competency and whole school bullying prevention programs that comprise social skills development. To address these challenges experienced by adolescents during transition, Riittakerttu et al. (2010) and Sourander et al. (2000) recommended that bullying prevention be the focus of interventions, social skills training should be encouraged, and trauma should be taken into account in any form of treatment. In contrast, Klomek et al. (2008) suggest intervention and prevention strategies focusing on building self-concept may reduce peer victimisation and depression in adolescents. Early preventative development of social problem-solving skills are more likely to provide young people with opportunities to learn and enhance positive coping strategies, giving a variety of skills to deal with bullying if experienced.

This study found similar prevalence rates for depressive and anxious symptoms for males and females whereas other research found females in early adolescence generally report increased depression and anxiety compared to males (Perry & Pauletti, 2011). However, a stronger path between victimisation and depression over the transition period was found for females compared to males, and the reciprocal path of depression leading to victimisation significant for males and not females. Gender specific interventions may be required to address possible differences in the types of bullying experienced by males and females. For adolescent males and females, positive social network skills training has been shown to decrease internalising symptoms (Mason, Schmidt, Abraham, Walker, & Tercyak, 2009). Interventions to build resilience, coping mechanisms and that target self-esteem in adolescent boys have been shown to reduce the incidence and impact of victimisation and help them to remain calm during peer conflict (Berry & Hunt, 2009) whereas interventions that target indirect bullying (Eslea & Smith, 1998), build social skills and peer support (Salmivalli, 2001), focus on conflict resolution (Letendre, 2007) and group acceptance (Adler & Adler, 1995) have been found to prevent or reduce the harm from victimisation for females. Environmental changes are needed to support interventions along with training for counsellors, providing links to external service providers, and considering families as partners to address the needs in students.

Strengths and Limitations

There are several strengths of this study. Most importantly, the longitudinal nature of the research design over the transition from primary to secondary school enabled the investigation of predictors as well as the consequences and impact of victimisation on mental health at a time that can be socially challenging for most students. Moreover, these findings are robust due to the large sample of students (90%) who completed questionnaires in at least three data collection points. Despite the strengths, there are limitations of this study. First, the use of self-report of victimisation (as opposed to peer, teacher or parent report) may result in underreporting. In addition, the method of data collection varied between Grade 7 students (completed at home) was inconsistent with Grades 8 and 9 (classroom-based). To reduce the impact of these differences an explicit and standard protocol (as used in the classroom) was provided to parents for all Grade 7 assessments, however parents still may have indirectly or directly influenced their children's responses to the questionnaire. While absentee students and those lost to follow-up, approximately 11%, may have impacted on the results, this potential bias is unlikely to influence the results substantially given the large number of respondents at each data collection. Results may not be generalisable to the other similar aged student populations as the sample included only Catholic secondary schools within the Perth metropolitan area. The prevalence of cyberbullying was reported at low levels with the use of technology increasing during the last two data collections this study. As the use of technology continues to increase it is recommended that further research be conducted to examine the causal pathways between cyber bullying, depression and anxiety. Finally, the causal links were studied over a relatively short, but critical, social time period consisting of immense social growth and development of social skills and relationships. In some students, the associations studied may have been well established before the commencement of the study.

Conclusion

The high prevalence of mental health problems in adolescents makes understanding the causal pathways between victimisation and internalising symptoms an important priority, especially during transition from primary to secondary school. Internalising symptoms may identify those at risk for victimisation, and victimisation may identify those at risk for internalising symptoms. The results of this study suggest symptoms of depression and anxiety are a precedent and antecedent for victimisation in adolescent males and females. Consequently, if school bullying prevalence or the harm from exposure was reduced the mental health of adolescents could be substantially enhanced. Schools therefore need a systematic whole-school approach, including universal and targeted interventions that straddles primary and secondary school and particularly addresses social skill development and the building of resilience, self-esteem and positive coping mechanisms among adolescents, especially those experiencing depression. Further research is needed, however, to determine the causal relationships between more vulnerable adolescents who are both victimised and perpetrators (i.e., bully/victim) and depression and anxiety and the causal relationships between cyberbullying and mental health problems.

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