Investigating the impact of peer and sibling bullying: A prospective longitudinal study of associations with mental health in adulthood

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Abstract

Background: Peer bullying has been widely associated with poorer mental health outcomes. Sibling bullying has also been associated with poor mental health outcomes and peer bullying, however, is often normalised and overlooked as a rite of passage. The transition to school during preadolescents (age 9 to 12) has been identified as an important period of change both in peer and familial relationships and changes in bullying roles and behaviours during this time can shape a young person's future mental health and wellbeing.

Aims: To explore relationships between peer and sibling bullying across school transition age and understand how exposure to each at transition age associates with mental health and wellbeing outcomes at 17.

Method: A sample of 724 youths were recruited as part of the data collection for Understanding Society, the UK Household Longitudinal Study (UKHLS) and followed up at age 10, 12 and 17. Regression models explored associations between peer and sibling bullying experiences between age 10 and 12, and outcomes at age 17. Interaction terms between the two forms of bullying were explored.

Results: Significant associations were found between peer and sibling bullying involvement before and after the school transition. Low and moderate exposure to sibling bullying was associated with lower psychological distress and higher negative self-view. Consistently high exposure to sibling bullying was associated with lower satisfaction with life but higher positive self-view. Peer bullying was only associated positive self-view after adjusting for covariates. Interaction effects between bullying forms and positive self-view are discussed. Participant sex had the most significant association with psychological distress, negative self-view and satisfaction with life.

Conclusion: The results highlight the importance of addressing sibling bullying during school transition age, and greater need for understanding the positive impact of bullying experiences, which appears under researched. Limitations and direction for future research are discussed.

Chapter 1: Introduction

The definition of bullying has developed over time and has historically held several inconsistencies between research and government campaigns (Olweus, 1994). Over time, a definition has evolved to be widely accepted with both research and practice defining bullying as the repeated, intentional act of causing harm, distress or intimidation to another person or group over time (Olweus, 2010). The key emphasis within literature is on the repetition of behaviours displayed with the intention of causing harm. Bullying is further defined as a power imbalance, with perpetrators seen as asserting dominance and control over their victims, using advantages related to size, strength, age, resource or social status to assert power (Olweus, 2010).

Bullying is often associated with peer relationships, with around 40% of young people in the UK experiencing peer bullying annually and 9% reporting it weekly (Anti-bullying Alliance, n.d.). While peer bullying is widely recognised as a global issue due to its impact on mental health and adjustment (Olweus, 2010), sibling bullying remains overlooked and normalised as a harmless rite of passage within families and the wider society (Straus et al., 2006; Wiehe, 1997). Despite affecting an estimated 50% of children, 16–20% of whom experience it weekly (Wolke & Skew, 2012), sibling bullying is less researched than peer bullying. However, studies have linked it to similar negative outcomes as peer bullying, including depression, self-harm, and low self-esteem (Wiehe, 1997). Sibling bullying is also associated with peer bullying and adjustment difficulties (Tippett & Wolke, 2015), with the greatest harm occurring when both forms of bullying are experienced simultaneously, leaving young people without a safe space (Dantchev et al., 2019). Despite this, few studies have examined their combined impact (Dantchev et al., 2019).

Psychological Perspectives on Bullying

Several theories have been developed to help understand how peer and sibling bullying evolve, persist and affect those involved. The theories have largely been developed independently of one another; however, research has found that the use of just one theory to explain the complex nature of bullying is limiting, and instead, theories are better integrated to capture the functional and dysfunctional elements of bullying (Monks et al., 2009).

Bandura's Social Learning Theory suggests the main factor that influences learning is modelling (Bandura & Walters, 1963). Whilst the theory was not specifically developed to understand bullying, bullying through this lens can be understood as a child witnessing aggression within their family, community or social agents and replicating these behaviours in their own relationships, particularly if they see the behaviour being positively reinforced (Baldry, 2003). For example, if a child experiences bullying by an older sibling that goes unpunished or sees an older peer bullying and gaining social status at school, they could be more inclined to imitate these behaviours. However, according to this theory, if a child observes these behaviours being effectively punished, they are less likely to imitate themselves (Baldry, 2003).

Whilst Social Learning Theory provided an initial understanding of how behaviour can be shaped by the environment, it offered limited understanding of why those who did not engage in bullying, even after observing behaviours being positively reinforced. Building on this limitation, Social-Cognitive theories agree that behaviour is learned through observation and imitation, however the way in which an individual responds is shaped by their own information processing of thoughts, emotions and social environments (Crick & Dodge, 1994). For example, research

has shown that harsh and inconsistent parenting from mothers significantly increased a child's aggressive behaviours towards peers, particularly in boys (Georgiou, 2008a). However, this was not the case for all children who had experienced inconsistent or harsh parenting, and researchers have shown some children, particularly proactive aggressors, are aware of the impact of bullying on others and use a range of social-cognitive strategies to influence whether they choose to imitate what they see (Crick & Dodge, 1994). These coping strategies can also buffer how one experiences bullying, such as using humour to alleviate interpersonal difficulties or protect from negative emotions associated with bullying (Fox et al., 2015). This theory supports an understanding of how bullying develops within an individual, however it fails to capture how relationships can influence the development of social-cognitive strategies.

Social dominance theory (Sidanius, 1993) may add insights to this limitation as it attempts to understand bullying in relation to group hierarchies. Researchers through this lens understand humans as being predisposed to encourage group cohesion and stability to increase chances of survival. Historically, this was achieved by organisation of naturally occurring dominance or submission in individuals creating a clearly defined hierarchy that promoted survival (Ttofi & Farrington, 2010). The dominance in the group reduced regression and maintained group cohesion. In modern day bullying, this framework highlights that some individuals are naturally predisposed to be more dominant and has been used to explain peer bullying behaviours during transitional periods where a renegotiation of dominance is necessary to bring the group back to stability (Pellegrini, 2002). This theory has further been used to differentiate between the effects of bullying roles which will later be discussed.

The lens of Attachment Theories suggests that bullying behaviours manifest from combined attachment styles and learned behaviours (Main et al., 1985). Early attachment experiences shape development of a child's emotion regulation, social competence and ability to form and engage in healthy relationships. It is thought that children with insecure attachments are more likely to engage in bullying, particularly within sibling bullying (Wolke & Skew, 2012) and this may be to avoid close relationships, appear more independent or as compensation for low self-esteem. In contrast, secure attachments with fathers have been shown to be a protective factor within associations between sibling bullying and depression (Bar-Zomer & Klomek, 2018). Understanding the dynamics of attachment and bullying behaviours can inform family-based interventions which may benefit both peer and sibling bullying. The theory has also been particularly useful for examining continuity of bullying across age groups through the lens of relative continuity of the internal working model that shapes attachment (Goldberg, 2000). However, the theory alone offers limited focus to wider interpersonal relationships and risks pathologising children with insecure attachment styles across different cultures and contexts.

These theoretical perspectives indicate a contribution of both individual and situational factors within bullying (Monks et al., 2009). Further researchers have acknowledged this and attempt to understand bullying from an ecological perspective, underpinned by Bronfenbrenner (1979) ecological systems theory. These frameworks offer a more systemic understanding of bullying that when used in conjunction with other theories help to capture the complex nature of bullying. This theory focuses on the multiple environmental systems that influence development, capturing the bidirectional interaction within the layers (Swearer & Doll, 2001). The theory proposes that individual development occurs within layers of five systems

including: individual level (Microsystem), interpersonal level (Mesosystem), community level (Exosystems), societal level (Macrosystems) and the dimension of time (Chronosystems) (Bronfenbrenner, 1979). Through this lens, bullying is understood as a characteristic of the individual engaging in the bullying as well as the influence of school, family, peers and community characteristics (Swearer & Doll, 2001). Understanding how each of these systems interact in peer and sibling bullying can support a holistic view of the behaviour across contexts which supports the development of bullying interventions and prevention strategies (Swearer & Espelage, 2004).

Bullying Behaviours and Roles

Bullying literature identifies several behaviours that contribute to bullying experiences, typically categorised into four main types: physical (e.g., assault, theft), verbal (e.g., threats, insults), social/relational (e.g., exclusion from groups, gossiping), and cyberbullying (e.g., via electronic devices; Williams et al., 2017). Exposure to the behaviours differs for individuals depending upon the role they take on within the bullying episode. Five main roles have been identified within bullying: perpetrators, victims, bystanders, reinforcers (who support the perpetrator), and defenders (who help the victim) (Salmivalli, 2010). Additionally, some individuals can be both perpetrators and victims, known as bully-victims.

These roles and behaviours have been identified in both peer and sibling bullying, with the two often being interdependent and changing over time (Zych et al., 2019). Despite the relationship between peer and sibling bullying roles and behaviours, it is understood that each behaviour is influenced by different relational dynamics. For example, Tippett and Wolke (2015) found that 36% of siblings were perpetrators of sibling bullying, with factors like large family size, male siblings,

financial difficulties, and harsh parenting being significant contributors to perpetration. Whilst similar family influences have been noted as influential over peer bullying roles, it is thought that peer group dynamics and school environments may have more influence, with Espelage and Swearer (2004) showing negative school climates, inconsistent discipline and lack of supervision being associated with increased peer victimisation and perpetration. The two types of bullying have shown to interact in role, with sibling victims being more likely to also be peer victims, whilst sibling perpetrators were more commonly peer perpetrators or bully-victims (Tippett & Wolke, 2015).

Along with role overlaps, similar patterns of bullying behaviours including physical, verbal and relational aggression have been identified within peer and sibling bullying research. However, it is understood that the intensity of sibling bullying may be higher due to occurring in settings where the relationship is more enduring (Monks et al., 2009). Bullying behaviours are shown to be more dependent on age and sex of a young person than roles. For example, younger males tend to experience more physical and verbal forms of bullying (Wang et al., 2009), whereas females were more often exposed to cyberbullying such as text messages and social media (Bauman et al., 2013). Whilst these findings are predominantly rooted in peer bullying, similar patterns have emerged within sibling bullying, where males send to perpetrate physical bullying, and females were more likely victims of relational and verbal sibling bullying (Arsenault et al., 2010). These differences are thought to reflect gendered social norms (Bem, 1993), where males are generally socialised to be strong and independent, and females to be understanding and sensitive (Bem, 1993). Such social norms shape how individuals behave, perceive others and respond to conflict and contribute to understanding the developmental trajectories of

bullying behaviours across the lifespan. Despite some similarities within peer and sibling bullying behaviours by sex, research into sex differences within sibling bullying is less extensive than peer bullying and would warrant further research to understand the complexities of sex and bullying role and behaviours.

Bullying Associations with Mental Health

Peer and sibling relationships in all forms have been well documented to associate with mental health and wellbeing (Huebner, 2004). In both peer and sibling contexts, bullying role and behaviours have shown to have different effects on mental health and wellbeing. Specifically, verbal and social/relational forms of bullying tend to have the most significant and long-lasting psychological impact in both peer and sibling bullying. This contrasts physical forms of bullying that are thought to result in more immediate harm, with less long-term effects (Arseneault et al., 2006; Reijntjes et al., 2011).

A large portion of both peer and sibling bullying research considers the effects on mental health and wellbeing of victims, a group that has shown to experience more internalising and externalising problems compared to other bullying groups (Reijntjes et al., 2011). It is well established that social contexts and networks significantly influence adolescent wellbeing (Oberle et al., 2011), and research has indicated a naturally occurring u-shaped curve of life satisfaction, where people across several cultures commonly show lower life satisfaction during middle age (Bauer & Kaiser, 2025). Although this curve is commonly referenced and naturally occurring, these associations are thought to interact with significant life events such as bullying. Specifically, it is thought that victims experience greater difficulties compared to other bullying roles due to the experience of victimisation challenging self-esteem and increasing social withdrawal, posing a threat to a child’s sense of

belonging and acceptance. Specifically, childhood victimisation by siblings was associated with increased psychological distress between the ages of 10 – 17 (Tucker et al., 2013). Similar patterns have been observed among peer victims, with studies showing that peer victims experience greater unhappiness compared to other groups (Wolke & Skew, 2012). In fact, childhood victims of both peer and sibling bullying report the highest level of psychological distress compared to those victimised by either peers or siblings (Baldry, 2003), highlighting the interactive nature of the two bullying forms and mental health.

The transition into young adulthood appears to be a key marker understanding the development of factors contributing to psychological distress (Copeland et al., 2014) as this is a common marker of decreased life satisfaction (Huebner, 2004). Despite the interactive nature of peer and sibling victimisation, it is thought these interactions may be sex and age dependent, with sibling relationship quality being more influential on life satisfaction for female adults or older adults than males and adolescents (Sener et al., 2008). The research on this understanding these interactions is limited and highlights a complex importance of sibling relational dynamics that are frequently overlooked (Yücel & Yuan, 2016). Exploring the combined effects of peer and sibling relationships on life satisfaction, mental health, and well-being aligns with an ecological model, highlighting how different social contexts interact to shape individual outcomes. This understanding can help inform policies and interventions aimed at reducing bullying and improving adolescent well-being.

Associations between perpetrator roles and mental health and wellbeing are less researched, however studies that do exist have indicated that the long-term mental health and wellbeing outcomes for perpetrators may be less detrimental than

for other bullying roles (Wolke et al., 2013). Links between perpetration and anxiety, depression, and low self-esteem have been identified (Ttofi & Farrington, 2010), however there is evidence to suggest perpetrators of bullying end up being physically and emotionally healthier than their peers (Copeland et al., 2014). This is thought to be due to perpetrators being naturally more dominant and therefore may experience buffering effects from increased power (which reduces feelings of helplessness), lower levels of empathy (which reduce feelings of guilt), and higher social status (which reinforces bullying behaviours through positive feedback) (Pellegrini, 2002). Despite these buffers, the impact of bullying on perpetrators may present in different ways to other roles, with studies showing perpetrators engaged in more antisocial behaviour and illicit drug use compared to other bullying groups (Niemela et al., 2011). However, much of this literature sits within peer-based studies and the effects of family relationships are less known.

Consistently and across both peer and sibling research, bully-victims are found to be most negatively affected by bullying, with studies showing bully-victims being more likely to experience anxiety and depression compared to those who were solely victims or bullies (Arsenault et al., 2006). These effects were also shown to last into adulthood, where bully-victims had increased anxiety, depression and poorer general health compared to victim-only groups (Copeland et al., 2014). One explanation for this has related to the complex relational patterns and intensity of bullying involved in being a bully and a victim simultaneously. Bully-victims may adopt aggressive behaviours to cope with feelings of powerlessness during their victimisation, which creates a harmful and confusing powerful/powerless loop (Arseneault et al., 2010). The coping mechanisms used to successfully navigate one relational dynamic (victim) do not translate into the other (bully) and therefore can

cause confusion and greater distress for the bully-victim. Much like other bullying roles and behaviours, sex and age differences have been found to differentiate the impact on mental health and wellbeing (Arseneault et al., 2010).

The above chapter highlights the complex nature of peer and sibling bullying experiences. Whilst it is evident that sibling bullying is less researched than peer bullying, studies have noted associations and overlaps between the two (Zych et al., 2019; Tippett & Wolke, 2015). Understanding how peer bullying develops, and changes may contribute to understanding similar changes and developments in sibling bullying and vice versa. In addition, bullying has been shown to be influenced by both individual, social and environmental factors and shifts within these systems are also likely to differentiate bullying experiences.

Preadolescence has been identified as a particularly significant period where simultaneous shifts in these systems occur (Arseneault., 2010). During this time children experience several simultaneous changes that could contribute to bullying such as physical changes due to puberty, relational dynamics with self and others and reorganisation of family relationships due to relationships becoming more peer focused (Toseeb et al., 2020). In addition to these changes, this period often coincides with school transitions, where the move to larger school environments causes significant changes in peer groups, teachers and policies or norms. Young people must establish new relationships or re-establish friendships and social status in new settings, all whilst experiencing changes at home and within themselves (Pellegrini & Bartini., 2000). As a result of these significant system changes, school transitions have been identified as a significant period for change in experiences of peer and sibling bullying patterns (Clark et al., 2022).

Aims of the Present Study

On the basis of the literature discussed in the above chapter, the current study aimed to explore associations between bullying experiences at the school transition age (preadolescences) and mental health and wellbeing outcomes in adolescence. The above literature highlights the multidimensional nature of bullying, with experiences changing depending on roles and behaviours a young person is involved with.

To begin understanding the complexity of bullying experiences during the school transition age, a systematic literature review was conducted to explore bullying experiences across the preadolescent school transition. From this literature review, several gaps in understanding were highlighted and further informed specific objectives of the current study, which are discussed within the next chapter.

Chapter 2: Systematic Literature Review

The purpose of this systematic review was to synthesise existing evidence on the trajectory of bullying during school transitions. The review further sought to identify factors that may differentiate these trajectories to develop a greater understanding of bullying evolves during a significant period of change. Whilst there have been several reviews to understand bullying across the life span, many of these focus on adolescents. There does not appear to be any existing review that focus on the trajectory of bullying at the school transition. With this time being identified as a significant period of change in exposure to bullying (Clark et al., 2022), it is hoped that a synthesis of this evidence will support understanding of the complex nature of bullying and identify most vulnerable groups during this crucial developmental time point.

Search Strategy

A systematic search of literature was conducted on 24th April 2024 and updated on 13th January 2025. The search was conducted using EBSCOhost, an online research platform that uses key terms to simultaneously search multiple databases. Search terms for this review were developed through reading existing literature on the topic area. The key search terms are related to bullying and school transitions. For bullying, key search terms were “bullying”, “bully”, “bullied”, “victim”, “victimi*ed”, “peer victimi*ation”. The wildcard asterisk used in victimised and victimisation ensured inclusion of papers utilising both the English and American spelling of the word. For school transition, the key terms were “school transition” and “school transitioning”. Table 1 shows the full search terms and Boolean operators as they were entered in the search operator.

EBSCOhost was used to simultaneously search the following databases: APA PsyschInfo, APAPsychTests, CINAHL Ultimate, MEDLINE Ultimate and E-Journals. Grey literature in the form of unpublished articles was excluded due to the limited subjection to rigorous review processes that are offered to published work. Aside from this parameter, the search did not include any additional restrictions as initial searches did not identify any existing literature reviews of this nature. The search identified 318 papers that used the search terms in their title or abstract. After secondary sources such as books and duplicates were removed, a total of 269 papers were left to be assessed against the inclusion criteria.

Table 1

Search terms and Boolean operators for the systematic review

Concept	Key words
Bullying	'bullying' or 'bully' or 'bullied' or 'victim' or 'victimi*ed' or 'peer victimi*ation'
	AND
School transition	'school transition' or 'school transitioning'

Selection Criteria

The current review focuses on studies exploring the trajectory of peer bullying during school transitions. This approach targets a specific developmental period that has historically been linked to bullying experiences (Clark et al., 2022). Educational institutions offer variation in the timing of these transitions. Some schools transition students once, moving from primary to secondary school at ages 11/12, while others have a two-stage transition—first from lower school to middle school at ages 11/12, and then from middle school to upper school around ages 14/15. Existing research has highlighted the transition from childhood to adolescence as a particularly significant period of change in terms of social and relational dynamics (Toseeb et al., 2022). Thus, this review specifically focuses on transitions during the pre-adolescent period, typically defined as ages 9-12 (Arseneault., 2010). Studies examining bullying trajectories during transitions outside of this age range were excluded from the review.

All forms of bullying behaviours (verbal, physical, social/relational, cyber) and roles (victim, perpetrator, dual role, uninvolved, bystander, reinforcer) were included

in the review due to previous research indicating complex interactions across them. Studies not available in English were excluded due to limitations in accurately translating the content. Qualitative studies were also excluded because of the focus of the current review on quantitative data. In cases where studies used mixed methods, only the quantitative component was considered if it met the inclusion criteria. For studies involving interventions aimed at reducing bullying prior to the transition, only data from the control group, which did not engage in the intervention, was included to ensure that the natural trajectory of bullying was captured. The full inclusion and exclusion criteria are outlined in Table 2.

Table 2

Inclusion and exclusion criteria for the systematic review

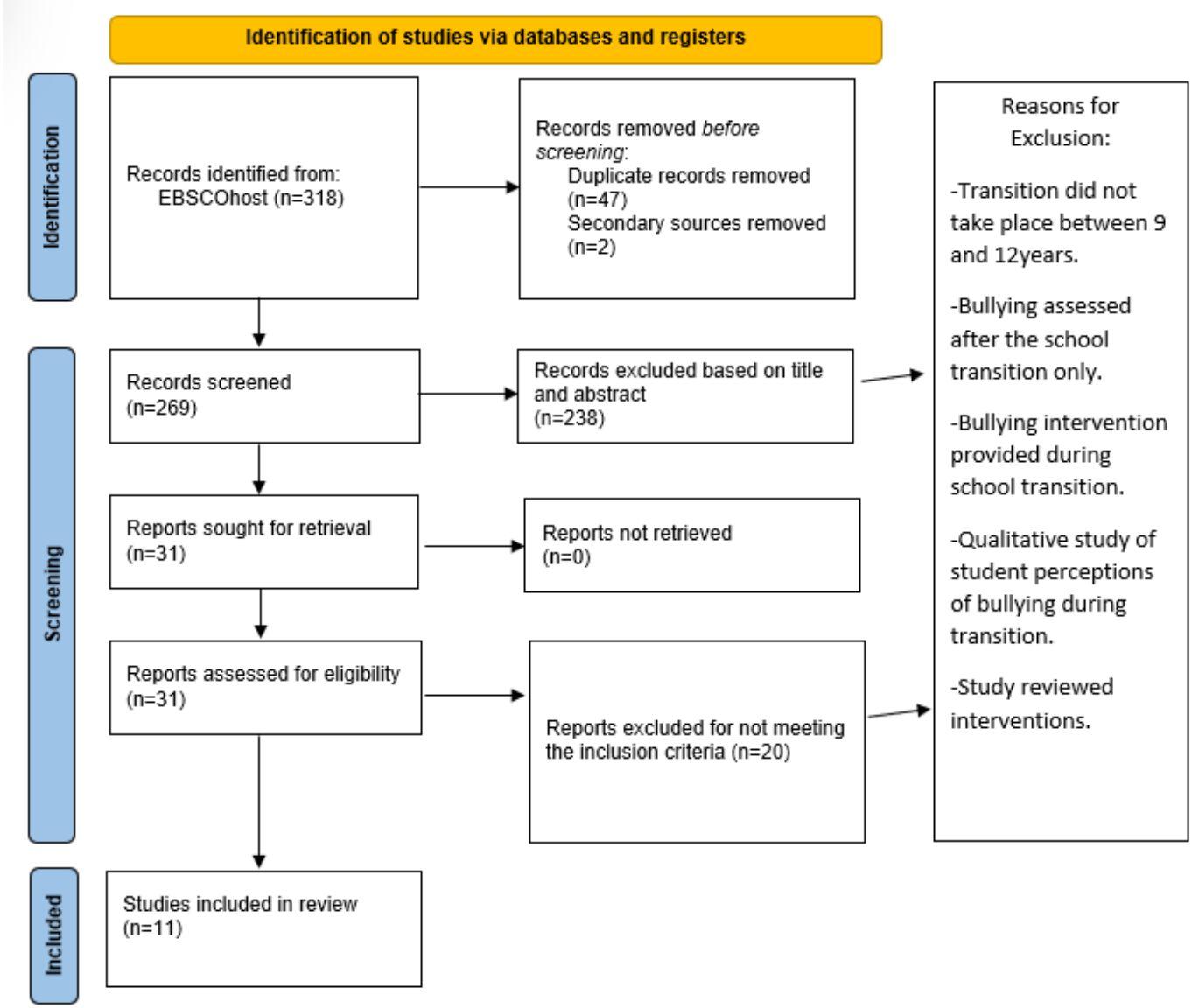
Inclusion	**Exclusion**
All types of bullying experiences	School transition occurs outside of pre-adolescent window (9-12years)
Transition occurs between the ages of 9 and 12 years.	Qualitative research
Includes quantitative measures of bullying	Not accessible in English
Cross-sectional at transition age, or longitudinal over the transition period	Those involved in an intervention prior to transitioning

The title and abstract of the remaining 269 papers were assessed against the inclusion criteria, with 31 papers meeting the criteria. Full text articles of these papers were screened against the same inclusion criteria, resulting in 11 appropriate papers. The reference section of each paper was scanned to identify any additional

papers that did not appear in the search, however no additional papers were found. Figure 1 shows a PRISMA diagram detailing the full process of study selection.

Figure 1

PRISMA diagram detailing study selection process



Note: records were excluded based on the inclusion and exclusion criteria in table 2.

Extraction and Synthesis

Quality rating tools are essential for providing a rigorous criterion against which research can be assessed. Using quality assessment tools when synthesising

research is crucial, as including poor-quality studies in an uncritical manner can undermine the overall quality of the synthesis. The Critical Appraisal Skills Program (CASP, 2014) is a comprehensive quality rating tool that includes 12 questions designed to help users evaluate the validity, results, and relevance of the studies being assessed. CASP offers several checklists tailored to different types of papers, with each study being rated as either satisfactory or unsatisfactory based on the response to each question. A satisfactory rating indicates that the paper meets most of the criteria, demonstrating a strong methodological foundation and relevance to the research question.

The 11 studies that met the inclusion criteria for this review were all longitudinal in nature, following bullying experience in the lead up to, over and following a school transition, rather than focusing on bullying at the time of the transition alone. As such, the quality of these studies was assessed using the CASP checklist for cohort studies (CASP, 2014). The full CASP cohort checklist can be viewed in appendix 1.

The data included in this review contained high levels of heterogeneity in terms of methodological and clinical diversity. Therefore, a meta-analysis was not considered an appropriate method for synthesising papers in a way that met the review aims. Instead, the data were synthesised using narrative synthesis. This method seeks to offer a rigour and transparent collation of studies with different characteristics, context and validity into textual narratives that provide an overall understanding of a complex topic (Campbell et al., 2020). The aims, sample, methodology and main findings from the papers in this review were extracted into an excel spreadsheet and grouped into two main groups based on their contribution to

the review aims. The two groups were: understanding the trajectory of bullying over the transition (n=11); factors that influence the trajectory of bullying (n=7).

Results

The search and screening process identified 11 eligible studies. The publication date of the studies ranged between 2002 and 2023, and each study was longitudinal in nature. Table 3 shows the characteristics of each study alongside which of the two above groups they belong to contribute to the research aims.

Quality Appraisal

The CASP checklist for cohort studies described above was used to determine paper quality within the current review. The checklist does not provide strict cut offs for how many categories a paper needs to meet to be considered as high quality, however it is generally agreed that the more ‘yes’ responses to the questions a study receives, the greater the quality. Table 4 shows the results of the quality assessment for each paper.

The quality assessment revealed that none of the studies received a rating less than 9, indicating they are of satisfactory to high quality and appropriate for inclusion in the review. All papers addressed a clearly focused issue, with most recruiting a cohort sample from secondary datasets. All studies were rated as not having identified all important confounding factors and this was due to the complex and multisystemic nature of bullying making it close to impossible for one study to appropriately capture all potential confounding factors. All studies showed some consideration to confounding factors, with a particular focus on demographic confounds such as socioeconomic status and ethnicity. Although all studies were scored as not having identified all potential confounds, this was not considered a

limitation within the research as the nature of the systematic review allows for a holistic understanding of different factors that may be contributing to bullying trajectories during preadolescence. Belief in results of Fujikawa et al., 2020 has been rated as ‘can’t tell’ due to a lack of reporting on confidence intervals.

Two studies (Brendgen et al., 2016; Monachino et al., 2021) failed to report the source of the sample and therefore were limited in their ability to apply results to the general population. In addition, generalisation within all studies is limited due to the selected time of school transition in all studies as per the nature of the review. Bullying behaviours are known to change with development and therefore findings within these studies may not be generalisable to youths outside of this period.

Table 3

Characteristics of studies included in synthesis

Authors, Year	Study Design, Country	N Participants, dataset, Age	Bullying variables	Main findings
Bowes et al., 2013	Longitudinal, UK	2232ppts from Environmental Risk Longitudinal Twin Study, 5 - 12	Victim only	Boys more likely to be chronic victims over school transition. Victimisation in primary school was associated with victimisation in secondary school. Ethology of victimisation different before the school transition to after. Chronic victimisation associated with increased internalising, externalising, depression and anxiety problems.
Brendgen et al., 2016	Longitudinal, Canada	767 (403F, 364M), 9-16	Victim only (Social Experiences Questionnaire)	Victim trajectories identified: 62% low decreasing (low in PS, lower in SS), 31% high decreasing (higher in PS, lower in SS), 7% High increasing decreasing (high in PS, high start SS, lower later SS). Boys more likely to follow high decreasing trajectory. Aggression and parent conflict associated with high decreasing.
Fujikawa et al., 2020	Longitudinal, Australia	1237 (51% M) from Child and Adolescent Transition study, mean age 9 on recruitment	Victim-only (Gatehouse Bullying Scale)	Prevalence of bullying decreased over transition for boys but stable for girls. Main decrease for girls before transition. Physical bullying higher in boys but decreased over transition. Cyber bullying sharply increased after transition for girls. Two thirds continued victims over transition. Overall impact of school transition on bullying behaviour weaker for boys than for girls.
Monachino et al., 2021	Longitudinal, USA	1098 (51.2%F) from Department of Justice funding	Perpetration and Victimisation (Reduced Aggression and Victimisation Scale)	Victimisation decreased as children aged but this varied by sex and demographics. Females were more likely to engage in relational bullying compared to physical. Children with special educational needs more likely to experience pervasive bullying. Uninvolved and verbal victimisation increased at transition, relational and pervasive bullying decreased. Physical victimisation was no longer detected after school transition, however, increase of relational.

Pellegrini & Long, 2002	Longitudinal, USA	154 (87M, 67F), 10-15	Victim only (Olweus Bullying Victim Questionnaire)	Victimisation reported decrease before the transition, be highest just before the transition and decrease again significantly after. Boys were more victimised than girls.
Valliancourt et al., 2023	Longitudinal, Canada	701 (52% F) from McMaster 2008 Teen Study	Perpetration and Victimisation (Olweus Bully Victim Questionnaire)	Victimisation decreased faster before the school transition. Continued to decrease over transition at a slower rate. Bullying perpetration increased steeply at point of transition then decreased following. Boys were half as likely to experience this trajectory.
Wang et al., 2016	Longitudinal, USA	698 (52.4% F) From McMaster 2008 Teen Study, Mean age 10.9),	Perpetration and Victimisation (Olweus Bullying Victim Questionnaire)	Girls reported higher victimisation, no sex differences in perpetration. School transition did not influence victimisation for boys but did for girls. Perpetration and victimisation were linked. Peer victimisation understood in context; peer perpetration more likely developmental.
Williford et al., 2010	Longitudinal, USA	458 (53%F) from Youth Matters Study, Mean age 10.2 on recruitment.	Perpetration and Victimisation (Olweus bullying/victim questionnaire)	No significant sex differences in models. Bullying role changed significantly over the school transition. Verbal aggression increased over time, whereas physical aggression decreased.
Williford et al., 2014	Longitudinal, USA	1077 (53%F) from Youth Matters study, Mean age 10.2 on recruitment.	Perpetration and Victimisation (Olweus bullying/victim questionnaire)	Victimisation increased aggression at the school transition. Most commonly, perpetrators transitioned into bully-victims highlighting an increase in aggression at school transition. No changes in uninvolved peers. Bullying transition was dependent upon social and environmental factors but there were no sex differences. High levels of depression made it less likely to be uninvolved in bullying. Antisocial attitudes increased likelihood of being a bully-victim after the transition.
Williford et al., 2016	Longitudinal, USA	431 (52% F) from Youth Matters Study, 10 - 13.	Perpetration and Victimisation (Olweus Bullying Victim Questionnaire)	Bullying and Victimisation decreased in the lead up to the school transition, however both increased at the point of transition. Bullying and victimisation associated with decreased cognitive empathy.
Zhang et al., 2022	Longitudinal, USA	2298 (9-15) from Fragile Families and Child Wellbeing Study	Victim only	Victimisation generally decreased after the school transition. Delinquency was associated with verbal and all type victimisation for boys and girls. Sex differences in all victim types except for minor victims. Girls more likely to be verbal victims, boys most likely to transition from minor victim to mainly verbal victims over the school transition.

Table 4

Results from CASP quality rating for longitudinal studies

	Bowes et al., 2013	**Brendgen et al., 2016**	**Fujikawa et al., 2020**	**Monachino et al., 2021**	**Pellegrini & Long, 2002**	**Vallancourt et al., 2023**	**Wang et al., 2016**	**Williford et al., 2010**	**Williford et al., 2014**	**Williford et al., 2016**	**Zhang et al., 2022**
Did the study address a clearly focused issue?	Yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Was the cohort recruited in an acceptable way?	Yes	can't tell	yes	can't tell	yes	yes	yes	yes	yes	yes	yes
Was the exposure accurately measured to minimise bias?	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Was the outcome accurately measured to minimise bias?	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Have the authors identified all important confounding factors?	no	no	no	no	no	no	no	no	no	no	no
Have they taken account of the confounding factors in the design and/or analysis?	yes	yes	yes	can't tell	yes	can't tell	yes	yes	yes	yes	yes
Was the follow up of subjects complete enough?	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Was the follow up of subjects long enough?	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Do you believe the results?	yes	yes	can't tell	yes	yes	yes	yes	yes	yes	yes	yes
Can the results be applied to the local population?	yes	can't tell	yes	can't tell	yes	yes	yes	yes	yes	yes	yes
Do the results of this study fit with other available evidence?	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Are the implications of this study for practice discussed?	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

Sampling

All studies, except for one (Pellegrini et al., 2002), utilised secondary data from existing large-scale longitudinal studies. Two studies used data from the 2008 McMaster Teen Study (Wang et al., 2016; Vaillancourt et al., 2023), three studies used data from the Youth Matters Program (Williford et al., 2010; Williford et al., 2012; Williford et al., 2016), one study utilised data from the Environmental Risk Longitudinal Twin Study Cohort (Bowes et al., 2013), one study used data from the Quebec Newborn Twin Registry (Brendgen et al., 2016), one study employed data from the first six waves of The Childhood Adolescence Transition Study (Fujikawa et al., 2020), and the final study used research funded by the U.S. Department of Justice National Institute of Justice. These secondary datasets date back as early as 1994, although most of the data utilised in the studies reviewed here was collected between 2001 and 2014, reflecting the experiences of young people during that period. Pellegrini et al. (2002) conducted a study that sampled five primary schools transitioning into two middle schools in North America. Schools were selected based on geographical area, and the participants were 5th graders preparing to transition to middle school.

Participants

In total, 11,745 participants were followed throughout the papers. All papers reported relatively even male: female ratios. The age of participants within the studies ranged between 5 years and 15 years, with the school transition occurring for all between the ages of 10 and 12 years depending on the country's own schooling system. For many of the studies, participants were studied across the year prior to, during and after the school transition, with only Bowes et al (2013), Brendgen et al (2016) and Zhang et al (2022) expanding the parameters to capture data from earlier

years that could be considered moderators in differentiating trajectory of bullying over the school transition. All studies included were conducted within the USA (n=6), Canada (n=3), Australia (n=1) or European countries (n=1). Five of the 11 studies reported White participants as the majority, three reported Latino participants as the majority and one study reported Black/African American participants as the majority. These samples were said to be representative of the ethnicity in the overall population in the area. Two studies did not report the ethnicity of their sample.

Measures and variables in studies included in the synthesis

Demographic variables

All 11 studies gathered data in relation to participant sex and categorised this as male or female. Participant sex was investigated either in relation to bullying status or bullying trajectory itself. Six of the studies gathered information on participant socioeconomic status (SES), with predominant focus on household income and parental education level. Zhang et al (2022) characterised SES using the poverty line (poor, not poor). Two studies made references to how SES was associated with different bullying trajectories over the school transition. Participant ethnicity was reported in nine studies and included in the main analysis of only Zhang et al (2022) and Monachino et al (2021).

Bullying Behaviours and Roles

Bullying was measured through self-report responses to questionnaires in all 11 studies. In addition, six of the studies assessed bullying using a multi-informant approach of either peer nominations or mothers' reports. Pellegrini et al (2002) was the only study to use all the above methods in addition to child diaries and direct observations as additional bullying assessment tools. Direct observations were

completed by seven research assistants during children's playtime and inter-rater reliability was over .80 indicating substantial to almost perfect agreement between raters (Pellegrini et al., 2002). In both studies using peer nominations, children were given a list of names of their classmates and asked to identify three people who perpetrated bullying behaviours, and three victims of bullying behaviours. Nominations were then counted and standardised to account for classroom size before being averaged to create scale scores for each young person (Brendgen et al., 2016). Bowes et al (2013) collected mother accounts of child bullying, however cross-informant agreement was modest (.20 to .29). Despite this, mother and child ratings of victimisaiton were summed and categorised into never victimised, occasionally victimised (reported by mother or child) and frequently victimised (reported by mother and child).

The most widely used measure of bullying was the Revised Olweus Bullying Victim Questionnaire (OBVQ; Olweus,1996). The measure asked participants to rate the frequency they experienced six perpetration and six victimisation behaviours on a five-point Likert scale. Six studies used the OBVQ, with most creating an overall composite score for each by averaging the six response items. Only Williford et al (2014) chose to dichotomise the scores, with frequency ratings of 'two or three times a month' or higher being coded a 1 and below coded as 0. The Social Experiences Questionnaire (SESQ; Crick & Bigbee, 1998), the Reduced Aggression/Victimisation Scale (RAVS; Orpinas & Frankowski., 2001), and the Gatehouse Bullying Scale (Bond et al., 2004) were each used in one study to capture the frequency of self-reported bullying experience. Bowes et al (2013) and Zhang et al (2022) did not cite a validated measure of bullying, however described capturing self-reported frequency of bullying using similar questions to those detailed in the other studies.

Seven studies using self-report scales made up of more than one item creating an overall perpetration or victimisation score reported Cronbach's alpha within acceptable limits (.66 to .94), with Monachino et al (2021) reporting exceptional internal consistency of the RAVS (.997 to .999). Three studies provided participants with a clear definition of bullying prior to them rating their experiences (Valliancourt et al., 2023; Wang et al., 2016; Bowes et al., 2013).

Five studies focused only on the experience of victimisation over the school transition (Bowes et al., 2013; Brendgen et al., 2016; Fujikawa et al., 2020; Zhang et al., 2022; Monachino et al., 2021). The remaining six studies explored trajectories of both perpetration and victimisation of peer bullying across a school transition (Vaillancourt et al., 2024; Williford et al., 2010; Williford et al., 2014; Williford et al., 2016; Wang et al., 2016; Pellegrini et al., 2002). The terminology of perpetrator and victim was frequently used in the studies of which captured both statuses, however Williford et al (2010) opted for using 'aggressive behaviours' to describe those who were perpetrators of bullying. Although the terminology was different, the traits were assessed using on the same scale as those using the term perpetrator.

Despite having different meanings for the person involved, perpetration and victim behaviours were largely defined in same way, with the only differentiation being whether the behaviour was "done to" or "done by" the individual. Seven behaviours classified into physical, verbal, relational or social bullying were used to determine bullying status throughout the studies. Physical forms of bullying such as hitting or kicking and verbal forms such as teasing and name calling were widely cited in all papers. Fujikawa et al (2020) and Vaillancourt et al (2023) were the only papers to directly explore cyber bullying, however other forms of social bullying such as rumour spreading and exclusion were considered in earlier papers.

Bullying Trajectories

Categorisation of bullying trajectories varied throughout the studies. Two studies (Brendgen et al., 2016; Bowes et al., 2013) explored the overall experience of bullying across the school transition, with categories such as uninvolved, increasing, decreasing and chronic. Three studies explored behaviour specific transitions (Fujikawa et al., 2020; Zhang et al., 2022; Monachino et al., 2021), with categories such as verbal, physical, relational. The remaining studies looked at trajectories of bullying/ victimisation roles across the school transition, with categories such as perpetrator, victim, dual role.

Where studies only explored victimisation, Brendgen et al (2016, Bowes et al (2013) and Zhang et al (2022) categorised victims into chronic and non-chronic subgroups. In each of these studies, chronic victim referred to children who were victimised both before the school transition and after the school transition, whereas non-chronic referred to those who experienced bullying either before or after the school transition, or those who were exposed to low/no victimisation. In the other victim-only studies, experiencing the same behaviour before and after the transition was classified as being a ‘stable’ victim. Additional classification of victimisation reflected changes in status before and after the school transition e.g. high decreasing/ low decreasing (Brendgen et al 2016). This refers to those who experience high levels of victimisation in primary school, but not secondary school and vice versa. Additional categorisation of victimisation related to trajectories of the specific victim behaviours e.g. verbal victim, physical victim, with trajectories of these behaviours being categorised as no exposure, some exposure and pervasive exposure (Monachino et al., 2021). Zhang et al (2016) also explored trajectories of victim behaviours identifying categorising victim transitions into low, mainly verbal

victims and all type victims. Those who did not change categories during the transition were also classed as ‘stable’.

Of the studies that investigated both victimisation and perpetration of bullying, Vaillancourt et al (2023) and Wang et al (2016) explored the trajectory of each status separately, with participants being either a perpetrator or victim. They categorised trajectories into declining (high exposure in primary school, low in secondary school) and escalating (low exposure in primary school, high in secondary school). Williford et al (2010), Williford et al (2014) and Williford et al (2016) also investigated the trajectory of each status separately, however they added additional groups of bully-victim and uninvolved to reflect the experience of those who held both status and those who held none. These studies explored the transition between each of these bullying groups in the lead up to and across the school change. Pellegrini et al (2002) also explored the trajectory of perpetration and victimisation, exploring how the changes between the subgroups associate with psychological traits.

Psychological, Social and Behavioural Traits

Psychological social and behavioural traits were identified as factors associated with the bullying trajectory in six studies. In addition, and outside of the aims of the current review, two studies also identified a potential bidirectional association between psychological traits and bullying trajectory, and trajectory and effects on psychological traits.

Four studies referenced internalising problems including being withdrawn, anxious, crying, and isolated as a factor associated with bullying trajectory. Two studies specifically used the term internalising problems, with the other two capturing specific internalising traits such as anxiety and depression. Measures used to assess

internalising problems included: The Child Behaviour Checklist (CBC: Achenbach, 1991a) along with teacher reports assessed by The Teacher Report Form (TRF: Achenbach, 1991b); The Revised Class Play (Masten et al., 1985); Children's Depression Inventory (Kovacs, 1992); and Multidimensional Anxiety Scale for Children (March, 1997). All measures aside from the Multidimensional Anxiety Scale for Children were shown to have internal consistencies within the acceptable to good range. The Multidimensional Anxiety Scale for Children had a questionable internal consistency score of .67, which may indicate some issues with reliability of the measure.

Three types of externalising problems were referenced as factors associated with bullying trajectory across five studies. These include delinquency, antisocial attitudes, and dominance over others. Bowes et al (2013) also reflected many of these traits under the heading of externalising behaviours which also included lying, getting into fights and shouting. They reached an overall externalising behaviour score by summing delinquency and aggression subscales. There was also some overlap in behaviours titled delinquency and antisocial attitudes. For example, Zhang et al (2022) recorded delinquency as damaging property, stealing, smoking or getting in fights, whereas Williford et al (2014) assessed antisocial attitudes as picking fights, smoking and stealing using The Community That Cares (CTC; Glaser et al., 2005) scale. The difference in terminology may be attributed to studies utilising different measures to assess externalising behaviours. Zhang et al (2022) measured self-reported delinquency behaviours using the delinquency subscale on the Things That You Have Done Scale (Maumary-Germaund, 2000). Delinquent behaviours discussed in Bowes et al (2013) were captured as part of an externalising behaviour scale on the Child Behaviour Checklist and Teacher Report Form (CBC, TRF;

Achenbach., 1991a; 199b) and was reported by mothers and teachers. Comparisons of findings across different measures of externalising behaviours are limited due to potential informant bias, context and perspective on delinquency.

Studies utilising the Youth Matters sample (Williford et al., 2014; Williford et al., 2016) considered how cognitive empathy in the form of perspective taking related to bullying trajectory over the school transition. Self-reported cognitive empathy was measured using the perspective taking dimension of the Interpersonal Reactivity Index (IRD; Davis, 1983) in both studies. The internal consistency of this measure was reported as good, ranging between .83 and .86 (Williford et al., 2014; Williford et al., 2016).

Each of the studies varied in how they explored internalising and externalising problems and cognitive empathy in relation to the school transition. Brendgen et al (2016) sought to understand how pre-existing internalising and externalising problems rated by peers related to changes in overall victimisation exposure across the school transition (increasing, decreasing, chronic). Bowes et al (2013) also explored how the same victim trajectories across the school transition associated with internalising and externalising problems both at age five (pre-existing) and age 12 (post exposure). Zhang et al (2016) assessed how different victimisation behaviour transitions (verbal, all type) associated with youth delinquency after the exposure to victimisation, whereas Williford et al (2014) explored how changes in bullying role across the school transition (bully to victim etc.) associated with internalising and externalising problems and cognitive empathy. Williford et al (2016) explored how changes in overall exposure to bullying and victimisation during the school transition associated with changes in cognitive empathy levels during the same period.

Analysis and Missing Data

Six studies utilised initial correlation analysis to identify relationships between variables. Four of these were Pearson correlations, with one study using an exchangeable correlation matrix that led onto further analyses in the form of generalized estimate equations and logistic regressions (Brendgen et al., 2016). Latent Variable Models were most prominent in the studies, with seven studies opting for either Latent Trajectory Analysis (n=2), Latent Profile Analysis (n=1), Latent Class Analysis (n= 2) and Latent Growth Change Analysis (n= 2). Three of these studies also used Binary Logistic Regression to model bullying trajectories. Two studies followed correlations with Hierarchical Regression Analysis, with a third utilising this method alongside repeated measures Analysis of Variance (ANOVA). Williford et al (2010) were the only researchers to rely on one method of analysis (Latent Class Analysis).

It is not uncommon for longitudinal studies to have high levels of attrition or missing data. Five of the studies reported missing data, however only Williford et al (2016) detailed the method used to assess missing data, opting for Latent Growth Curve Modelling and concluding a 35% increase in missing data over time but noting missingness was ignorable. Wang et al (2016) concluded that the final sample differed from those who dropped out, and included more girls, parents with higher levels of education and white participants. The remaining two studies noted no significant difference between participants and dropouts, however, did not detail how they had come to this conclusion. Pellegrini et al (2002) concluded that attrition rates across the three grades assessed meant year two held 90% of participants from year one and year three held 83% of participants from year one and 93% of participants from year two.

Findings of Studies Included in Synthesis

Demographics

Sex differences in the trajectory of bullying experience were found in eight of the studies, with many studies indicating differences in the type of bullying boys and girls engage in. For example, Fujikawa et al (2020) found that before the school transition, girls were more likely to spread rumours and engage in social excluding victimisation, whereas boys showed more physical victimisation. For girls, the school transition saw a significant decrease in reports of these behaviours, however, for boys it was concluded that despite an overall decrease in prevalence of victimisation over the transition, the overall impact of the school transition was weaker than for girls (Fujikawa et al., 2020).

These findings were echoed in Wang et al (2016) who reported sex differences in victimisation but not perpetration before the transition, with the school transition being significant for girls but not boys. Pellegrini et al (2002) found boys were more likely to be both victims and perpetrators of bullying, with boy-to-boy perpetration increasing at the point of transition before decreasing. Further research showed boys were more likely to be chronic victims in both primary and secondary school, however this difference was only marginal (Bowes et al., 2013) and in contrast to Wang et al (2016). The contrast in findings could be attributed to different methods of bullying report with Bowes et al (2013) using mother reports of bullying and Wang et al (2016) relying on self-reported bullying. Although both useful ways of gathering data, cross comparisons offer limitations due to different perspectives and contexts of the responders. Participant sex was found to be a nonsignificant predictor of victim trajectories in two studies (Williford et al., 2010; Williford et al.,

2014). Instead, these studies concluded that bullying trajectory was likely dependent on social and environmental factors.

Findings relating to the impact of socioeconomic status (SES) on trajectory of bullying across the school transition were sparce, with only two studies finding significant differences in victim status. There were no significant findings in relation to perpetration of bullying and SES. Zhang et al (2022) found both boys and girls from poorer families (60% boys, 65% girls) had higher odds of experiencing all types of victimisation compared to their less poor peers. Brendgen et al's (2016) correlation analysis found that lower family income was associated with increased victimisation at the point of transition only, but lower maternal education was associated with increased victimisation at the transition and in the year that followed, however neither of these variables significantly predicted trajectories when relational and psychological variables were added.

Participant ethnicity was found to differentiate bullying status in two studies. Zhang et al (2022) found Hispanic boys and girls were more likely to be minor victims than verbal victims, and less likely to be all type victims compared to non-Hispanic white boys and girls. Monachino et al (2021) also found differences in bullying status by ethnicity with white children being more likely to be non-victims than pervasive victims before the transition and Black or African American children more likely to be non-victims or relational victims after the transition. There were no additional ethnic differences at any other time in this study. Despite higher attrition rates in this study, it was felt the final transition pathway was representative of ethnicities in the total sample of the original data.

Bullying Behaviours and Roles

The trajectory of bullying victimisation and perpetration varied across studies depending on how these behaviours were defined. When victimisation was explored as trajectory of bullying roles, three studies (Valliancourt et al., 2023; Williford et al., 2014; Williford et al., 2016) found that victim status steadily decreased across the school transition. This finding was replicated by Brendgen et al. (2016), where latent trajectories revealed that 31% of participants experienced higher levels of victimisation before the school transition compared to after. However, this was not the most common trajectory in the study, as 62% of participants reported low levels of victimisation both before and after the transition (Brendgen et al., 2016). Fujikawa et al. (2020) found stable overall victimisation over the school transition, but further analysis revealed different trajectories for specific types of victimisation. For instance, cyberbullying showed an increasing trajectory across the transition when controlling for participant demographics.

Two studies identified different victimisation trajectories depending on the type of bullying experienced. Monachino et al. (2021) found significant increases in verbal, relational, and pervasive forms of bullying during the school transition. In their findings, physical victimisation existed in the year prior to the transition but disappeared in the year following it, with verbal and relational bullying emerging as new victim pathways after the transition. This suggests a change in the type of victimisation with age (Monachino et al., 2021). However, while the study reported a large overall sample size (N = 1098), the authors noted difficulties in controlling for Type 1 errors in the year before the transition due to some victim categories having small sample sizes, so the results should be interpreted with caution. Zhang et al.

(2022) also found variations in victim behaviour trajectories, noting that these differences were influenced by participant sex and behavioural traits.

Findings related to perpetration of bullying were less frequently discussed. Valliancourt et al. (2023) found that perpetration steeply increased at the point of school transition before declining again once students entered secondary school. This pattern was further supported by Williford et al. (2014), who showed that bullying perpetration increased at the transition and then steadily decreased as students settled into the new school. Williford et al. (2010) found links between patterns of victimisation and perpetration, with earlier findings indicating that perpetrator-only groups existed in the year before the transition. However, dual bully-victim roles increased from 10% to 19% over the school transition (Williford et al., 2010). The most common trajectory involved students transitioning from uninvolved to bully-victim (9%) when changing schools, supporting Valliancourt et al.'s (2023) suggestion that some young people experience increased aggression when changing schools before levelling out. Further research indicated potential psychological and sex differences in these findings (Pellegrini et al., 2002).

Psychological, Social and Behavioural Traits

Findings exploring associations between trajectories of overall bullying and psychological traits yielded similar results. Both Bowes et al (2013) and Brendgen et al (2016) concluded that pre-existing internalising and externalising problems had the strongest association with chronic victim trajectories. In addition, these studies found that a decreasing victim trajectory had the strongest association to pre-existing externalising problems, whereas an increasing victim trajectory had the strongest association with pre-existing internalising problems (Bowes et al., 2013; Brendgen et al., 2016). Following the school transition, Bowes et al (2013) found chronic victims

to self-report the highest anxiety and depression scores compared to those who were exposed at one time point or uninvolved. This association was also replicated for maternal reports of internalising and externalising problems after the exposure and chronic victimisation.

. Studies exploring the different trajectories of role specific bullying also found significant associations between psychological, social and behavioural traits. Specifically, Williford et al (2014) showed young people who transitioned from bullies to uninvolved were more likely to report elevated depression scores. Williford et al (2014) also showed increased self-report antisocial attitudes were more likely to be associated with bully or bully-victim status before the transition. The most common transition for children with increased antisocial attitudes was from uninvolved to bully-victim status (Williford et al., 2014).

Cognitive empathy was a less consistent associate with bullying role trajectories; however, it was noted that increased cognitive empathy was significantly associated with those who transitioned from victims to uninvolved or those who remained stable uninvolved during the school transition (Williford et al., 2014). The odds ratios in these findings were relatively high due to small sample sizes in certain bullying groups. This means that the results may not be as robust as they appear to be, and generalisability may be limited. In addition, Williford et al (2016) found lower cognitive empathy was associated with stable perpetration over the school transition, however found no significant associations with victimisation trajectories were found. It should be noted that both studies assessed cognitive empathy with perspective taking domains which, whilst recognised as an important skill in relationships, limits the findings in relation to other empathy components such as affect empathy.

The final association between trajectories of bullying roles and social traits was reported by Pellegrini et al (2002). Their findings showed a negative association was found between the social characteristic dominance and bullying. Specifically, during the school transition it was shown a decrease in dominance levels was associated with the role of perpetrator across the school transition. However, after the school transition, the opposite was true, and it was found that higher reported dominance traits were associated with lower perpetration of bullying (Pellegrini et al., 2002). As this was the only study to explore trajectories of bullying role and dominance, it is not possible to explore how these findings relate to the other studies.

Finally, the one study exploring bullying behaviour specific trajectories and social traits found different trajectories of victim status membership was associated with self-reported delinquency levels, where increased delinquent behaviours were more likely to be mainly verbal victims or all-type victims. Those at highest risk of delinquency were youths that were persistently victimised in any form or those who transitioned from a lower exposure group (either low or mainly verbal to all type). Although different bullying trajectories were assessed, these findings are similar to Williford et al (2014) associations with antisocial behaviours, where they showed transitions to higher bullying exposures (uninvolved to bully-victim) to associate with increased anti-social behaviours.

The above findings describe how psychological, social and behavioural traits can influence the trajectory of different bully statuses, including overall exposure, behaviour type and role changes, however there is also evidence to suggest that this relationship may be bidirectional. Two studies reported that any experience of bullying significantly increased the likelihood of internalising, externalising and social

problems compared to unexposed children (Bowes et al., 2013; Williford et al., 2016). These associations remained even after controlling for early mental health problems, IQ, demographics and family structure (Bowes et al., 2013). In addition, simultaneous experience of bullying and victimisation (bully-victim) was found to increase internalising and externalising problems, whereas victim only groups were more likely to experience increased internalising problems only (Williford et al., 2010).

The table below (Table 5) summaries consistent results and areas of divergence with main themes.

Table 5

Summary of key consistent findings and areas of divergence in relation to factors that may differentiate the trajectory of bullying across the school transition.

Finding	Consistent findings	Inconsistent findings	Did not include
Victimisation decreases across the school transition	Vaillancourt et al (2023) Williford et al (2014; 2016) Monachino et al (2021) Zhang et al (2022) Wang et al (2016) Brendgen et al (2016)	Fujikawa et al (2020) – Overall victimisation remains stable for girls but decreases for boys. Williford et al (2016) & Pellegrini et al (2002) – victimisation decreases, however peaks again at transition. Williford et al 2014 – Victimisation increased.	Bowes et al (2013)
Perpetration increases at point of school transition, then decreases	Vaillancourt et al (2023) Williford et al (2016) Williford et al (2014)	Wang et al (2016)– perpetration was stable across transition. Williford et al (2010) – perpetration class transitioned into bully-victim.	Bowes et al (2013) Brendgen et al (2016) Monachino et al (2021) Fujikawa et al (2020) Pellegrini et al (2002) Zhang et al (2022)
Trajectory of bullying is different for different roles	Monachino et al (2021) & Fujikawa et al (2020) – verbal and social bullying increase. Physical bullying decreases. Fujikawa et al (2020) – cyber bullying increases	-	Bowes et al (2013) Brendgen et al (2016)

	Zhang et al (2022) – verbal and all type victim decrease		Pellegrini et al (2002) Vaillancourt et al (2023) Williford et al (2016) Williford et al (2014) Williford et al (2010) Wang et al (2016)
Sex differentiates bullying trajectories	Bowes et al (2013) – boys more likely to be chronic victims Fujikawa et al (2020) – Overall decrease in victimisation greater for females than males. Wang et al (2016) – females experience higher victimisation Pellegrini et al (2002) – boys more likely to be victims and perpetrators. Brendgen et al (2016) – boys more likely decreasing victimisation Monachino et al (2021) – boys more likely pervasive and physical profile, girls more relational. Vaillancourt et al (2023) – boys less likely to experience perpetration increase/decrease. Zhang et al (2022) – girls more likely to be verbal, boys more likely to increase victimisation.	Wang et al (2016) – no sex differences in perpetration trajectory Williford et al (2010; 2014) – no significant sex differences	Williford et al (2016)
Internalising problems are associated with trajectories	Bowes et al (2013) & Brendgen et a (2016) – pre-existing internalising and externalising associated with chronic victim. Externalising associated with decreasing victim trajectory, internalising associated with increasing. Bowes et al (2013) & Williford et al (2014) – decreasing victimisation associated with increased internalising problems.	-	Monachino et al (2021) Fujikawa et al (2020) Vaillancourt et al (2023) Williford et al (2010) Wang et al (2016) Pellegrini et al (2002) Williford et al (2016) Zhang et al (2022)
Externalising problems are associated with trajectories	Williford et al (2014) & Zhang et al (2022) – higher externalising issues associated with increased exposure to bullying over transition.	-	Monachino et al (2021) Fujikawa et al (2020) Vaillancourt et al (2023) Williford et al (2010) Wang et al (2016) Pellegrini et al (2002)
Cognitive empathy is associated with trajectory	Williford et al (2014) & Williford et al (2016) – Cognitive empathy is lower in consistent perpetrators of bullying	Williford et al (2014) Cognitive empathy was higher in victims transitioning to uninvolved or stable uninvolved.	Monachino et al (2021) Fujikawa et al (2020) Vaillancourt et al (2023) Williford et al (2010)

	Williford et al (2016) – cognitive empathy was not associated with victimisation.	Wang et al (2016) Bowes et al (2013) Brendgen et al (2016) Zhang et al (2022) Pellegrini et al (2002)

Note: this is a summary of where studies agree or converge in their findings. Findings that were unique (no other studies researched) are not included in this table and can be found in the main text (e.g. dominance).

Discussion

The purpose of this systematic review was to synthesise existing literature exploring the trajectory of peer bullying across school transitions. Bullying trajectories have been cited to depend on many intersecting factors, and so the current literature review sought to understand how these factors interact to predict bullying over the school transition. The systematic search identified 11 research papers that were considered appropriate for inclusion in the review when assessed against a pre-defined inclusion and exclusion criterion. The final set of papers contained significant heterogeneity in methodology and therefore a narrative synthesis was considered the most appropriate way to synthesise the findings. The papers were grouped based on their exploration of either the trajectory of bullying status and school transition only, or inclusion of additional variables that could intersect with this relationship. Intersecting variables were categorised into demographic, psychological, social and behavioural traits that were shown to influence the trajectory of bullying across the school transition. The review also identified a potential bidirectional relationship between bullying trajectory and intersecting factors, however, as this was only explored in a handful of studies (Bowes et al., 2013; Williford et al., 2010; Williford et al., 2016), the discussion in relation to these findings in the context of the review are brief. However, the review

findings can be situated within wider bullying literature indicating associations between bullying and mental health.

The papers in the review were of similar and reasonable quality. All studies utilised longitudinal methods to investigate bullying experiences before, during and after the school transition at minimum. All but one (Pellegrini et al., 2002) utilised secondary data provided by larger national studies. The use of secondary data is often favourable in longitudinal analysis as it is generally considered to be a cost-effective way of gathering historical data. Larger datasets such as those referenced in many of the studies often contain boost samples to ensure the data are representative of the overall changing population, therefore making results more generalisable. Within the literature used in this review, only one study (Wang et al., 2016) concluded that the final sample after attrition was different to those who dropped out, and therefore likely differ from the overall population. Although most studies commented on how the sex and ethnicity of their sample was reflective of the general population, there are many additional factors that reflect difference in a population that were not considered.

The current review does not offer conclusions that have cross cultural implications due to all studies being conducted within Western, Educated, Industrialised, Rich and Democratic (WEIRD) populations. Existing bullying literature suggests that cultural factors shape how bullying is understood, experienced and addressed. For example, it is reported that racial and ethnic minorities are disproportionately affected by contextual-level risk factors such as the school environments that are associated with bullying (Xu et al., 2020). It is further noted that findings in minority populations are often inconclusive due to measurements of bullying often being behaviour focused and failing to capture wider contexts of

bullying (Lai & Kao, 2018). Although there are some references to different trajectories for people from different ethnic backgrounds, sample sizes of minority groups were often small (Monachino et al., 2021), meaning the statistical power for these groups was low and could contribute to difficulties in representing significant differences. This literature review highlighted a lack of literature from cross cultural populations which would offer insights into additional contextual influences on bullying trajectory and further support implementation of policy to address bullying.

Self-report measures of bullying were used in all the studies in this review. Bullying questionnaires were administered once or twice a year and required some retrospective recall of bullying experience, but not over a significant period. Whilst self-report measures are often used in bullying literature due to their ease of administration, they often risk social desirability bias, memory recall issues or lack of insight and awareness of young people's experiences (Clark et al., 2022). Further to this, bullying is often associated with social stigma and portrayed in schools as being negative. Feelings of shame and embarrassment may surround experiences of victimisation or perpetration, and so children may misreport their experiences to avoid being viewed negatively by others (Clark et al., 2022). Some of the papers in this review attempted to overcome these limitations by including additional bullying measures in the form of observations, parent reports, and peer nominations. However, only one (Bowes et al., 2013) commented on cross informant agreement of bullying scores, indicating that mother and child reports of bullying differed. Despite risk of poor cross informant agreement, Shakoor et al (2011) concluded that maintaining different informant data even when cross-informant agreement is low can be meaningful due to each informant providing a unique perspective on bullying involvement that contributes to an overall picture of the experience.

Bullying status was captured in various forms in the current review, with victimisation being the most widely studied. Studies typically examined victimisation either as a whole or by breaking it down into different types, such as verbal victimisation. Across these studies, several similarities emerged regarding victimisation trajectories during the school transition. First, overall victimisation was generally found to be highest in lower and primary school compared to middle and secondary schools, with a decreasing trajectory over the school transition. This trend is consistent with broader research, which suggests that exposure to bullying is often linked to developmental stages, with a natural decrease as a child ages (Olweus et al., 2010). As children grow older, their social, cognitive and emotional maturity increases, which allows them to navigate peer relationships more affectively. These naturally developing skills reduce the likelihood of experiencing victimisation. However, not all studies found a decrease in the trajectory of victimisation, which reiterates the complex and integrative nature of bullying within different contexts. These studies failed to consider how additional system such as family relationships including sibling bullying dynamics interact with peer bullying during the school transition.

Second, the trajectory of victimisation was found to differ by type of victim behaviour, with increases in verbal and relational victimisation and a decrease in physical victimisation during the school transition (Monachino et al, 2021). This shift from physical to relational victimisation may reflect both developmental changes and shifts in social dynamics as children age (Goldberg, 2000). The finding that overall victimisation decreases during the school transition, while certain types of victimisation increase, underscores the complex nature of bullying experiences. Studies that do not distinguish between different types of victimisation (verbal,

physical, social) may fail to capture the experiences of those who remain victims, providing an incomplete picture of victimisation during this transition. It is possible that this limitation is already reflected in bullying perpetration research, as very few studies investigate perpetration by behavioural type (verbal, physical, social). Accounting for different behavioural types provides a clearer and more complete picture of bullying which supports design of effective intervention and prevention strategies.

Perpetration and victimisation trajectories were found to be associated with various psychological and social traits. Research indicates that younger children are still in the process of cognitive development, which often results in reduced social coping skills such as cognitive empathy and perspective-taking skills (Crick & Dodge, 1994). Within this review, increased cognitive empathy, particularly in the form of perspective-taking, was linked to a decreasing victimisation trajectory or no involvement in bullying (Williford et al., 2014). Conversely, lower cognitive empathy was associated with increased bullying perpetration (Williford et al., 2016), which aligns with developmental changes in cognitive abilities. Broader literature also emphasises the connection between cognitive empathy and developmental stage, noting a natural decline in cognitive empathy during preadolescence, which is influenced by developmental, social, and environmental changes (Van der Graaff et al., 2014). Additionally, some studies observed an increase in aggressive and bullying behaviours leading up to the school transition (Valliancourt et al., 2023; Williford et al., 2014; Williford et al., 2016), which coincides with a period when children typically experience a decrease in cognitive empathy.

Sex differences were found in relation to behavioural subtypes of some trajectories, which was reflective of the wider literature. It is generally agreed that

girls are more likely to engage in social and verbal forms of victimisation (Bauman et al., 2013). In contrast, boys are more often associated with physical forms of bullying (Wang et al., 2009), and in the current review, with increased delinquent behaviours (Zhang et al., 2022). Physical forms of victimisation were no longer detected for males or females after the school transition, but the development of a relational victim group was present, and particularly prominent for girls (Monachino et al., 2021). These sex differences reflect broader societal expectations for each sex where typical ‘masculine norms’ may encourage males to be more overt in their expression, whereas the opposite is true for females (Bem, 1993). These findings offer an important perspective when creating effective interventions and policies to reduce bullying, however it should be noted that two studies failed to find sex differences in bullying trajectories which may indicate additional contextual factors at play.

Social dominance theories of bullying suggest aggressive behaviours serve as an adaption to certain context (Ttofi & Farrington, 2010). Conflicting patterns of aggression found in the current review indicate variation by sex and interactions with internalising and externalising problems that differentiate trajectory. Further research would benefit from analysis that allowed for modelling of bullying trajectory based on contextual (such as family or peer group influences) and individual predictors. This is often more challenging when using secondary data as not all datasets will capture both individual and contextual factors needed to create an overall understanding of bullying trajectory.

While the literature that separates perpetration and victimisation into behavioural types such as verbal or physical offers a more detailed understanding of the factors influencing bullying trajectories, these subgroups often reflect smaller

samples, which can reduce the statistical power of the results, despite the overall large sample sizes. Many studies attempted to address this limitation by using analytic strategies involving latent variable models. Methods like Latent Class Analysis (LCA) have been shown to offer unique and more sensitive insights into behavioural patterns compared to traditional methods such as dichotomising bullying, as they do not rely on predetermined cutoff scores (Williford et al., 2010). These methods enable more dynamic and flexible modelling of behavioural changes over time. However, they are often criticised for being less generalisable than dichotomised bullying scores because the lack of cutoffs or thresholds in subgroups may mean a group exists in one population but not another. Both types of analysis methods were used in the reviewed studies, and this, alongside the intersection of the identified factors associated with trajectory, may help explain some of the differences found in bullying trajectories over the school transition.

The above findings highlight a complex interaction between biological, psychological and social factors influencing the trajectory of bullying over the school transition. This is inclusive of sex, dominance, antisocial attitudes, empathy, existing mental health, socioeconomic status and ethnicity. A small number of studies also noted a potential bidirectional nature with some of these factors. It was generally agreed that bullying exposure in any form increased internalising and externalising problems for young people, and this is reflected within the wider literature (Huebner, 2004; Reijntjes et al., 2011). However, the findings from this review indicate chronic victims and bully-victim groups may be at greater risk of internalising and externalising problems after the school transition. As it was not the intention of the current review to understand the impact of exposure to different bullying trajectories, these findings were not explored further. However, the finding aligns with existing

literature that has highlighted bully-victims to be most vulnerable to increased anxiety and depression compared to other groups (Arseneault et al., 2006). Whilst this review could not capture this relationship, earlier studies have shown that these effects may be long-lasting (Arseneault et al., 2006; Reijntjes et al., 2011) and may result from both peer and sibling bullying experiences (Wolke et al., 2013). Further investigation as to how bullying trajectories affect mental health and wellbeing in later life could help to improve interventions and policies that seek to reduce bullying during significant periods of development.

Strengths and Limitations

To the authors knowledge, this review is one of the first to provide a synthesised understanding of the literature on bullying trajectories over the school transition. The review included longitudinal studies with predominantly large sample sizes that were reflective of four different WEIRD countries. The review sought to create a greater understanding of the many intersecting factors that differentiate bullying trajectories. In doing so, it also provided some insight into how these trajectories may influence later mental health and wellbeing of those exposed to different trajectories. The review further highlighted that the relationship between bullying and school transitions is under researched, with only 11 studies being identified within the current review. Further research into this topic, particularly with links to sibling bullying will help to understand the complex nature of this developmental stage.

The review also has several limitations. Firstly, the review process, including extraction, quality appraisal and synthesis was completed by only one author. Lack of coauthors may increase the risk of unintentional and personal bias and limits opportunities for peer review, which affects overall process. This is often more

problematic when conducting a narrative synthesis such as the one in this review due to the subjective nature of this method. However, it is hoped that the use of PRISMA guidelines, quality appraisal tools and transparency throughout the selection process helps to mitigate some of these limitations. Secondly, whilst the review sought to understand bullying across the school transition period, specifically between age 10 and 12, the search terms may have limited the scope of papers identified for the review. For example, Korn et al's (2005) paper investigating the stability of victim and bully roles from primary to secondary school would have been a suitable study in line with the inclusion criteria for this review, however due to the use of different terminology (primary to secondary as opposed to transition), the study did not appear in the search for this review. It is therefore important to note that although the review was extensive for literature including school transition, there are likely other papers available that would provide additional insight into the aims of this literature review. Future reviews in this topic should seek to extend the search terms to encompass specific school transitions such as primary to secondary, or elementary to high school.

Implications

The findings from the current review highlight complex intersections between peer bullying trajectories and psychological, social, behavioural and demographic factors over the school transition. The review identified a need for future research to investigate these associations in populations from a variety of communities due to known differences as to how cross-cultural factors differentiate understanding, experience and support of bullying. A greater cross-cultural understanding could support the development of anti-bullying interventions that support young people from ethnic minority backgrounds. It is not always possible to capture cultural

differences when using secondary data, however it is felt that replication of research across a broader range of countries and communities may help to bridge cross cultural gaps in knowledge.

In addition, further research should look to consider differences in overall exposure to bullying, as well as different role or behavioural subtypes as each were shown to take on a different trajectory over the school transition. Subtle differences may have unique implications when considering the impact of different trajectories, particularly in relation participant sex.

The current review only considered the trajectory of peer bullying across the school transition. Whilst this form of bullying is most related to schools, it is known that the school transition is a significant period of developmental change for young people. Peer bullying has also been found to have strong associations with sibling bullying (Tippett & Wolke, 2015) and whilst it is thought that peer bullying is likely more reactive to social and academic changes, the school transition also initiates changes in family roles and dynamics which are often associated with sibling bullying (Bowes et al., 2013). Understanding the trajectory of sibling bullying and its relationship with peer bullying during this period of developmental change may help create a greater understanding of how the two forms of bullying intersect, as well as help develop interventions and support for those who are identified as being at risk of exposure to both peer and sibling bullying simultaneously during this significant period, a phenomenon that has been shown to be most harmful to young people's wellbeing (Dantchev et al., 2019).

Finally, the current review identified additional findings that suggest the impact of bullying on mental health and wellbeing may be different depending on the

trajectory a young person is exposed to during the school transition. In developing a greater understanding of how exposure to both peer and sibling bullying may affect mental health or wellbeing, research has the potential to identify young people who are most at risk of mental health difficulties when they experience bullying at the school transition.

The purpose of the current study was therefore to address some of the gaps in knowledge identified in the above literature review surrounding peer bullying at school transition age and expand upon its associations with mental health and wellbeing. The review highlighted a lack of focus on interactions between peer and sibling bullying at school transition age, despite the two being strongly linked (Tippett & Wolke, 2015) and this period being identified as a crucial point of change for both familial and peer relationships (Clark et al., 2022). The current study therefore aimed to explore associations between peer and sibling bullying at school transition age. The review further highlighted a greater need for understanding how bullying roles change across the school transition. Although the studies within the review were informed by WEIRD populations, little evidence considered how bullying changes across the school transition within the UK population. The current study therefore will investigate bullying at this time using a cohort from a UK based population to increase cross-cultural knowledge of bullying.

The study has three aims. The first was to identify any associations between involvement in peer and sibling bullying both before and after the school transition. The hypothesis for this aim was that there would be a significant association between peer and sibling bullying involvement at age 10 and age 12, where involvement in one form would differ based on the other.

The second aim was to understand associations between peer and sibling bullying roles (victim-only, bully-only, bully-victim) across the school transition age (age 10 to age 12). The hypothesis for this aim was that there would be a significant association between peer and sibling bullying roles across the school transition, where bullying roles at age 10 (victim-only, bully-only, bully-victim) would be associated with bullying roles at age 12 for both peers and siblings. It was further hypothesised that this would differentiate by sex.

The final aim of the current study was to understand different trajectories of peer and sibling bullying across the school transition (consistently low, increasing, decreasing, consistently high) are associated with mental health and wellbeing in adolescence. There were several hypotheses associated with this aim: It was hypothesised that a) consistently low exposure to peer and sibling bullying during school transition age would be associated with lower psychological distress and lower negative self-view at age 17; b)the association between one relational bullying exposure (peer or sibling) and mental health outcomes at 17 will be moderated by the other relational bullying exposure, such that the associations between sibling bullying and mental health will be stronger for those with consistently high exposure to peer bullying and vice versa. ; c) consistently high exposure to peer and sibling bullying across the school transition age would be associated with low satisfaction with life and low positive self-view at 17; d) the association between one relational bullying exposure (peer or sibling) and mental wellbeing outcomes at 17 will be moderated by the other relational bullying exposure, such that the associations between sibling bullying and mental wellbeing will be stronger for those with consistently low exposure to sibling bullying and vice versa.

As this appears to be the first study to consider associations between exposure to both peer and sibling bullying together at the point of school transition and long-term mental health and wellbeing, the focus will be on understanding how mental health and wellbeing at age 17 correlates with overall exposure to bullying regardless of whether the experience was as a victim or perpetrator. It is acknowledged that this approach may introduce a potential limitation as highlighted in the above systematic review, as it limits the ability to identify nuanced differences in changes to each bullying role. However, given the exploratory nature of the study, it is important to maintain an adequate sample size to increase the statistical power and reliability of the findings. Instead of specific behaviours, overall bullying exposure over the school transition age was categorised as consistently low (no exposure), increasing (exposed before transition but not after), decreasing (unexposed before transition but exposed after) and consistently high (exposed both before and after transition). These groups were replicated for both peer and sibling bullying experience.

Chapter 3: Methods

Paradigm

A research paradigm is an overarching framework that guides the way researchers approach their underlying assumptions about knowledge (epistemology), reality (ontology) and methods used to gather and interpret data (Krauss, 2005). A research paradigm influences the method and pattern of conducting research, including the study design, questions addressed, data collection, analysis and interpretation. Two research paradigms sit at either end of the continuum, positivist and interpretivist. Those adopting a positivist paradigm

belief that there is a single, objective reality that can be measured and understood through scientific methods. Researchers operating within this paradigm often use quantitative methods to test hypotheses, believing that the results from one study can be generalised to another (Wildemuth, 1993). In contrast, interpretivists argue that there are multiple realities, each shaped by the subjective experiences and interpretations of individuals. Interpretivist research typically utilises qualitative methods and is influenced by the researcher's personal perspective (Wildemuth, 1993).

The current study is informed by a post-positive paradigm, which combines the strengths of scientific inquiry with the recognition that not all aspects of reality can be fully known (Krauss, 2005). Whilst the study adheres to scientific methods, posing hypotheses that can be tested and making predictions based on these hypotheses, it also acknowledges that there are inherent limitations. These limitations arise from potential biases of both the researchers and participants and from the fact not all variables can be controlled or accounted for. The study seeks to examine how independent variables (peer and sibling bullying experiences) are associated with dependent variables (mental health and wellbeing at age 17years), whilst controlling for potential confounding variables (sex, ethnicity, socioeconomic status). However, as this is a post-positive approach, the study recognises that it is unable to establish definitive causal explanations. Instead, it aims to provide evidence of the associations between bullying experiences during the school transition and mental health and wellbeing outcomes at age 17years, whilst acknowledging the complexities of human behaviour and the limitations this has on generalisability of findings.

Ontology

Ontology is the philosophical ‘study of being’, focused on what is true or real about the world in which humans acquire knowledge (Goertz & Mahoney, 2012). Ontology exists on a continuum, ranging from naïve realism – the belief in a singular, objective reality to relativism - the understanding that multiple, subjective realities exist (Goertz & Mahoney, 2012). The ontological position of a researcher refers to the stance or perspective a researcher adopts regarding the nature of reality in the world and how it can be understood. Within research, the ontological positioning of a researcher guides how they think about the existence of social structures, events, objects and experiences, shaping the overall data collection and interpretations.

Within the current study, my own ontological position is one of critical realism. Critical realists believe that reality is stratified, and there are three domains of reality: the empirical, the actual and the real (Lundh, 2017). The empirical domain refers to the phenomena the individual directly experiences, the actual domain encompasses events that may or may not have been personally experienced, but still occur, and the real domain is concerned with the underlying mechanisms that generate such events, even if these mechanisms are not directly observable (Lundh, 2017). A key feature of critical realism is subjective realism, which suggests that an individual’s subjective experience, influenced by their social context, shapes how they experience and interpret an event. For the current study, this means that bullying experienced as a real event in a general sense will be experienced and interpreted differently to each respondent based on their social structures and context.

Epistemology

Epistemology is a branch of philosophy that is concerned with how knowledge is created (Matthews, 1993). Its focus is on theories, sources and limits of human knowledge, along with how knowledge is validated and justified. In a broader sense, epistemology is the focus on the general nature of knowledge and considers questions about how humans come to know and understand the world. Epistemological positioning relates to a researcher's stance or approach to epistemological questions (Matthews, 1993). An epistemological position is the stance a researcher takes in a debate regarding how knowledge is created, and this stance influences the researcher's methodological choices within research (Matthews, 1993).

My own epistemological position is a position of modified objectivity. This means that objectivity, i.e. the principle of maintaining impartiality, neutrality and detachment when conducting research, is valued, however there is additional knowledge that true objectivity is never fully achievable. This is because the researchers and participants are human, and therefore cannot fully eradicate perspectives, biases or positions that may influence the research process. Modified objectivity understands that humans cannot simply observe the world and acquire knowledge and instead, knowledge is understood as being socially produced, changeable and fallible (Tikly, 2015). From this stance, it is believed that knowledge held about social structures e.g. social roles and norms is subjective, relative and constructed by individuals.

The current study is grounding in existing theoretical frameworks related to peer and sibling bullying and their impact on adult outcomes. The research draws on existing literature that highlights the negative associations between childhood

bullying and mental health and wellbeing difficulties in adulthood. However, it is important to acknowledge that the subjective experience of the individuals who have experienced the bullying may differ, and social constructs such as sex, class, social norms and personal experience shape how bullying is perceived and its long-term effects. Therefore, whilst I am drawing on theoretical methods that offer a general understanding of the issues of bullying, it is also recognised that everyone's interpretation and experience of bullying are shaped by unique context and social environment.

Modified objectivity can therefore be understood in the current study as a balance between maintaining a consistent approach to data collection and acknowledging the individuality of the participants' experience. This means that whilst the study ensures consistency in the data collection process (surveys and interviews), the interpretation of responses remains inherently subjective.

Methodology

The methodology of a post-positivist approach is rooted in scientific method, but with an understanding that complete objectivity and absolute knowledge are not achievable (Wildemuth, 1993). Post-positivist research typically utilises quantitative approaches to better understand the complexities of human behaviour and the context in which the phenomena occur. The research design is structured to test hypotheses or research questions but also acknowledges that the results will not be causal. In post-positivism, hypotheses are developed based on existing theories and are tested with the understanding that not all variables can be controlled or measured perfectly.

In the current study, data, although not specifically collected with the intention of answering the questions in this study due to secondary nature, were collected using surveys, questionnaires and structured interviews, and whilst these are commonly understood as objective measurements, it is recognised that all measurements are potentially flawed due to human subjectivity and uncontrollable variables. Statistical methods including correlations and regression analyses were used to test hypotheses exploring relationships between the independent and dependent variables. However, as this study is rooted in post-positivism, it is understood that a hypothesis can be tested and potentially disproven, but can never be fully proven (Popper, 1972). Statistical techniques were used to assess significance of results, whilst also considering possibility of error or bias. It is recognised that controlling for potential confounding variables such as sex, socioeconomic status and ethnicity is important, however it is often impossible to account for all potential variables, particularly those related to subjective human experience. Statistical controls such as multiple regression analysis including predictor variables are employed, however, it is recognised that potential bias is always present in the research process. When using regression analyses, it is recognised that these techniques can analyse relationships between bullying and mental health and wellbeing, however, I am continuously mindful not to draw overly simplistic or deterministic conclusions.

Researcher position statement

Researchers using a post-positivist approach emphasise critical reflexivity, i.e. the practice of being consciously aware of and critically reflecting on how the researchers own personal biases, values, assumptions and social identity influence the research process. Critical reflexivity is important at every stage of the research

process and helps researchers to acknowledge their perspective is always shaped by social context, history and experiences, and the way they make sense of this may impact their research.

Within this study my own experience of working with adults with mental health difficulties and witnessing the negative effects of both peer and sibling bullying has led them to hold a bias that bullying negatively affects mental health. Without reflecting on this preconceived understanding of bullying and mental health, I would have limited the study to only investigating the negative impact of bullying; however, having an awareness of this bias has allowed me to widen this perspective by including dependent variables associated with wellbeing including satisfaction with life and positive self-view to allow for a more holistic understanding of how bullying interacts with adult outcomes. Although recognising this bias differentiated study design, it is also recognised that my own assumptions about bullying influenced the choice of measures within the study and there are limits to the ability to investigate more nuanced experiences of individuals who may have different coping mechanisms or interpretations of bullying.

The current study utilises secondary data and therefore issues of researcher identify and power dynamics in data collection are difficult to explore within this context. The use of secondary data means that the researcher's sex, race, age or professional background have not influenced how the participants responded to questions, however there is little control over how the characteristics of the person collecting the data may have interacted. Secondary data also reduces risk of power dynamics with participants, and the school aged children responding to the questions were considering an array of different topics for research, not only their bullying experience. This leaves me curious about whether this would have differentiated

children's responses had they of had an awareness their responses would be used specifically for bullying research.

When interpreting bullying experiences using quantitative data, the theoretical lens of the researcher can influence the emphasis they put on certain results. Within this study my own lens of bullying being harmful means I need to be more mindful not to over emphasis the negative consequences of bullying to align with my own personal stance. Instead, the I seek to be mindful to reflect that although some people may experience negative effects of bullying, this will not be the experience for all, and some may even experience positive outcomes such as resilience. The study also looks at the long-term effects of bullying, and I am mindful that bullying may have a short-term negative effect, however this may not last in the same extent they have witnessed through their work and personal experiences, which will not be captured in this study.

Finally, I am approaching the research as a White British female and understands there are likely to be social, cultural and environmental factors that influence my own lens, and the lens of their participants. Data was collected across the UK between 2009 and 2024 and throughout this time there have been several economic, cultural and environmental changes that likely influence how participants respond and how bullying is perceived. The data used for child responses is across the school transition (typically occurring in the UK at age 11years). The decision to use this time is rooted in existing research, however my own bias of this being a significant period of change for children also influenced the decision. This may influence the results and significance of long-term effects of bullying.

Design

Data for the current study were sourced from the main survey of the United Kingdom Household Longitudinal Study (UKHLS). The UKHLS is a large-scale, longitudinal survey that collects information to capture change in household and individual circumstances. The data are from a household panel study, meaning the study interviewed and followed everyone in a household to see how different generations experience life in the UK and can source information about parents, children, siblings, wider families and community systems. The data are collected in waves, with wave 1 starting in 2009 and capturing approximately 40,000 households across the UK. The same households are sampled in each wave. Households were chosen using a stratified random sampling method which ensured participants were representative of different geographical areas and demographic characteristics.

Each wave spans across two years, with a new wave starting annually e.g. wave 1 2009-2011, wave 2 2010 – 2012. This allows for continuous data collection for participants, making it possible to study both short-term and long-term changes of people living in the UK. The survey spans across all four countries within the UK (England, Ireland, Wales, Scotland) allowing for comparison of people's experiences under different policy contexts. The study is multitopic, meaning it covers a range of social, economic and behavioural factors. Some core questions such as demographics and employment status are repeated in all waves, whereas other supplementary questions (such as health related information) are rotated and only asked in specific waves. The main survey covers many topics including employment and income, health and wellbeing, relationships and more. Each wave has an adult questionnaire completed by those over the age of 16years, and youth questionnaires that are designed for people aged 10-15years.

Every year, participants complete their questionnaire in either a face-to-face interview, or online questionnaire. Adults typically complete an interview, whereas children aged 10 to 15years have a paper-based questionnaire with questions appropriate for their age group. For children under the age of 10, parents or caregivers answer questions about their child. The interviews predominantly took place within a participant's home, with only a small proportion participating via telephone or online interviews. However, following the Covid-19 pandemic and during Wave 11 (January 2019 to May 2020), all face-to-face interviews were suspended in line with the UK government lockdown restrictions. During this time, all interviews were moved online or via telephone. Following this, many interviews have remained online or via telephone. Despite Covid-19 speeding up the process of multiple modes of data collection, this process was already developing in hopes of reducing survey attrition (Lynn et al., 2023). Although there were some concerns regarding data quality after this shift, research has shown response quality and break-off rates did not vary between devices (Maslovskaya et al., 2023), therefore supporting multiple modes of data collection.

Sample

The UKHLS is made up of four main samples: The British Household Panel Survey original sample (BHPS), the General Population Sample (GPS) including the original 26 000 households sampled in 2009 when UKHLS began, the Ethnic Minority Boost sample (EMB) first introduced in 2009 and, the Immigrant and Ethnic Minority Boost sample (IEMB) recruited in 2014-2016 (Lynn et al., 2023). Over the years, the response rate for each sample has decreased (Figure 1). In wave 12 (2020-2022) 37.1% of the GPS and 22.3% of the EMB samples remained from the original samples in wave 1 (2009-2011). Attrition rates are known to vary marginally

by sex, age, ethnicity and income, and EMB and IEMB boost samples have notably lower response rates over time compared to GPS (Lynn et al., 2023). The UKHLS make ongoing efforts such as incentives, and reminders to capture a representative sample and reduce attrition rates.

The current study utilises bullying data from the youth questionnaires designed to capture responses of young people aged 10 – 15. Within the UKHLS, bullying responses are treated as supplementary information, and therefore questions are asked in rotation as opposed to year on year. Bullying questions in the youth questionnaire are asked biannually, meaning responses are available in odd waves. Youth questionnaires were used to understand peer and sibling bullying responses, as well as whether a child has a sibling. In the current study, the youth data was merged with household data to determine household income and poverty status. The study also utilised responses from adult questionnaires relating to psychological distress, satisfaction with life, and view of self. This information was merged with the youth data to allow for exploration of longitudinal associations between childhood bullying and mental health and wellbeing.

Eligibility

Only participants that had a sibling living at home with them during the time of completing the survey at age 10 were eligible to participate in the current study. This eligibility criterion was chosen because the study sought to understand interactions between peer and sibling bullying and mental health and wellbeing, therefore those without siblings would likely have a different experience. A total of 3700 10-year-olds with siblings completed the survey containing questions about peer and sibling bullying experiences between waves 1 and 13, however, due to the longitudinal nature of the research, the study required those 10-year-olds to have also completed

the questionnaire again at age 12 and the adult questionnaire age 17. This was because the study aimed to understand correlations between bullying behaviours over the school transition age (age 10 to age 12) and mental health and wellbeing in later life (age 17).

Measures

Predictor variable: Peer and sibling bullying experience. Bullying experience was determined by an amalgamation of variables relating to peer and bullying experiences. Questions such as ‘how often do you hit, kick or push your sibling?’ were scored on a four-point Likert scale to indicate the frequency a young person was exposed to the bullying (0 never, 1 not much, 2 quite a lot, 3 a lot). Table 6 shows the eight sibling bullying questions and the four peer bullying questions asked to youths in the study at age 10 and age 12. Frequency of peer and sibling bullying was dichotomised according to guidance in Sharp et al (2021). In line with this guidance, responses ‘never’ and ‘not much’ were coded as 0-uninvolved, and responses ‘quite a lot’ and ‘a lot’ were coded as 1-involved. Uninvolved is representative of youths who were not directly affected by peers or sibling perpetration or victimisation, and therefore youths that may have been indirectly affected in the position of bystander or defender are also captured within this group. This was repeated for perpetration and victimisation for both peer and sibling bullying at age 10 and 12.

The dichotomised peer and sibling bullying scores were then used to create bullying transition variables. Involvement scores at age 10 and 12 were combined to create the following transition categories: consistently low (uninvolved at 10 and 12), increasing (uninvolved at 10, involved at 12), decreasing (involved at 10, uninvolved at 12) and consistently high (involved at 10 and 12). This was repeated for peers and

sibling bullying, however due to the limited sample size in the increasing and decreasing groups, the two were combined into an overall moderate variable that reflected being bullied at either 10 or 12.

For bullying role, the dichotomised scores were further categorised to identify whether participants were uninvolved, victim-only, bully-only or bully victims in peer and sibling bullying. This categorisation was repeated at age 10 and 12.

Dummy variables were created for each peer and sibling bullying transition and role to be used in the regression analyses. Interaction effects between peer and sibling bullying transitions were created using these dummy variables, however not all interaction terms were possible due some variables containing empty cells with participants not reporting that experience. The following interaction terms were not possible due to variables containing empty cells: low peer*low sibling, low peer*moderate sibling, low peer*high sibling, moderate peer*high sibling, high peer*high sibling. This left the following interaction terms that were used in the regression analysis: moderate peer*low sibling, moderate peer*moderate sibling, high peer* low sibling and, high peer*moderate sibling.

Table 6

Peer and sibling bullying questions asked at age 10 and 12

Variable	Population	UKHLS waves
How often do siblings hit, kick or push you?	Youth	1, 3, 5, 7
How often do siblings take belongings from you?	Youth	1, 3, 5, 7
How often do siblings call you nasty names?	Youth	1, 3, 5, 7
How often do siblings make fun of you?	Youth	1, 3, 5, 7
How often do you hit, kick or push your sibling?	Youth	1, 3, 5, 7

How often do you take belongings from siblings?	Youth	1, 3, 5, 7
How often do you call siblings nasty names?	Youth	1, 3, 5, 7
How often do you make fun of siblings?	Youth	1, 3, 5, 7
How often are you physically bullied at school?	Youth	1, 3, 5, 7
How often are you bullied in other ways at school?	Youth	1, 3, 5, 7
How often do you physically bully others at school?	Youth	1, 3, 5, 7
How often do you bully others in other ways at school?	Youth	1, 3, 5, 7

Note: all questions were scored 0 (not at all) to 3 (a lot)

Outcome variable: Psychological distress (GHQ-12). The GHQ-12 was used to measure psychological distress at age 17. The GHQ-12 is a brief screening tool that is used to assess an individual's mental health and detect psychological distress. The questionnaire includes 12 items that focus on aspects such as mood, anxiety, sleep and social functioning within the past week. Participants rate each item on a four-point Likert scale (0 not at all, 1 no more than usual, 2 rather more than usual, 3 much more than usual). The total score ranges from zero to 36, with higher scores indicating greater psychological distress. Research suggests that when using the Likert scoring method as with the current study, a cut off score of 11/12 yields the best specificity (77.4%) and sensitivity (78.9%) in identifying people who would meet criteria for a clinical diagnosis of mental health difficulties (Goldberg et al., 1997). In the current study, the total score was used as a continuous scale, where higher scores indicated greater psychological distress. The GHQ-12 scores in the current study were taken from the adult questionnaire in wave 8, 10, 12 and 14. Cronbach alpha .90, indicating excellent internal consistency with all 12 items being highly correlated and assessing the same underlying concept of psychological distress.

Outcome variable: Satisfaction with life. This variable arose from four variables asked in the adult questionnaire relating to satisfaction with health, income, leisure time and life overall. Table 7 shows the wording for each question. Participants were asked to rate each item on a seven-point Likert scale from 1 (completely dissatisfied) to 7 (completely satisfied). Scores from each question were standardised using descriptive statistics and showed good internal consistency (Cronbach Alpha = .84). An overall composite score was then created by aggregating the mean scores of each item to create a continuous overall satisfaction with life score (Patalay & Fitzsimons., 2016).

Table 7

Life satisfaction questions asked at age 17

Variable	Population	UKHLS waves
Satisfaction with health	Young adults, adult	8, 10, 12, 14
Satisfaction with income	Young adults, adult	8, 10, 12, 14
Satisfaction with amount of leisure time	Young adults, adult	8, 10, 12, 14
Satisfaction with life overall	Young adults, adult	8, 10, 12, 14

Outcome variable: View of self. This variable was derived from eight variables that related to a participants view of themselves and their abilities at age 17. Questions such as ‘I feel I have a good number of qualities’ were rated on a four-point Likert scale (1 strongly agree, 2 agree, 3 disagree, 4 strongly disagree). Table 8 shows the eight questions that were asked in the UKHLS questionnaire to create these scales. Initially, items 2, 3, 7 and 8 were reverse coded to ensure all items

were in the same direction to complete a Principal Component Analysis (PCA). Scores were standardised using descriptive statistics and the PCA revealed two underlying components. Component one explained 50.38% of the variance (36.18% after rotation) and had factor loadings ranging between .75 and .86. Component two explained 17.23% (31.43% after rotation) and had factor loadings between .72 to .79. Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy had a value of .86 and a significant result for Bartlett's Test ($p < .001$), indicating the data are suitable for factor analysis as the variables were sufficiently correlated to perform the analysis effectively. Components one and two were retained, with component one representing negative self-view (Cronbach alpha = .87), and component two representing positive self-view (Cronbach Alpha = .79).

Table 8

Variables for view of self, asked at age 17

Variable	Population	UKHLS waves
I feel I have a number of good qualities	Young adults, adult	8, 10, 12, 14
I do not have much to be proud of	Young adults, adult	8, 10, 12, 14
I feel useless at times	Young adults, adult	8, 10, 12, 14
I am as able as most people	Young adults, adult	8, 10, 12, 14
I am a likeable person	Young adults, adult	8, 10, 12, 14
I can usually solve my own problems	Young adults, adult	8, 10, 12, 14
I am inclined to feel like a failure	Young adults, adult	8, 10, 12, 14
At times I feel I am no good at all	Young adults, adult	8, 10, 12, 14

Note: Scores were rated on a 4-point scale where higher scores indicate greater agreement with the statement.

Covariates

The covariates chosen to be included in the regression analyses were selected based on findings from the systematic literature review included in this study regarding bullying during the school transition. Variables were also selected based on availability in the UKHLS dataset.

Sex has frequently been reported as a factor interacting with bullying experiences. Girls have been shown to experience decreases in bullying at the time of the school transition compared to boys (Fujikawa et al., 2020). In addition, sex differences have been found in the relationship between bullying and mental health difficulties (Williams et al., 2017). In the current study, participant sex was taken from a derived variable that collates information from multiple sources to consistently represent the sex of participants. Sex was coded 1 for male and 2 for female. Dummy variables were then created for sex where one was included in the analysis, and the other used as a reference group.

Ethnicity has further been cited as differentiating bullying experiences at school transition age (Monachino et al., 2021) and mental health (Xu et al., 2010). Within the current study, ethnic groups were derived from multiple sources such as self-reported adult, youth, household responses and ethnic group of biological parents. Participants chose from 18 ethnic groups, however due an underrepresentation of many ethnic groups, data was dichotomised in to ‘British’ and ‘non-British’ based on responses. It is recognised that this process risks oversimplifying ethnic identity and limits the ability to capture richness in diversity along with unique experiences within each group.

Socioeconomic status (SES) was a further covariate in the current study taken at age 10. Previous research has shown that young people from poorer

backgrounds were more likely to experience victimisation at the point of school transition (Brendgen et al., 2016). In the current study, SES was assessed using equivalized household income, calculated by dividing net household income by the modified OECD (Organisaiton for Economic Co-operation Department, 2013) equivalence scale. The poverty status of participants was also included as a marker of SES, with families who had an income that was lower than 60% of the median income level classified as 1- in poverty and those above 0- not in poverty. Both assessors of SES were included in the analysis as although they are often recognised as being closely related, poverty status reflects the state absolute deprivation (less access to food, shelter etc.), whereas household income captures the comparison of resources between individuals or groups, which can vary greatly even in households above the poverty line (Chen et al., 2015). The inclusion of both in the current research allows exploration of how deprivation and relative resources are associated with bullying and mental health outcomes. There was a significant negative correlation between household income and poverty status, $r = -.28$, $p < .01$, indicating that the association is moderate. This suggests that household income and poverty status capture related but distinct aspects of socioeconomic status. Therefore, both variables were retained to examine their unique contributions.

Statistical Analysis

All analyses were conducted using SPSS v29.Frequencies of the dichotomised peer and sibling bullying involvement and role were used to describe the prevalence of roles and trajectory of bullying across the school transition. Correlation analysis was conducted prior to the main analysis to allow for a quick overview of relationship between study variables and check for multicollinearity.

Descriptive statistics (mean and standard deviation) for key study variables separated by male and female.

The statistical analysis sought to address three aims of the study. The first was to understand associations between peer and sibling bullying involvement at age 10 and 12. Peer and sibling bullying involvement at age 10 and 12 are categorical variables (0 uninvolved, 1 involved) therefore, Chi-squared tests of independence were used to determine if there was a significant relationship between the two at age 10 and 12. . The second aim of the study was to understand the associations between peer and sibling bullying roles (victim only, bully only, bully-victim) across the school transition. Peer and sibling bullying roles are also categorical variables, however they have more than two categories (victim only, bully only, bully-victim), therefore multinomial logistic regressions were conducted to explore these associations. This analysis was only possible for sibling bullying due to few participants reporting experiences of these roles in peer bullying. Uninvolved in bullying was used as the reference category and the analysis was adjusted for participant sex, ethnicity and household income and poverty status at age 10.

Finally, the third aim of the study was to understand how different trajectories of peer and sibling bullying across the school transition associate with mental health and wellbeing in adolescence. To address this aim, multiple hierarchical regression models were used. The dependent variables were continuous variables measuring life satisfaction, positive self-view, negative self-view and psychological distress at age 17. The independent variables were categorial variables of peer and sibling bullying exposure across the school transition (consistently low, moderate, consistently high). At block one, the independent variables of peer and sibling bullying trajectory were entered. At block two, interaction terms between peer and

sibling bullying trajectory were entered. Finally, at block three control variables including poverty status and household income at age 10, sex and ethnicity were entered. Control variables were entered at the final stage to allow for an initial assessment of the variable explained by the peer and sibling bullying trajectories without statistical adjustment. This approach also allowed evaluation of the robustness of peer and sibling bullying effects once the model had adjusted for covariates.

Missing data across the four outcome variable responses at age 17 ranged from 5% to 8.3%. Rates of missingness in peer and sibling bullying reports ranged from 1% to 7% at age 10 and 1.2% to 3% at age 12. As these missing values are generally considered to be small, mean imputation was used to handle all missing data. Mean imputation assumes data is missing at random (MAR) and was completed prior to dichotomising independent variables. This method allows for sample retention and ensures a valid and consistent basis for categorisation. It is recognised that mean imputation has some limitations due to risk of introducing or increasing potential bias such as reduction in variance or distortion of relationships; however, as the rate of missingness in the study was below 10%, it is unlikely that mean imputation would distort the overall distribution of the data significantly. Alternative methods such as multiple imputation may be useful when rates of missingness are higher than 10% (Field, 2014).

Ethical issues

The University of Essex Ethics Committee has approved all data collection on Understanding Society main study, COVID-19 surveys and innovation panel waves, including asking consent for all data linkages except to health records. Participants provided informed consent upon entering the UKHLS. Additional ethical approval

was not required for the current study due to the nature of secondary data analysis. The full ethical approval statement for the UKHLS data can be found here: https://www.understandingsociety.ac.uk/documentation/mainstage/user-guides/main-survey-user-guide/ethics/.

The data was downloaded from the UK Data Archive and was stored and analysed on a password protected laptop that was stored within a private residence. Antivirus software on the laptop was updated regularly and all data remained on the laptop. Each participant had a unique identification number provided throughout each wave, and therefore no identifiable information was provided or needed for this analysis.

Dissemination

This research was conducted for a thesis submission for the Doctorate in Clinical Psychology at the University of Essex. The research will be uploaded to and openly available to Essex university students online via the University of Essex Research Repository. The department of Health and Social care at the University of Essex holds an annual conference at which a poster and presentation of preliminary stages of this research have already been presented at. The full research will be presented at the next Health and Social care annual conference in June 2025. The research will also be shared with the Understanding Society forums.

This research may be of interest to NHS Children and Adolescent Mental Health Services (CAMHS), particularly if they regularly encounter children experiencing bullying by peers and/or siblings. In addition, schools and charities that support families and friendships may be interested in the findings of this study to inform their service. Finally, the research may be of interest for publication in peer

reviewed journals or for presentation in national or international conferences such as those held by the British Psychological Society (BPS), NHS or World Anti-Bullying Forum.

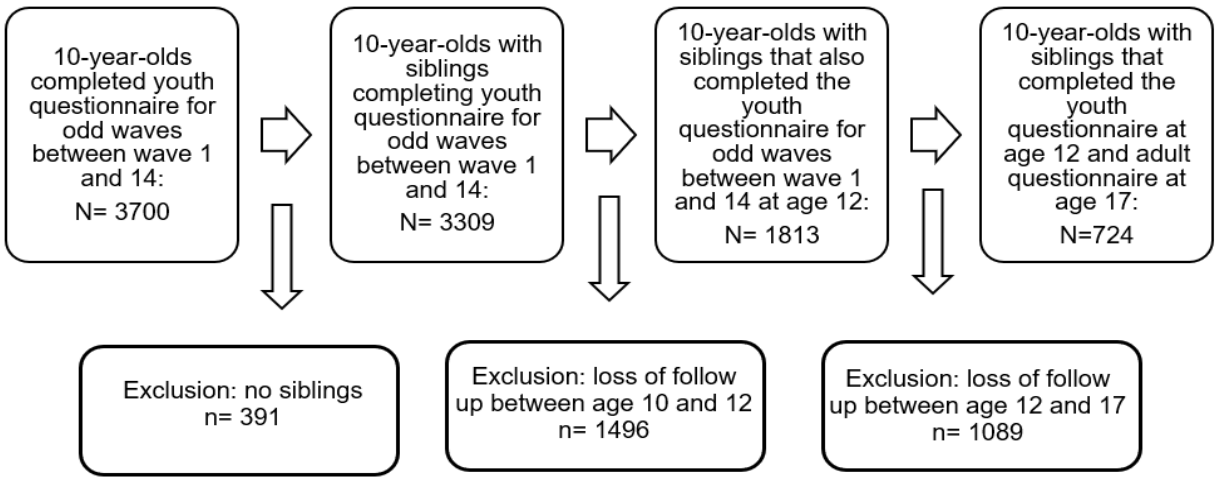
Chapter 4: Results

Participants

Of the 3700 children who completed the youth questionnaire aged 10between waves 1 and 14, only 724 had available data at age 10, 12 and 17. Attrition was the main reason for reduction in sample size. Due to the longitudinal nature of the study following a cohort of age 10 to age 17, the youth data in the final sample was representative of youths aged 10 and 12 between 2009 to 2019 (waves 1, 3, 5, 7, 9) and 17 between 2016 to 2024 (waves 8, 10, 12, 14). The final sample consisted of 51.4% female vs 48.6% male, 28% non-British vs 72% British and 87.7% not in poverty vs 12.3% in poverty. All 724 participants had at least one sibling at the time of responding to the youth questionnaires. Figure 2 shows a flow diagram of sample inclusion.

Figure 2

Flow diagram of study participant selection from original sample to final sample.



Prevalence of peer and sibling bullying

At the age of 10, 30% of youths in the final sample reported being involved with sibling bullying (victim only 14.1%, bully only 3.7%, bully-victim 12.2%) and 6.2% were involved with peer bullying (victim only 6.1%, bully only 0.1%, bully-victim 0%). At age 12, 29.8% of youths reported being involved in sibling bullying (victim only 14.8%, bully only 2.1%, bully-victim 13%) and 5.6% were involved with peer bullying (victim only 5%, bully only 0%, bully-victim .6%).

Prevalence of peer and sibling bullying roles in the final sample (n= 724) was compared to that of those lost in follow up taking responses from their questionnaires when they were age 10 (n= 2585) using Crosstabs with Chi-Square Test. Table 9 shows the results of the Crosstabs with Chi-Square Test. The findings reveal that there were no significant differences between peer and sibling bullying roles in the final sample compared to those lost in follow up. This suggests that sample attrition was not systematically associated with these key variables.

Table 9

Crosstabs with Chi-Square Test comparing bullying roles of participants in final sample to those lost in follow up.

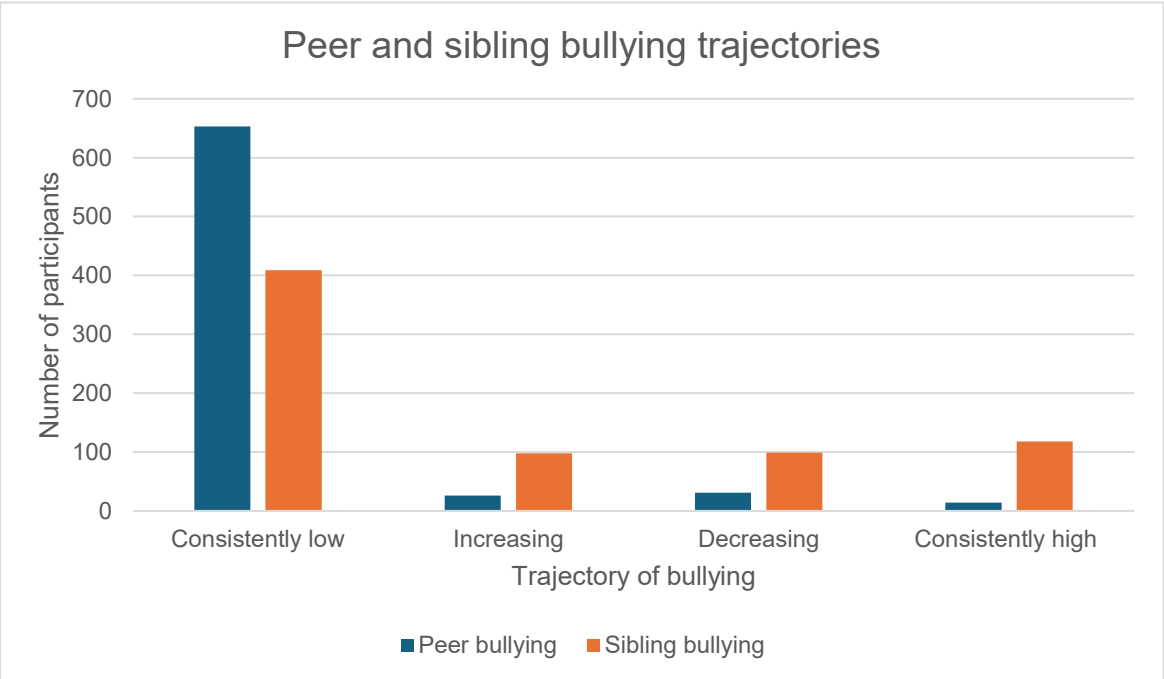
Variable	χ^2	df	*p* value	N (valid)
Sibling Victim	0.72	2	0.39	3309
Sibling Bully	0.35	1	0.55	3309
Sibling Bully-Victim	1.65	2	0.44	3309
Peer Victim	0.19	1	0.66	3309

Peer Bully	1.29	1	0.26	3309
Peer Bully-Victim	0.04	2	0.98	3309

Figure 3 shows the trajectories of overall peer and sibling bullying over the school transition. For consistently low trajectory of bullying, 56.5% of sibling bullying and 90.2% peers reported low or no involvement in bullying at time one and time two. For an increasing trajectory, 13.5% siblings and 3.6% peers reported bullying low or no involvement at time one and involved at time two. Decreasing bullying was characterised by being involved at time one, and low or no at time two, with 13.7% siblings and 4.3% peers reporting this trajectory. Consistently high bullying was characterised by involvement in bullying both at time one and time two, with 16.3% siblings and 1.9% peers reported consistently high bullying over the school transition.

Figure 3

Trajectory of peer and sibling bullying across school transition age.



Descriptive statistics

Table 10 shows descriptive statistics for key study variables for males and females. A correlation R-matrix for study variables is shown in table 11. Although there are significant correlations between predictor variables, none of the variables had an r value greater than 0.5, indicating minimal concerns for multicollinearity between variables (Field, 2014). Kolmogorov-Smirnov tests revealed that assumptions of normality were not met for all continuous dependent variables within the study as each was shown to be significantly non-normal ($p < .001$). However, central limit theorem suggests that in larger samples ($N > 50$), the sampling distribution of the mean will approximate a normal distribution, even if the raw data is not normally distributed (Field, 2014). Further studies have conducted research into comparisons between standard errors produced using central limit theorem and non-parametric bootstrapping techniques, revealing both methods accurately estimated true standard errors in larger sample sizes (Nixon et al., 2010). Therefore, the current study will proceed with parametric testing due to the large sample size ($N = 724$).

Descriptive statistics for the data revealed small sample sizes within peer bullying groups for males and females, as well as increasing and decreasing experience groups. As a result, the main analysis will combine increasing and decreasing bullying groups into ‘moderate’ bullying category that will indicate a person was bullied at either T1 (before the school transition) or T2 (after the school transition), but not both. Interaction terms for sex and bullying group will be explored to allow for direct testing of whether there is a relationship between bullying status and outcome variables by sex.

Table 10

Descriptive statistics for peer and sibling bullying experiences aged 10 to 12years over the school transition and overall psychological distress, negative self-view, satisfaction with life and positive self-view by sex aged 17years.

	Sibling bullying				**Peer bullying**			
	Males		**Females**		**Males**		**Females**	
	n	***%***	***n***	***%***	***n***	***%***	***n***	***%***
Consistently low	204	58	205	55.1	310	88.1	343	92.2
Increasing	35	9.9	63	16.9	19	5.4	7	1.9
Decreasing	52	14.8	47	12.6	14	4.3	16	4.3
Consistently high	61	17.3	57	15.3	8	2.3	6	1.6
Uninvolved age 10	239	67.8	268	72	329	93.5	350	94.1
Victim only age 10	55	15.6	47	12.6	22	6.3	22	5.9
Bully only age 10	15	4.3	12	3.2	1	.3	0	0
Bully-victim age 10	43	12.2	45	12.1	0	0	0	0
Uninvolved age 12	256	72.7	252	67.7	325	92.3	359	96.5
Victim only age 12	37	10.5	70	18.8	23	6.5	13	3.5
Bully only age 12	5	1.4	10	2.7	0	0	0	0
Bully-victim age 12	54	15.3	40	10.8	4	1.1	0	0

	Males			**Females**		
	M	***SD***	***n***	***M***	***SD***	***n***
Psychological Distress	11.69	6.38	352	14.12	6.77	372
Satisfaction with life	5.41	1.21	352	5.09	1.17	372
Positive self-view	1.85	0.51	352	1.94	0.46	372
Negative self-view	2.93	0.73	352	2.74	0.63	372

Note: Psychological distress scale 0-36, satisfaction with life scale 0-7, positive and negative self-view scale 0-4. M: Mean, SD: Standard Deviation.

Table 11

Correlation R matrix for all independent and dependent variables.

	Sibling Low	Sibling increasing	Sibling decreasing	Sibling high	Peer Low	Peer increasing	Peer decreasing	Peer high	Satisfaction with Life	Positive self-view	Negative self-view	Psych Distress	Household income	Sex	Poverty Status	Ethnicity
Sibling Low	--															
Sibling increasing	-.451**	--														
Sibling decreasing	-.454**	-.157**	--													
Sibling high	-.503**	-.175**	-.176**	--												
Peer Low	.226**	-.100**	0.037	-.244**	--											
Peer increasing	-.115**	.141**	-.077*	.096**	-.585**	--										
Peer decreasing	-.145**	0	0.035	.165**	-.641**	-0.041	--									
Peer high	-.120**	0.03	-0.027	.155**	-.426**	-0.027	-0.03	--								
Satisfaction with Life	.113**	-0.05	0.008	-.111**	.149**	-.079*	-.120**	-0.039	--							
Positive self-view	-.112**	0.04	0.026	.085*	-.135**	0.062	.103**	0.056	-.401**	--						
Negative self-view	0.07	-0.06	0.061	-.095*	.120**	-0.06	-0.072	-.073*	.433**	-.530**	--					
Psych Distress	-.076*	0.02	-0.063	.147**	-.119**	.078*	0.036	.099**	-.460**	.453**	-.575**	--				
Household income	0.04	0.03	-.092*	-0.002	0.015	-0.009	0.032	-0.069	0.036	-0.01	0.02	-0.018	--			
Sex	-0.03	.102**	-0.031	-0.027	0.07	-.094*	0.001	-0.024	-.128**	.090*	-.133**	.181**	-0.009	--		
Poverty Status	-0.01	0.01	0.035	-0.029	-0.032	-0.027	0.025	0.07	0.014	-0.04	0.007	-0.044	-.280**	0.028	--	
Ethnicity	-.083*	-0.02	0.06	.076*	-0.03	0.005	0.011	0.043	0.01	.140**	-0.061	0.042	.146**	-0.029	-.263**	--

*$p < .05$ ** $p < .01$ *** $p < .001$

Examining associations between peer and sibling bullying at age 10 and 12.

It was hypothesised that there would be a significant association between peer bullying involvement (uninvolved, involved) at age 10 (before the school transition) and age 12 (after the school transition) and sibling bullying involvement at the same age. Chi-Squared tests of independence were conducted to examine the cross-sectional relationship between peer bullying involvement (uninvolved, involved) and sibling bullying involvement (uninvolved, involved) both at age 10 and 12.

The results of the chi-squared test of independence for bullying before the school transition indicated a significant association between peer bullying at age 10 and sibling bullying at age 10, X^2 (1, N = 724) = 27.17, p < .001. The effect size, Cramér's V = .19, suggests the association between the two forms of bullying at age 10 is small to medium. Further, the chi-squared test of independence for the two forms of bullying after the school transition also indicated a significant association between peer and sibling bullying involvement at age 12, X^2 (1, N = 724) = 27.17, p < .001. The effect size remained small to medium (Cramér's V = .24), but the association was slightly stronger at age 12 than at age 10. These results suggest that involvement in peer bullying before and after the school transition is associated with involvement in sibling bullying at the same age, indicating the likelihood of being involved in one type of bullying (peer or sibling) at age 10 and 12 differs based on the involvement in the other at the same age.

It was further hypothesised that there would be a significant association between peer and sibling bullying roles across the school transition, with bullying roles at age 10 (victim-only, bully-only, bully-victim) being associated with bullying roles at age 12 for both peer and sibling bullying, and these associations would differ

by sex. However, due to a low number of participants reporting experience of the role peer bully-only or bully-victims at age 10 and 12, it was not possible to assess these associations between these roles within peer bullying. Instead, sibling bullying roles at age 12 (victim-only, bully-only, bully-victim) were modelled by sibling bullying roles at age 10 using a multinomial logistic regression.

A multinomial logistic regression was conducted to examine association of sibling bullying roles at age 10 (victim-only, bully-only, bully-victim) and sibling bullying roles at 12 (victim-only, bully-only, bully-victim), with uninvolved as a reference category. Peer bullying involvement at age 10 (uninvolved, involved), sex (male, female), ethnicity (British, non-British) and poverty status age 10 (in poverty, not in poverty) were included as covariates. Results showed the model was statistically significant, X^2 (21) = 137.06, $p < .001$. The -2 Log Likelihood statistic decreased from 389.82 for the intercept to 252.76 for the final model suggesting that the predictors explained a significant portion of the variance in sibling bullying roles at age 12, with the final model explaining 21% of the variance in sibling bullying roles at age 12 (Nagelkerke R^2= .21). Table 12 shows the results of the multinomial logistic regression.

Table 12

Results of Multinomial Regression showing factors associated with the likelihood of sibling bullying roles at 12.

	Sibling Bullying Roles at age 12		
	Victim-only	**Bully-only**	**Bully-Victim**
	Exp(B) (CI, 95%)	*Exp(B) (CI, 95%)*	*Exp(B) (CI, 95%)*
Sex (Female)	2.21 (1.39, 3.51)***	2.28 (.755, 6.88)	.825 (.514, 1.33)
Sibling Victim-Only at 10	5.24 (3.02, 9.09)***	2.61 (.519, 13.16)	5.45 (2.93, 10.17)***
Sibling Bully-Only at 10	.824 (.180, 3.77)	6.54 (1.22, 34.97)*	3.996 (1.47, 10.85)**
Sibling Bully-Victim at 10	2.61 (1.32, 5.15)**	5.53 (1.48, 20.61)**	9.10 (5.03, 16.79)***
Peer bullying at age 10 (involved)	4.59 (2.12, 9.94)***	3.26 (.630, 16.84)	1.996 (.82, 4.86)
Poverty status (not poor)	.743 (.352, 1.53)	.486 (.059, 4.02)	.948 (.459, 1.96)
Ethnicity (British)	1.05 (.625, 1.77)	1.24 (.327, 4.67)	.921 (.530, 1.60)

Table shows odds ratio and confidence intervals at 95% *$p < .05$ ** $p < .01$ *** $p < .001$.
Reference category: uninvolved.

Sibling Victim Vs Uninvolved

Four predictor variables were significantly associated with sibling victim-only status at age 12. Results showed the strongest predictor of sibling victim status at age 12 was sibling victim status at age 10, with siblings of this status being 5.24 times more likely to be victims at age 12 compared to uninvolved (*Exp(B)* = 5.24, $p < .001$). Similarly, those with sibling bully-victim status at age 10 were 2.61 times more likely to be sibling victims at age 12 compared to uninvolved (*Exp(B)* = 2.61, $p < .01$), however this association was moderate and not as strong as that of sibling victim status at age 10. Sibling bully-only status at age 10 was not significantly associated

with sibling victim-only status at age 12 (*Exp(B)* = .82, *p* = .80). In addition, involvement in peer bullying at age 10 was strongly associated with sibling victim-only status at age 12, with those involved with peer bullying being 4.59 times more likely to be sibling victims compared to those uninvolved (*Exp(B)* = 5.59, *p* < .001). Finally, a moderate association with sex and victim status revealed that females were 2.21 times more likely to be sibling victims at age 12 compared to males (*Exp(B)* = 2.21, *p* < .001). Poverty status and ethnicity were non-significant predictors of sibling victim-only status at age 12.

Bully-only Vs Uninvolved

In contrast to sibling victim-only status at age 12, fewer predictors significantly associated with sibling bully-only status at age 12. The strongest association was found between sibling bully-only status at age 10, with siblings of this status being 6.54 times more likely to be a sibling bully-only at age 12 (*Exp(B)* = 6.54, *p* < .05). In addition, those with sibling bully-victim status at age 10 were 5.53 times more likely to have sibling bully-only status at age 12 (*Exp(B)* = 5.53, *p* < .01). This was also a strong association as indicated with the increased odds ratio, however the association had a stronger significance compared to bully-only status indicating bully-victim status at age 10 may be a more reliable contributor to the overall model, despite the lower odds. Peer bullying involvement at age 10, sibling victim-only status at age 10, sex, ethnicity and poverty status were non-significant predictors of bully-only status at age 12.

Bully-victim Vs Uninvolved

Sibling bully-victim status at age 12 was significantly associated with sibling bullying roles at age 10. The strongest association was found between sibling bully-

victim status at age 10 and sibling bully-victim status at age 12, with those in this status at age 10 being 9.19 times more likely to be bully-victims at age 12 (*Exp(B)* = 9.194, $p < .001$). In addition, a strong association between sibling victim-only status, with siblings in this status being 5.46 times more likely to be bully-victims at 12 compared to uninvolved (*Exp(B)* = 5.455, $p < .001$). Finally, a moderate association was found between sibling bully-only status at age 10 and, with sibling bully-only at age 10 being 4 times more likely to be bully-victims compared to uninvolved (*Exp(B)* = 3.996, $p < .01$). Peer bullying involvement at age 10, sex, poverty status at age 10 and ethnicity were non-significant predictors of sibling bully-victim status at age 12.

Overall, the findings reveal that sibling bullying roles at age 12 were predicted by different sibling bullying roles at age 10. In general, the strongest predictor of each sibling bullying role at age 12 was the same bullying role at age 10 (e.g. victim status predicted victim status), however the associations with other bullying roles, peer bullying involvement and sex had varying significance in each role.

The next section explores how different exposure to peers and sibling bullying over the school transition are associated with mental health and wellbeing outcomes at age 17. Exposure to peer and sibling bullying was inclusive of consistently low (uninvolved before and after), moderate (involved either before or after) and consistently high (involved before and after) exposures over the school transition age. Hierarchical regressions were used to model psychological distress, negative self-view, satisfaction with life and positive self-view. Step one introduced peer and sibling bullying exposures as above to the model, step two introduced interaction terms between peer and sibling bullying and step three introduced demographic covariates. Results from the full model at step three including all covariates simultaneously, are shown in table 13. The estimates reflect the unique effect of

each predictor after adjusting for all other variables in the model. The hierarchical modelling approach with stepwise entry of predictors can be found in Appendix 1.

Table 13

Full model of results showing the magnitude of the associations between peer and sibling bullying over the school transition and psychological distress, negative self-view, satisfaction with life and positive self-view aged 17years, adjusted for covariates (n=724).

	Psychological Distress	**Negative self-view**	**Satisfaction with life**	**Positive self-view**
	B (95% CI)	***B (95% CI)***	***B (95% CI)***	***B (95% CI)***
Siblings				
Consistently low	-.35 (-.58, -.13) **	.25 (.02, .53) *	REF	REF
Moderate	-.42 (-.67, -.17) **	.27 (.02, .48) *	-.08 (-.25, .10)	.10 (-.07, .28)
Consistently high	REF	REF	-.32 (-.55, -.09) **	.24 (.01, .46) **
Peers				
Consistently low	-.63 (-1.33, .08)	.18 (-.54, .89)	REF	REF
Moderate	-.56 (-1.34, .23)	.05 (-.75, .84)	-.26 (-.71, .20)	-.05 (-.50, .39)
Consistently high	REF	REF	-.14 (-.86, .57)	.84 (.14, 1.55) *
Interaction Peer*Siblings				
ModPeer*LowSib	.22 (-.46, .91)	-.39 (-1.08, .31)	-.34 (-1.03, .35)	.83 (.14, 1.51) *
ModPeer*ModSib	.42 (-.21, 1.06)	-.30 (-.94, .35)	-.41 (-1.05, .23)	.71 (.08, 1.35) *
HighPeer*LowSib	-.53 (-2.06, .99)	.33 (-1.21, 1.88)	.25 (-.30, 1.78)	-2.52 (-4.04, -.99) **
HighPeer*ModSib	.35 (-.85, 1.54)	-1.15 (-2.36, .07)	-.40 (-1.61, .81)	-.56 (-1.75, .06)
Covariates				
Sex=Male	-.39 (-.53, -.25) **	.28 (.14, .43) **	.28 (.14, .42) **	-.21 (-.36, -.07) **
Pov status = not poor	.10 (-.14, .33)	-.01 (-.25, .23)	-.13 (-.36, .11)	.07 (-.17, .30)

Ethnicity = British	.04 (-.13, .20)	-.13 (-.30, .04)	.05 (-.12, .21)	.28 (.11, .44) **
Household Income	.04 (-.03, .12)	.02 (-.06, .10)	.06 (-.02, .13)	-.04 (-.11, .04)

*$p < .05$ ** $p < .01$ *** $p < .001$

Note: This table shows estimates from the full model including all covariates. Hierarchical model steps are reported in appendix 1.

Modelling associations between peer and sibling bullying experiences across school transition age and mental health outcomes at age 17.

It was hypothesised that consistently low exposure to peer and sibling bullying across the school transition age, characterised by low or no exposure at time one (before the school transition) and time two (after the school transition) would be associated with lower psychological distress and lower negative self-view at age 17. It was further hypothesised that the association between one relational bullying exposure (peer or sibling) and mental health outcomes at 17 will be moderated by the other relational bullying exposure (interaction effect), such that the associations between sibling bullying and mental health will be stronger for those with consistently high exposure to peer bullying and vice versa.

The models revealed that in the first step, sibling and peer bullying exposure explained 3.1% of the variance in psychological distress (R^2 =.031, F (4,719) = 5.784, $p < .001$) and 2% of the overall variance in negative self-view (R^2=.020, F (4,719) = 3.591, $p < .001$). In the second step, interaction terms between peer and sibling exposures were added, however they did not significantly improve the model in psychological distress, ΔR^2 = .004, F (4,715) = .673, p = .611, or in negative self-view (ΔR^2 = .008, F (4,715) = 1.528, p = .192). This indicates that the hypotheses of peer and sibling bullying having a an interactive effect on psychological distress and negative self-view was not supported. The interaction term was not significant,

suggesting that the effect of one form of relational bullying does not depend on the level of the other.

Finally, in the third step, demographic covariates were included, which significantly increased the explanatory power of the model of psychological distress (ΔR^2 = .041, F (4, 711) = 7.985, p < .001) and negative self-view (ΔR^2 = .023, F (4, 711) = 4.266, p < .01). The addition of the covariates explained 7.6% of the variance in psychological distress, and 5.1% of the variance in negative self-view, indicating a stronger fit for socio-demographic factors in predicting psychological distress and negative self-view at 17 in addition to bullying exposure.

For sibling bullying, the model at step three revealed a significant negative association between consistently low (B = -.352, p < .01) and moderate (B=-.421, p < .001) exposure to sibling bullying over the school transition and psychological distress at age 17. These findings suggest that psychological distress scores are on average 0.352 units lower for consistently low exposed and 0.421 units lower for moderately exposed siblings compared to consistently high sibling bullying exposure. Both consistently low exposure and moderate exposure to sibling bullying each showed moderate associations with psychological distress at age 17. However, when standardised to represent psychological distress in standard deviations, the strength of the relationship between moderate sibling bullying and psychological distress when all other variables are held constant was slightly stronger (β = -.187) than the relationship with consistently low sibling bullying (β = -.175). This indicates that moderate exposure to sibling bullying has a slightly greater negative association with psychological distress relative to other predictors. These findings support the hypothesis that consistently low exposure to sibling bullying would be associated

with lower psychological distress, however, highlight that moderate exposure to sibling bullying is associated with the largest reduction in psychological distress.

However, in contrast, the model at step three revealed that when adjusted for covariates, consistently low (B = .246, p < .05) and moderate (B =.272, p < .05) exposure to sibling bullying was significantly associated with increased negative self-view scores. Specifically, the actual change in negative self-view was 0.246 units higher for consistently low bullied siblings, and 0.272 units higher for moderately exposed siblings compared to consistently high exposed siblings. Although each individual association was small, the findings revealed that the magnitude of the association in terms of standard deviation of negative self-view and relative to other predictors was only marginally different for consistently low exposed (β = .122) and moderately exposed (β = .121) siblings. The findings reveal that the hypothesis of lower levels of sibling bullying would be associated with lower negative self-view was not supported. Contrary to expectations, the results revealed that lower levels of sibling bullying during the school transition were associated with higher negative self-view at age 17. This suggests that in this sample, individuals who experienced lower levels of sibling bullying during school transition age reported more negative perceptions of themselves at age 17.

For peer bullying, the model at step one revealed that consistently low (B = -.603, p < .05) exposure to peer bullying at school transition age was significantly associated with lower psychological distress compared to consistently high exposure. The association between consistently low peer bullying was large suggesting that the actual change in psychological distress was .603 units lower for consistently low bullied peers compared to consistently high. However, after adjusting for covariates, consistently low (B =- .630, p = .08) and moderately

exposed (*B* = -.556, *p* = .164) peer bullying was no longer significantly associated with psychological distress. These findings suggest the hypothesis that lower exposures to peer bullying would be associated with lower psychological distress is supported, however psychological distress may be more strongly associated with demographic factors than peer bullying as peer bullying exposures were no longer significant after adjusting for covariates. In addition, peer bullying exposure in any form was not significantly associated with negative self-view in any of the models, indicating that the hypothesis that consistently low exposure to peer bullying would be associated with lower negative self-view was not supported. Contrary to expectations, peer bullying at any level was not significantly related to negative self-view.

The findings indicate that demographic covariates were significantly associated with both psychological distress and negative self-view at age 17, and the inclusion of them in the model significantly increased the overall explained variance of the models from moderate to good and strong fits. The result of the model at step three indicate that being male was significantly associated with lower psychological distress (*B* = -.387, *p* < .001) but higher negative self-view (*B* = .285, *p* < .001) compared to being female. These findings indicate a moderate association between males and psychological distress, where the actual change in psychological distress was .387 units lower for males. In addition, a small association between males and negative self-view indicates that the actual change in negative self-view was 0.285 units higher for males compared to females. The magnitude of the association relative to change in standard deviations in psychological distress (β = -.194) and negative self-view (β = .142) was stronger for males than all other predictors entered into the model at step three. However, further regression analysis exploring the

associations between sex, peer and sibling bullying and interaction effects revealed no significant interaction effect between sex and peer or sibling bullying exposure on psychological distress (ΔR^2 = .003, F (4,714) = .596, p = .666) or negative self-view (ΔR^2 = .006, F (4,714) = 1.114, p = .348). These results suggest that although sex was significantly associated with psychological distress and negative self-view, it did not moderate the association between peer or sibling bullying exposure and mental health outcomes at 17.

The model revealed that ethnicity, household income at age 10 and poverty status at age 10 did not significantly associate with psychological distress or negative self-view at age 17. Figure 4 shows the relative strengths of the associations, indicating how much psychological distress and negative self-view change for a one standard deviation change in each predictor variable. For categorical predictors, this reflects change in the dependent variable relative to the reference categories.

Figure 4

Relative strengths of associations of change in psychological distress and negative self-view relative to reference categories.

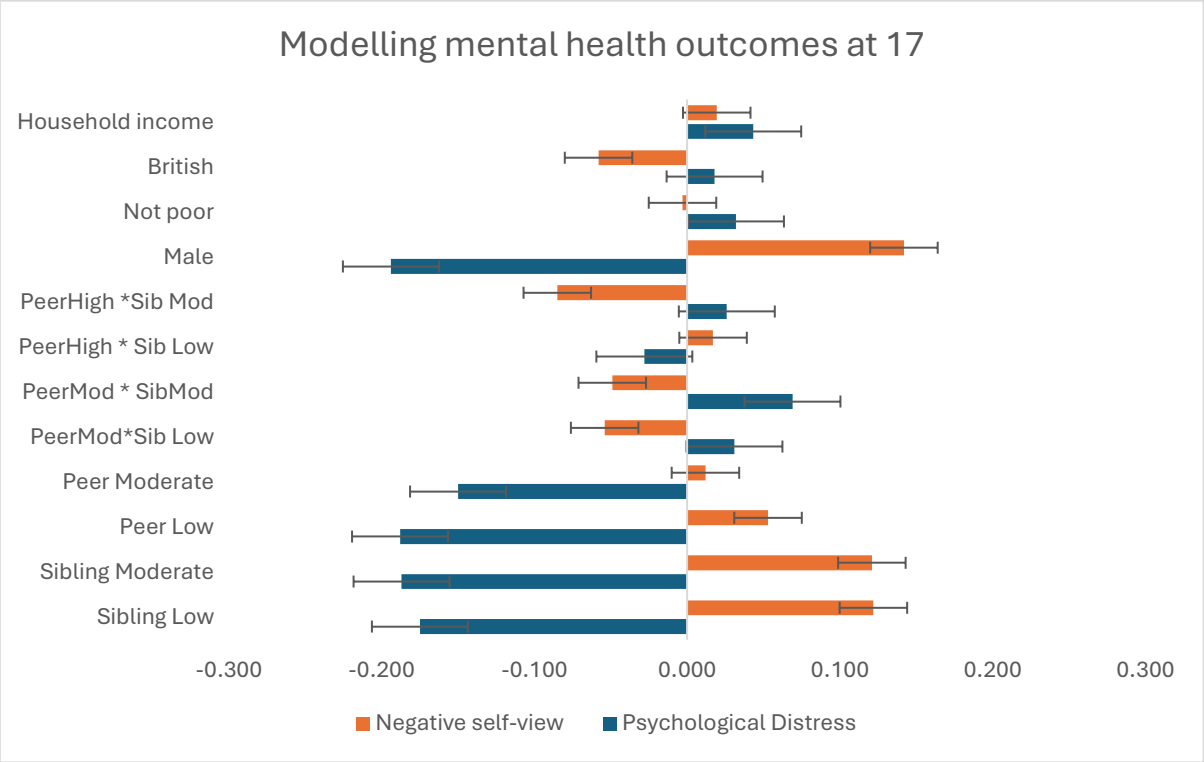


Figure 4 shows standardised coefficients for each predictor in the model at step three using a 95% confidence interval. Positive numbers indicate an increase in the outcome variable.

Modelling associations between peer and sibling bullying experiences across the school transition and mental wellbeing outcomes at age 17.

It was hypothesised that consistently high exposure to peer and sibling bullying across the school transition, characterised by exposure at time one (before the school transition) and time two (after the school transition) would be associated with low satisfaction with life and low positive self-view at age 17. It was further hypothesised that the association between one relational bullying exposure (peer or sibling) and mental wellbeing outcomes at 17 will be moderated by the other relational bullying exposure, such that the associations between sibling bullying and

mental wellbeing will be stronger for those with consistently low exposure to sibling bullying and vice versa. The models revealed that in the first step, sibling and peer bullying exposure explained 3.2% of the variance in satisfaction with life (R^2 = .032, F (4,719) = 5.902, p < .001) and 2.5% of the overall variance in positive self-view (R^2 = .025, F (4,719) = 4.686, p < .001). In the second step, interaction terms between peer and sibling exposures were added, however they did not significantly improve the model in satisfaction with life (ΔR^2 = .003, F (4,715)= .574, p = .681), but did for positive self-view (ΔR^2 = .025, F (4,715) = 4.750, p < .001), explaining 5.1% of the variance in positive self-view. This finding indicates a significant interaction effect, whereby peer and sibling bullying exposure across the school transition moderates the relationship with positive self-view, but not with satisfaction with life. Finally, in the third step, demographic covariates were included, which significantly increased the explanatory power of the model of life satisfaction (ΔR^2= .023, F (4, 711) = 4.298, p < .01) and positive self-view (ΔR^2 =. 027, F (4, 711) = 5.256, p < .001). The addition of the covariates explained 5.8% of the variance in psychological distress, and 7.8% of the variance in positive self-view, indicating a strong fit for socio-demographic factors in predicting satisfaction with life and positive self-view at 17 in addition to bullying exposure.

For sibling bullying, the model at step three revealed a significant association between consistently high exposure (B = -.322, p < .01) to sibling bullying across school transition age and satisfaction with life at age 17. Specifically, the model revealed a moderate association where satisfaction with life was 0.322 units lower for consistently high exposed siblings compared to consistently low exposed siblings. This finding supports the hypothesis that higher exposure to sibling bullying would be associated with lower satisfaction with life at age 17. In contrast, a significant

association between consistently high exposure (*B* = .236*, p* < .05) to sibling bullying and positive self-view revealed that positive self-view increased by 0.236 units for consistently high exposed siblings compared to consistently low exposure. Although the magnetite of association is small between consistently high exposure and positive self-view, the findings are contrary to the hypothesis that consistently high sibling bullying would be associated with lower positive self-view. The findings suggest that in this sample, individuals who were exposed to consistently high sibling bullying across school transition age report higher positive self-view compared to consistently low exposed siblings. Moderate exposure to sibling bullying across school transition age did not significantly associate with satisfaction with life or positive self-view at age 17.

For peer bullying, the model at step one revealed a small significant association between moderate exposure to peer bullying (*B* = -.209, *p* < .001) and satisfaction with life, where satisfaction with life at age 17 was 0.209 units lower for moderately bullied peers compared to consistently low exposed peers. However, after adjusting for covariates, the model at step three revealed moderate (*B* = -.255, *p* = .27) and consistently high (*B* = -.142, *p* = .70) exposure to peer bullying were not significantly associated with satisfaction with life at age 17. These findings reveal that the hypothesis of consistently high exposure to peer bullying would be associated with lower satisfaction with life was therefore not supported. Initially, moderately exposed peers were associated with lower satisfaction with life. However, after adjusting for covariates the significance of this association changed, suggesting the relationship between peer bullying and satisfaction with life may be influenced by demographic factors such as age, sex or socioeconomic status.

The models further revealed that consistently high exposure (B = .840, p < .05) to peer bullying had a large significant association with positive self-view, where positive self-view was 0.840 units higher for consistently high exposed peers compared to consistently low. This finding does not support the hypothesis that consistently high exposure to peer bullying across the school transition age would be associated with a lower positive self-view. Contrary to expectations, in this sample, consistently high exposed peers at school transition age reported a higher positive self-view at age 17 compared to lower exposures to peer bullying.

An interactive effect of peer and sibling bullying was found for positive self-view at step two and three of the models. At step three, strong significant interaction effects between moderate peer and consistently low sibling exposure (B = .825, p < .05) and moderate peer and moderate sibling exposure (B = .712, p < .05) and positive self-view were found. Specifically, positive self-view was 0.825 units higher for those exposed to moderate peer bullying and consistently low sibling bullying, and 0.712 units higher for those exposed to moderate peer and moderate sibling bullying exposures, compared to the uninvolved group. This suggests that the association between peer bullying and positive self-view differs depending on the level of sibling bullying exposure.

While both interaction effects were significantly associated with positive self-view, the magnitude of the associations relative to other predictors in the model was only marginally different. The association between exposure to both moderate peer bullying and moderate sibling bullying (β=.117) and both moderate peer bullying and consistently low sibling exposures (β=.114) were different, but their relative strength compared to other predictors is quite similar. In contrast, a strong significant interaction effect was found between consistently high peer bullying andconsistently

low sibling exposure (*B* = -2.521, *p* < .001) and positive self-view, where positive self-view was 2.52 units lower for individuals exposed to both high peer and low sibling bullying. The relative strength of the association of the exposure to both consistently high peer bullying andconsistently low sibling exposure (β = .132) was stronger than other interaction effects and likely explains more of the variance in positive self-view.

The models at step three highlighted that the demographic covariates significantly improved the overall explained variance in satisfaction with life and positive self-view at age 17. Further investigation revealed that being male had a small significant association with higher satisfaction with life (*B* = .280, *p* < .001), where satisfaction with life was 0.280 units higher for males compared to females. In contrast, being male (*B* = -.214, *p* < .01) was significantly associated with lower positive self-view, where positive self-view was 0.214 units lower for males compared to females. Further regression analysis explored interaction effects between sex and peer and sibling bullying and satisfaction with life and positive self-view. However, results revealed no significant associations between sex and bullying interactions for satisfaction with life (ΔR^2 = .003, *F* (5,713) = .441, *p* = .820) and positive self-view (ΔR^2 = .004, *F* (4,714) = .694, *p* = .596) indicating the cumulative effect of the two did not predict satisfaction with life or positive self-view more strongly than their individual effects.

A small significant association was found between British ethnicity (*B* = .280, *p* < .001) and positive self-view, where positive self-view was 0.280 units higher for British participants compared to non-British participants. However, British ethnicity did not significantly associate with satisfaction with life. Household income at age 10 and poverty status at age 10 did not significantly associate with satisfaction with life

or positive self-view at age 17. Figure 5 shows the relative strengths of the associations, indicating how much satisfaction with life and positive self-view change for a one standard deviation change in each predictor variable. For categorical predictors, this reflects change in the dependent variable relative to the reference categories.

Figure 5

Relative strengths of associations of change satisfaction with life and positive self-view relative to reference categories.

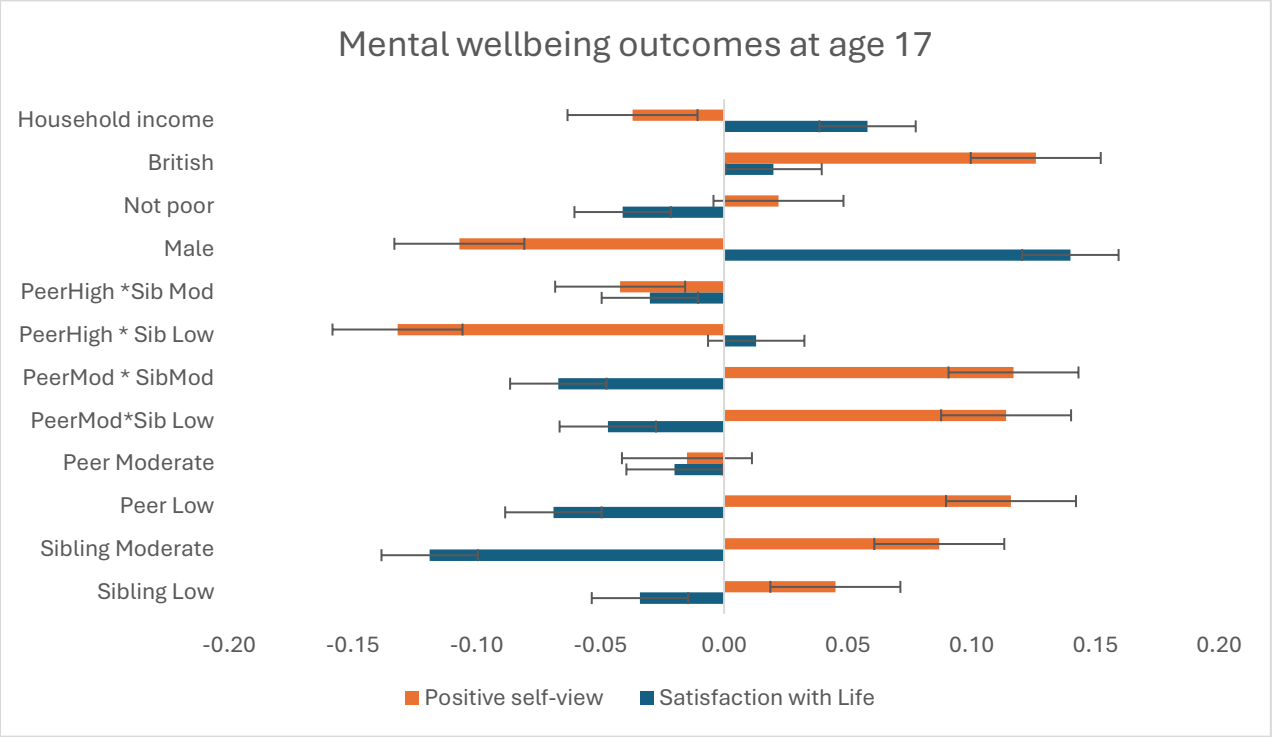


Figure 5 shows standardised coefficients for each predictor in the model at step three using a 95% confidence interval. Positive numbers indicate an increase in the outcome variable.

Chapter 5: Discussion

The study found significant associations between peer and sibling bullying involvement at age 10 and age 12. It further showed significant associations between sibling bullying roles at age 10 and age 12, with Multinomial Logistic

Regression analysis revealing strong associations between sibling bullying role at age 10 and 12, particularly for sibling victim-only and bully-victim status at 12. Bullying exposure across the school transition was associated with mental health and wellbeing outcomes at 17, but not always as predicted. Specifically, consistently low and moderate exposure to sibling bullying was significantly associated with lower self-reported psychological distress, but higher negative self-view after adjusting for interactions and covariates. Peer bullying exposure across the school transition was not significantly associated with mental health outcomes at 17. Additionally, consistently high exposure to sibling bullying was associated with lower satisfaction with life, but higher positive self-view. Consistently high peer bullying was also associated with higher positive self-view. Finally, significant interaction effects were shown, indicating the association between peer bullying and positive self-view may be moderated by sibling bullying exposures, Associations between peer and sibling bullying have been explored within existing literature, with studies repeatedly concluding that experiencing one form of bullying is associated with a greater risk of exposure to the other (Wolke & Skew, 2015; Tippett & Wolke, 2015; Zych et al., 2019). Some of this literature suggest that these associations may be role specific, where victim or perpetrator status in one relationship show moderate to strong associations with the same status in the other (Tippett & Wolke, 2015). However, much of the research is cross-sectional and it is therefore it is unclear how these associations change and develop across preadolescence for sibling bullying. In the current study, the small to medium associations between cross-sectional involvement in peer and sibling bullying indicate that engagement with bullying in one relationship at age 10 and age 12 significantly associated with engagement in the other at the same age, which is in agreement with previous findings (Tippett &

Wolke, 2015; Zych et al., 2019). However, the current study also attempted to expand on this finding and existing research to explore whether these associations were also longitudinal and dependent on peer and sibling bullying roles such as victim-only, bully-only and bully-victim.

For sibling bullying roles, the study found strong associations between bullying roles at age 10 and the same bullying role at age 12, suggesting some stability of the role across school transition age. It's possible that sibling bullying roles experience less variability across the school transition age because the intense nature of sibling relationships means patterns of behaviour can become more established, and less changeable over time (Zych et al., 2020). Additionally, sibling bully-victim status at age 10 also showed moderate to strong longitudinal associations with all bullying roles at age 12, and all bullying roles at age 10 were associated with bully-victim status at age 12. Previous research has suggested that sibling relationship dynamics may be reciprocal, where siblings engage in both perpetrator and victim roles resulting from the intensity of their relationship creating a bi-directional power dynamic (Tippett & Wolke, 2015). Whilst there is some indication of stability in sibling bullying roles across school transition age in this study, the associations with bully-victim status could be a reflection of how this bi-directional power dynamic evolves over time. Differences in sibling bullying roles by birth order and age are cited within the literature where elder and first born siblings have greater strength and perceived access to parental resources compared to younger siblings (Tippett & Wolke, 2015), giving them both a physical and mental advantage to perpetrate, as well as receiving jealousy from younger siblings making them potential victims. The shift in family dynamics and relationships over the school transition (Toseeb et al., 2022) may be a catalyst for reorganisation in sibling dynamics,

igniting a power struggle between siblings associated with bully-victim roles. However, it is important to note that these findings are correlates and cannot provide insight into causal relationships between peer and sibling bullying roles. In addition, the odds ratios for bully-victims were elevated in comparison to other predictors, however the significance was not as strong. Sibling bully-victim cells had fewer participants compared to victim only or bully only status, and confidence intervals for this status were larger. This may reduce statistical confidence in the odds ratios, and whilst there is some evidence of a significant association, further research with larger samples needed would support verification of the findings and understanding of associations between sibling bullying roles over the school transition age.

Unfortunately, it was not fully possible to explore associations between peer bullying roles across the school transition age due to empty cells. However, it was found that involvement in peer bullying at age 10 increased the odds of being a sibling victim at age 12. One possible explanation for this is that in the current sample, the majority of those reporting involvement in peer bullying at age 10 were in the victim-only status, with only a small minority reporting being a peer bully-only. With previous studies highlighting the associations being stronger between specific peer and sibling bullying roles (Tippett & Wolke, 2015), it may be that the overall peer bullying involvement categorisation is more representative of peer victims, hence this could be why it was associated with sibling victim status at age 12 and not for other sibling bullying roles. The results of the current study therefore show that there are some small to medium associations between peer and sibling bullying overall at both age 10 and age 12, however, these associations may be more intricate and dependent on bullying roles, which warrants further exploration. Further

research using larger samples for peer victim roles could better help to understand long-term associations between peer and sibling bullying roles.

Following identifying associations between peer and sibling bullying, the study explored several hypothesises in relation to bullying trajectories and mental health and wellbeing in adolescence. It was hypothesised that consistently low exposure to peer and sibling bullying would be associated with low psychological distress and low negative self-view. This hypothesis was partially supported. Next, it was hypothesised that there would be an interaction effect between peer and sibling bullying, the association between one relational bullying exposure (peer or sibling) and mental health outcomes at 17 would be moderated by the other relational bullying exposure, such that the association between sibling bullying and mental health would be stronger for those with consistently high exposure to peer bullying and vice versa.. This hypothesis was not supported and there were no interactive effects between peer and sibling bullying during the school transition and mental health outcomes in adolescence. This finding suggests that the impact of peer and sibling bullying on mental health outcomes may operate independently, and that the level of experience in one is not significantly influenced by the exposure of the other, indicating no evidence of a moderating relationship between peer and sibling bullying for mental health outcomes at 17.

In relation to wellbeing, it was hypothesised that consistently high exposures to peer and sibling bullying would be associated with low satisfaction with life and positive self-view. This hypothesis was partially supported for satisfaction with life, but not in relation to positive self-view. Finally, it was hypothesised that there would be an interactive effect between peer and sibling bullying,. This hypothesis was partially supported for positive self-view, but not for satisfaction with life. Additional

interactive effects between peer and sibling bullying and positive self-view are explored within this chapter.

Sibling bullying and mental health outcomes

A series of multiple hierarchical regressions were carried out to examine associations between sibling bullying trajectories over the school transition and psychological distress and negative self-view in adolescence. The results revealed that moderate exposure to sibling bullying, characterised by experiencing sibling bullying either before or after the school transition, was the strongest predictor of lower psychological distress and higher negative self-view. However, the relative strength of these associations was only marginally stronger than other sibling bullying predictors in the model, and consistently low exposed siblings were also correlated with lower psychological distress and higher negative self-view compared to consistently high exposed.

Exposure to sibling bullying, particularly as a bully-victim has been associated with increased anxiety and depression both at the time of the bullying (Arsenault et al., 2006), and in later life (Copeland et al., 2014). The associations are considered more significant for victims and bully-victims due to the bullying behaviours challenging self-esteem (Tucker et al., 2013) and creating conflicting relational dynamics where learnt coping skills are difficult to implement across all contexts (Arsenault et al., 2010). It is therefore unsurprising that lower forms of sibling bullying were associated with lower psychological distress compared to higher forms in the current study. However, the findings that higher negative self-view was associated with low and moderate experiences of sibling bullying was surprising.

One explanation could relate to the representation of sibling bullying trajectories as a whole in the current study, rather than representing trajectories for each individual role. Within this study, bullying exposure is representative of an experience of bullying regardless of the role (victim, perpetrator, bully-victim) or type (physical, verbal, relational). This decision was made based on previous research citing that any experience of bullying can have detrimental effects on mental health and wellbeing (Toseeb & Wolke., 2021). However, this method may have reduced the ability to differentiate between the different associations of being a perpetrator or victim previously identified in research (Copeland et al., 2014). Whilst there is evidence to suggest that perpetrators can also experience anxiety, depression and low self-esteem as a result of the bullying experience (Ttofi & Farrington, 2011), additional literature suggests that perpetrators of bullying may actually experience healthier physical and emotional wellbeing compared to other bullying roles (Copeland et al., 2014). Within the current sample, bully-only roles were less frequently reported compared to victim-only roles in sibling bullying however, it may be that the proportion of perpetrators may be greater in the higher exposure groups compared to other bullying roles. This may provide some understanding as to why lower exposures of sibling bullying were associated with higher negative self-view in adolescence.

In addition, within the current study, psychological distress and negative self-view are constructs representative of internalising difficulties, an outcome that is more commonly associated with victim-only status (Tucker et al., 2013). Perpetrators, in contrast have been shown to experience greater externalising difficulties such as antisocial behaviours compared to other bullying roles (Niemela et al., 2011). Without differentiating between the trajectory of different bullying roles,

it may be that perpetrator experiences are inflated within some of the findings, leading to the unexpected elevation in negative self-view for lower bullying exposure groups. Future research could seek to understand the long-term effects of different trajectories in sibling bullying roles, including both future internalising and externalising difficulties such as antisocial behaviours. This would support a greater understanding of long-term outcomes for different trajectories of sibling bullying roles.

A further potential explanation for the conflicting finding for negative self-view relates to how sibling bullying behaviours are viewed and managed at different levels. It is known that sibling bullying is often overlooked within families (Straus et al., 2006) and therefore may not be addressed by parents at the lower and moderate levels compared to high levels that may be more overt. Ecological perspectives suggest that individuals develop within the context of interaction between layers of systems around them (Swearer & Doll., 2001). If low and moderate bullying goes unpunished then victims may begin to internalise negative messages about themselves due to the wider system signalling that the behaviour is acceptable, and their feelings are not valid (Ttofi & Farrington, 2011). This can lead to a belief that they did something wrong to provoke the bullying, which overtime reinforces their negative self-perception. As this study only considered the longitudinal associations with bullying and mental health, it is not possible to decipher when these associations began. Further research could consider assessing mental health outcomes both at the time of bullying, and later in life to provide a more holistic understanding of how sibling bullying associates with mental health.

Finally, the importance of sibling relationship quality was not considered in this study and may contribute to the surprising findings relating to negative self-view.

Through an ecological perspective it is recognised that sibling relationships in any form are an integral part of development and lack of interaction with siblings may be associated with worse outcomes (Huebner, 2004). It is important not to assume that because youths are not experiencing consistently high bullying with their siblings that the relationship is of good quality. A lack of positive reinforcement, or distance from siblings that is not associated with bullying can negatively impact self-esteem, particularly if the sibling relationship is viewed as lacking compared to others either within the family or wider society (Shepherd et al., 2020). Without understanding additional dynamics in sibling relationships, particularly in groups that do not experience high levels of bullying, it may be difficult to anticipate how the different sibling interactions relate to negative self-view in the future. Further research into sibling bullying should also seek to capture additional relational dimensions such as closeness to ascertain a more holistic view of how the sibling relationship associates with view of self.

Peer bullying and mental health outcomes

A series of multiple hierarchical regressions were carried out to examine associations between peer bullying trajectories over the school transition and psychological distress and negative self-view in adolescence. The findings in relation to peer bullying and mental health outcomes in adolescence were unexpected than for sibling bullying. Results revealed that peer bullying did not significantly associate with psychological distress or negative self-view when models were adjusted for demographic covariates. These findings were not in support of the hypothesis, and contrast findings within previous literature that have highlighted associations between peer bullying experiences in all forms being associated with higher psychological distress (Sourander et al., 2007). One potential explanation for this

could be related to the small percentage of participants (2.3% male, 1.6% female) reporting exposure to consistently high peer bullying over the school transition. Whilst it is not less common for peer bullying remain consistently high across the school transition (Brendgen et al., 2016; Zhang et al., 2022), it is possible that the small sample of peer bullying involvement in this study reduced statistical power therefore increasing difficulty in detecting subgroup differences for peer bullying that are associated with mental health in adolescence.

The findings in this study did find significant associations between peer bullying and psychological distress in earlier models prior to adjusting for covariates. Specifically, consistently low peer bullying was strongly associated with lower psychological distress compared to consistently high exposure. This finding would support the hypothesis and previous research (Sourander et al., 2007), however the reduced significance after adding demographic covariates may indicate that the associations are mediated or explained by other demographic variables more so than peer bullying trajectories.

The current study included sex, ethnicity and socioeconomic status as potential confounding variables within peer bullying and mental health associations. Where peer bullying was no longer significant after adjusting the model for these covariates, sex was found to be a strong significant predictor of both psychological distress and negative self-view, where males were associated with lower psychological distress and higher negative self-view compared to females. Within the literature, sex differences have been identified in the trajectory of bullying across the school transition, with females tending to see a decrease in victimisation compared to males (Fujikawa et al., 2020). Sex differences have further been identified in associations between bullying and psychological distress, with studies highlighting

bullied females are more likely to experience internalising difficulties, compared to bullied males, who were more associated with externalising issues (Wolke et al., 2013). These findings were based on cross-sectional data (Wolke et al., 2013), however the associations between females and higher psychological distress appear to remain true in this longitudinal study.

Although there were no significant interaction effects for peer bullying and sex with mental health in the current study, the moderate to strong associations with sex and mental health difficulties in adolescence found in this study suggest these associations warrant further exploration within bullying research. It is understood that changes to trajectories in peer bullying roles and behaviours are linked with developmental stages associated with changes in behavioural and cognitive processes (Olweus et al., 2010). For peers, it may be possible that the experiences of different trajectories of overall bullying at school transition age are less significant than changes within the individual and associations with mental health in adolescence. With known associations between sex and peer bullying roles and behaviours (Bauman et al., 2013) perhaps the role and behaviour have greater influences in peer bullying compared to sibling.

Peer bullying did not significantly associate with negative self-view in any of the models. Much like sibling bullying research, self-view has been shown to differ depending on whether the individual is a victim or perpetrator, with perpetrators experiencing better outcomes than victims (Wolke et al., 2013). In the current study, there were very few peer bully-only or bully-victim groups within the sample which likely limited the ability to differentiate between the experience of each different role in peer bullying. Further understanding of associations between longitudinal associations between peer bullying and negative self-view could develop through

research exploring differences in trajectory of peer roles and behaviours and associations with mental health outcomes at 17.

The current study further hypothesised that there would be an interaction effect between peer and sibling bullying, where exposure to consistently high peer bullying when also exposed to consistently high sibling bullying would associate with higher psychological distress and negative self-view. This hypothesis was not supported, and no significant interaction effects were found for peer and sibling bullying and mental health outcomes in adolescence. Research on the interactive effects of peer and sibling bullying has been mixed. Although some research has highlighted that the effects on mental health are more detrimental when exposed to both peer and sibling bullying (Baldry, 2003), additional findings suggest that the two forms uniquely predict worsened mental health outcomes (Tucker et al., 2013). It is known that peer and sibling bullying are associated with one another, it is also understood that the function of both differs, with peer bullying being largely attributed to material deprivation (Wolke & Skew, 2012), and sibling bullying is thought to stem more from parental time and resource control (Hawley, 1999). The behaviours are often approached and managed differently (Straus et al., 2006) and therefore may impact distinct domains of psychological distress and negative self-view (e.g. social vs familial view of self).

Overall, the findings revealed that lower psychological distress was most associated with moderate and consistently low forms of sibling bullying, and males. Whereas the same predictors were in contrast moderately to strongly associated with increased negative self-view. In the current study, negative self-view was reflective of ability and pride in self, which is just one aspect that makes up view of self. Additionally, psychological distress is only one measure of mental health

difficulties and is therefore only reflective of internalising issues. In order to understand the complex interactions and relationships between peer and sibling bullying and mental health, future research could include measures exploring view of self across different domains, along with both measures of internalising and externalising difficulties such as anxiety, depression and antisocial behaviours.

Sibling bullying and mental wellbeing outcomes

The associations between sibling bullying trajectories across the school transition and satisfaction with life and positive self-view were explored. Results revealed strong associations between consistently high exposure to sibling bullying and lower satisfaction with life, as predicted. However, contrary to expectations, consistently high exposure to sibling bullying was moderately associated with increased positive self-view compared to lower exposures of sibling bullying.

The wider literature has frequently associated sibling bullying with decreased satisfaction with life (Patalay & Fitzsimons, 2016; Yucel & Yaun, 2016). Some studies indicate there may be age and sex differences in these associations, with sibling relationships for adults and elderly females being more influential on life satisfaction (Sener et al., 2008). However, the correlations between consistently high sibling bullying over the school transition and satisfaction with life in adolescence were strong, indicating an importance of this influence even at a younger age. Sibling relationships are often long-lasting, and as with mental health difficulties, the intense nature of the relationships may enhance the effects of the experience, helping to understand why consistently high and prolonged exposure was associated with long-term lower satisfaction with life.

In contrast to expectations, prolonged exposure to sibling bullying across the school transition was associated with higher positive self-view. This finding was unexpected, however there are some potential reasonings in existing literature that could help to understand this association. Firstly, as well as associations with peer bullying, sibling relationships have further been shown to interact with parental relationship quality, positive parent-child relationship qualities had a buffering and protective effect against the negative effects of sibling victimisation (Yucel & Yaun, 2016). Additionally, the protective role of parents who provide emotional support and positive conflict resolution skills are thought to potentially mitigate the harmful effects of sibling bullying (Wolke et al., 2013) and therefore may increase a positive self-view. The current study did not explore associations between parental relationship quality and bullying experiences, however, it is evident in the current findings that not all bullying experiences negatively affect future outcomes, and a greater understanding of why this may be would support in developing strength based intervention strategies to support young people to use their existing skills to navigate bullying experiences to benefit future outcomes.

Sex differences were found in satisfaction with life and positive self-view, where males were moderately associated with higher satisfaction with life, but held a less positive self-view compared to females. There were no significant interaction effects between sex and sibling bullying for mental wellbeing outcomes, however, previous research has suggested males and females seek different relational aspects, where males seek independence and females seen relatedness (Cross & Madson, 1997). This could be reflective of gendered social norms that influence the way males and females seek connection (Bem, 1993). In the current study, satisfaction with life assessed several domains of life including income and leisure. It

may be that gendered social norms encourage males to strive for success and achievement (Bem, 1999), increasing their satisfaction with life, however emotional expression is less encouraged for males and therefore they may be more likely to internalise difficulties that result in reduced positive self-view.

Peer bullying and mental wellbeing outcomes

Results of the regression analyses revealed that peer bullying did not significantly associate with satisfaction with life after adjusting for covariates. This was an unexpected finding as, like sibling bullying, existing literature has identified associations between poor peer relationships and lower life satisfaction (Yucel & Yuan, 2016). As with the sex differences, there is some existing evidence to suggest that satisfaction with life differs based on individual, social and environmental factors (Heubner, 2004). It is possible that associations with peer bullying across the school transition are less significant in the long-term compared to sibling bullying and other less changeable factors. At age 17, young adults have likely had some opportunity to renegotiate friendships and move away from the bullying due to the natural reorganisation of peer groups that occurs following the school transition (Arsenault et al., 2010; Espelage, 2015). Factors such as sex and siblings are less amenable to change compared to peer groups, which are influenced by wider society and therefore the more static factors may contribute more to satisfaction with life in the long term. The current study did not explore satisfaction with life at the time of the bullying, which could have been a useful way in understanding the strength of associations on the immediate and long-lasting effects of peer bullying experiences and satisfaction with life in relation to other predictor variables. Additionally, the current study only assess satisfaction with life at one time, age 17. With existing research highlighting how significant life events such as bullying may initiate the

initial decline of the u-shape curve of life satisfaction (Bauer & Kaiser, 2025), further research should seek to track associations between bullying and life satisfaction at several time points to understand how they contribute to the natural decline.

Much like sibling bullying and in contrary to the study hypotheses, consistently high peer bullying was associated with increased positive self-view. Although this mirrored the direction of associations with sibling bullying and positive self-view, the correlations with peer bullying were marginally stronger. As discussed, in the current study there were few to no peer bullies or bully-victims, and therefore the exposure of peer bullying within consistently high exposure groups is likely more reflective of peer victim-only groups, making this finding more surprising. The positive adjustment of victims is significantly overlooked within the literature, however there is some evidence to suggest that positive self-view may mediate the negative effects of bullying (Sapouna & Wolke., 2013). It is thought that some people are naturally more resilient to bullying experiences, with some evidence suggesting that childhood bullying roles are associated with genetics and physiological changes in the body (Copeland et al., 2014). Specifically, twin studies highlight gene-environment interactions, where children who carry certain genetic variations such as though associated with serotonin regulation may be more susceptible to negative psychological outcomes when exposed to environmental stressors such as bullying (Bowes et al., 2013). The body of literature into genetic influences on response to bullying is growing and could provide useful insights into why some people experience better outcomes from bullying than others.

In addition to the individual correlations, interaction effects between peer and sibling bullying were identified with moderate and lower levels of peer and sibling bullying increasing positive self-view. Within the current study positive self-view was

related to ability and likeability of self. Experiencing moderate levels of peer bullying whilst also being exposed to moderate sibling bullying or high levels of peer or sibling bullying and being able to survive the situation may have supported individuals to develop coping mechanisms and skills to navigate the experience, helping them to recognise their ability to solve problems, this increasing their self-view. It has also been discussed that family and relational factors have been shown to buffer the effect of bullying, including parental relationship quality (Yucel & Yuan, 2016), number of friends and positive atmosphere in the home (Bowes et al., 2010), and whilst not studied here, would support in understanding interactive associations between the two forms of bullying. However, when peer bullying was high and sibling low, strong associations with lower positive self-view emerged. The complicated navigation of coping with relational problems in one area but less in another involves different coping strategies to consistently high bullying and therefore may be more detrimental to positive self-view.

As with sibling bullying experiences, a lack of perceived social support from or interaction from siblings when facing high bullying with peers may strain the individual's social network and therefore decrease positive self-view (Patalay & Fitzsimons., 2016). These dynamics may mirror the complexities of bully-victim roles, which are thought to be of greatest detriment to individuals (Arsenault et al., 2010). Greater exploration of additional relationship dynamics within peer, sibling and parental relationships may better help to understand the intricate and multidimensional nature of wellbeing.

Whilst the discussed findings suggest some correlations between different peer and sibling bullying trajectories across the school transition age and mental health and wellbeing, it is important to be mindful that the findings do not suggest

causation. Additionally, each of the regression models were successful in explaining less than 10% of the overall variance in mental health and wellbeing in adolescence. Whilst an R^2 value between 0.05 and 0.10 is not uncommon in psychological research due to the complex nature of human behaviour and influence of many naturally occurring and uncontrollable variables (Field, 2014), the low explanatory power of the models may be indicative of additional potential confounds that interact with the associations. It has already been discussed how parental relationship quality (Yucle & Yaun, 2016), number of peer relationships (Bowes et al., 2010), genetic factors (Bowes et al., 2013) and sibling age and birth order (Tippett & Wolke, 2015) may interact with bullying experiences and mental health and wellbeing outcomes, however these factors were not considered within the context of the school transition. By not including these additional potential confounding variables, findings from the current study only explain a small proportion of variance in mental health and wellbeing in later life. However, although small, the findings do highlight that sibling bullying in particular does associate with mental health and wellbeing, however these associations are not always negative.

Further consideration of covariates within the wider systems will help to understand the complex nature of combinations of peer and sibling bullying through an ecological perspective that is more reflective of individuals in their everyday life. This will support an understanding of covariates that interact with the bullying to determine whether a person is positively or negatively affected by their early bullying experiences.

Strengths and limitations

To the best of our knowledge, this research is one of the few studies that investigates trajectories of both peer and sibling bullying experiences across school

transition age and their associations with mental health and wellbeing in adolescence. The study utilised a relatively large sample (*N* = 724) from a large longitudinal survey of households in the UK collected through Understanding Society's UKHLS. The UKHLS is designed to be highly representative of the UK population and therefore this makes finding of studies more generalisable to the wider UK population. Although the UKHLS data is widespread, and collected over several years, all participants answer the same self-report questionnaires regarding their peer and sibling bullying experiences at the time of bullying and mental health and wellbeing outcomes in adolescence, allowing for comparability and replicability across waves.

However, due to the nature of the current study, the sample was limited to focus on a specific developmental stage (the school transition and adolescence) rather than a set point in time (particular year). These sample parameters mean that whilst the participants answers are recorded at the same age as all other participants (age 10, 12 and 17), the data was recorded between 2009 and 2024 meaning participants were not necessarily the same age in the same year and therefore may not have answered their questions at the same point in time, unlike in cohort studies. This may have implications regarding respondents understanding or perception of bullying behaviours depending on wider societal influences or changes in policy regarding management of bullying. The sample parameters also mean that the final sample risks being non-representative of the wider population as those who repeatedly completed the questionnaire at all ages may have different characteristics from those that do not. Whilst the prevalence of bullying was explored in both the included and excluded sample, additional unknown differences in the two populations may result in the estimated associations reported being bias. This would

therefore limit the generalisability of the findings to the full target sample as results may only capture the type of participant that is able to reliably complete surveys over long periods of time. These people's bullying experiences and mental health and wellbeing outcomes may differ from those that were unable to do so.

Additionally, societal influences and understanding of mental health and wellbeing has likely changed during the study period, specifically with questionnaires answering during the Covid-19 pandemic, which is known for having greatly influenced mental health and wellbeing. The current study did not account for Covid-19 and therefore responses regarding mental health and wellbeing during these waves are likely different to other responses. Similarly, Covid-19 would have likely affected peer and sibling bullying experiences within the UK, with lockdown policies meaning young people were associating less with their peers and more with their siblings, changing the dynamics of relationships. Being mindful of these potential societal, economical and mental health changes when interpreting longitudinal data clarifies the context of the person at the time of answering the questions. The study could have potentially overcome this limitation by controlling for a function of the time of Covid-19 or introduction of any bullying policy changes during the time the data spanned.

In addition, when using longitudinal research, it is common practice to use stratification and weights to ensure the final sample is representative of the general population. Whilst these processes were used within the wider Understanding Society data collection, at the time of analysis, the UKHLS did not include longitudinal weights for the youth data. It was therefore not possible to utilise weights in the current study as an appropriate weight was unavailable. The analyses in the current study proceeded with an unweighted sample and therefore caution is

encouraged in generalising findings to the wider population. However, as the study aim was to focus on a specific cohort and stage of life (school transition) the use of unweighted analysis may still provide useful information despite potential selection and non-response biases. Had the study proceeded with incorrect or arbitrary weights, the findings would likely have been less and potentially incorrectly generalisable and therefore proceeding with an unweighted sample when an appropriate weight is not available increases transparency as assumptions have not been made about how the sample should be represented within the wider population.

Remaining with focus on the study sample, although a relatively large overall sample was used, the breakdown of peer and sibling bullying into roles and types by sex was not possible due to small samples or empty cells in each group. Therefore, peer and sibling bullying were explored as an overall experience inclusive of all roles (victim only, bully only, bully victim) and types (physical, verbal, other). Although there is existing research that suggests the role and type of bullying can differentiate mental health and wellbeing (Tippett & Wolke., 2015), there is an abundance of evidence that suggests any involvement with bullying can have detrimental (Toseeb & Wolke., 2021) and long-lasting effects (Arseneault et al., 2006; Reijntjes et al., 2011). With this being one of only a few studies exploring peer and sibling bullying across the school transition, information regarding the impact of combined overall experiences may provide a useful starting point in reducing bullying at this crucial stage in a young person's life. However, it is important to hold in mind that the final representation of results may lack richness in the understanding of complex interactions between the trajectory of different bullying roles or types for males and females found in previous research (Bowes et al., 2016) Additionally, the current

study hypotheses were not being fully supported and therefore further investigation into interactions between trajectories of specific peer and sibling bullying roles and behaviours may help to identify differences in how each is associated with positive and negative mental health and wellbeing in adolescence and adulthood.

A further limitation is the way in which missing data was handled. Within the current study, missingness was low for all variables, and therefore analysis was completed by using mean imputations to handle missing data. Whilst this method was considered appropriate in the current research due to missingness being less than 10% (Field., 2014), using mean imputation increases the potential risk of underestimating natural variability within the data. This means that the relationship between bullying trajectories and mental health and wellbeing may be underestimated based on these results. Where studies have more than 10% missing data or seek alternative methods, multiple imputation may be a preferred way of handling missingness. This method creates multiple imputations for each missing value and pools together the data to create more accurate estimates of the parameters and reliable standard errors (Field, 2014) and therefore more reliable inferences can be made from the data. This method preserves variance, giving a more accurate and less bias reflection of the true relationship between the variables.

As discussed, the study utilised data based on self-reported responses of bullying and mental health and wellbeing outcomes. Whilst the use of these methods is often common practice within bullying literature due to the subjective nature of bullying behaviours, a multi-informant approach may have provided a more holistic overview of bullying experiences from different perspectives (Pellegrini et al., 2002). In the current study, few children reported being involved with peer bullying, and even less reporting being bully-only or bully-victims of peers. This could be a result

of social desirability within responses, as peer bullying has more stigma attached to it compared to sibling bullying. Children therefore may have been more aware of their peer bullying behaviours being considered inappropriate and so became more cautions to admit their own perpetration of such behaviours. This was less apparent in reports of sibling bullying as this behaviour tends to be more normalised and therefore holds less shame in admitting to it. Future studies can include teacher or parent reports of bullying as well as peer nominations as seen to be beneficial in previous research (Pellegrini et al., 2002). This is not always achievable in secondary datasets or longitudinal studies, and it is therefore important to seek a balance of both practicality of achieving a large sample size and having a holistic representation of data.

In the current study, bullying variables were dichotomised to create bullying exposure trajectories. Whilst this method has been used in previous empirical studies (Sharpe et al., 2021), the process may have created a loss of information where the severity or frequency of the bullying data is not captured. The effect of dichotomising bullying variables would likely associate with changes in statistical power and amplitude of relationships between bullying and mental health and wellbeing outcomes identified in this study. In using continuous or ordinal data, the bullying estimates may reflect more meaningful and subtle effects on the estimates that allow for richer interpretation. However, there are also strengths to dichotomisation of bullying variables as it allows for simple interpretation that can be useful when working with clinical and policy thresholds.

Additionally, the outcome variable's positive self-view and negative self-view were each constructed from four questions relating to ability, likability and pride. Whilst the separation of positive and negative self-view has allowed for exploration of

multiple aspects that make up view of self, the scales used were not validated, and whilst they held acceptable to good internal consistency, there is a risk that the findings may not truly reflect the concepts of negative and positive self-view. To explore this limitation, a sensitivity analysis was conducted to assess whether the effects of peer and sibling bullying differed by the framing of the self-view outcome variable. A sensitivity analysis of three separate regression models was conducted and aimed to assess whether the same predictors remained significant across outcome variations of self-view, explore whether the strength and direction of associations changed depending on how the dependent variable was constructed and if the interaction effects were stable or sensitive to changes dependent variable used.

The four items used to create the positive self-view and four items for negative self-view (reverse coded) were combined to create an overall self-esteem scale reflecting a modified version of the Rosenberg Self-Esteem Scale (Rosenberg, 1965), containing eight of the 10 items from the original scale. Internal consistency for the 8-item scale was .84, indicating good overall internal consistency. The internal consistency scores of the positive and negative self-view scales used in this study were .79 and .87 respectively.

The multiple hierarchical regressions used for positive and negative self-view in the main analysis were rerun and repeated to include the modified self-esteem scale. The results of the sensitivity analysis revealed that the observed interaction effects between peer and sibling bullying were more pronounced when using the positive self-view subscale compared to the overall self-esteem score. This indicates that the conceptualisation and measurement of self-esteem may influence the ability to detect moderating effects between peer and sibling bullying and positive self-view.

It is therefore important to be mindful which construct is being measured when using scales that capture self-esteem, which is a multifaceted construct. Although the interaction effects were no longer significant, the sensitivity analysis revealed consistently high peer and sibling bullying exposure was associated with increased self-esteem, which remains contrary to the hypotheses. This finding supports the use of separating the positive and negative self-view scales as it allowed for more nuanced exploration of interactive effects between peer and sibling bullying and view of self. Appendix 3 shows the results of the sensitivity analysis for positive self-view, negative self-view and the modified overall self-esteem scale.

A final limitation within the current study is the limited exploration of the impact of pre-existing mental health difficulties for young people. Research has shown that relationships between bullying and mental health may be bidirectional, where externalising behaviours were associated with victim groups, and victimisation increased externalising behaviours (Bowes et al., 2015). Consideration of these factors may have offered a greater understanding of how early mental health difficulties interact with bullying and wellbeing in adolescence and adulthood. Future studies could include data from pre-existing mental health and wellbeing scores prior to the school transition. This can be self-report and multi-informant to allow richness of information.

Implications and Future Research

Although the correlational nature of the study means that it is not possible to conclude that peer or sibling bullying are causal factors to mental health and wellbeing differences in adolescence, our findings support the understanding that bullying may lead to negative outcomes later in life (Arsenault., 2010). Our findings suggest that trajectories of sibling bullying may have stronger associations with

future outcomes compared to peer bullying, reinforcing a greater need for parents, families and wider society to recognise and intervene with sibling bullying. The study also showed that sibling bullying involvement was associated with peer bullying involvement at both age 10 and age 12, suggesting both educational and home settings should be educated about bullying behaviours and use a systemic approach to ensuring safety and wellbeing of individuals across contexts.

Our findings also showed sibling bullying is not only associated with negative outcomes but may have some positive outcomes also. Whilst consistently high exposure was associated with decreased satisfaction with life, the experience was also associated with an increased positive self-view. Potential factors such as positive and protective parental relationships may be a buffer for bullying experiences (Yucel & Yaun, 2016) and therefore this study could promote the development of interventions including education and parenting classes where parents learn both to identify and understand sibling bullying behaviours whilst also working on their own responses to the behaviours and relationships with their children. This would support both a reduction in bullying behaviours and enhancement of additional important relationships and strategies to build resilience against bullying experiences.

The focus of the current study was predominantly on internalising aspects of mental health and wellbeing. Therefore, an understanding of how preadolescent peer and sibling bullying affects externalising behaviours in later life is lacking in this study. Existing research has suggested perpetration in sibling bullying contributes to the development of antisocial behaviours in later life (Dantchev & Wolke., 2019). This study held a predominant focus on sibling bullying and whilst valuable, it would be of interest to understand how the two forms of bullying interact and effect externalising

or relational difficulties in adulthood. Alongside addressing some of the potential limitations discussed within this paper, future studies should seek to capture a both internalising and externalising behaviours associated with mental health and wellbeing. This would support a more holistic understanding of how different associations between peer and sibling relationships and mental health and wellbeing in adolescence.

Clinical implications

The findings of both the literature review and research in this paper indicate that a complex picture of how bullying can evolve across the school transition and the long term impact it can have on mental health and wellbeing. Clinicians should therefore seek to routinely screen for bullying experiences with both peers and siblings during initial assessments, and hold external relationships in mind throughout their work. This can help to identify potential risk factors contributing to mental health and wellbeing difficulties and support in targeting early signs of distress. The indication that peer and sibling bullying are associated also highlights the importance of exploring both relationships longitudinally when working with both adults and children. The findings also highlight some positive outcomes of experiencing bullying across the school transition and these can be used to support clients when using strength-based models. Finally, knowledge towards the different associations between peer and sibling bullying with mental health and wellbeing should promote curiosity into how systems are supporting and working together to prevent bullying, particularly in families and sibling relationships where these behaviours may be more overlooked. Greater understanding of the impact of bullying can and should be used to support the development of safeguarding policies.

Conclusions

Overall, the findings within the current study sought to understand associations between peer and sibling bullying during school transition age and mental health and wellbeing at age 17 on a UK based sample. The findings highlight that sibling bullying was significantly associated with all mental health and wellbeing outcomes at age 17, indicating the importance of targeting behaviours during the school transition age. Although many of the results contrasted with what was

hypothesised, it is recognised that the positive wellbeing of young people who experience bullying are often overlooked and warrant further exploration. The school transition brings about significant change for young people in both environmental and relational domains (Pellegrini & Bartini., 2000) and whilst many existing bullying interventions are targeted from 6 to 18years, they hold a predominant focus on primary schools (Gaffney et al., 2021), whereas the current findings suggest the point of transition could also be significant time to intervene to reduce the effects of bullying. The study held several discussed limitations; however, it is hoped that the information can be used to support the notion that sibling bullying interventions are as important as peer bullying interventions, and that preadolescence and the school transition is an important time to introduce these interventions both within the school and family systems. This discussion has suggested several points to strengthen further research in this area.

References

Achenbach, T. M. (1991a). *Manual for the Child Behaviour Checklist/4–18 and 1991 Profile*. Burlington, VT: University of Vermont, Department of Psychiatry.

Achenbach, T. M. (1991b). *Manual for the Teacher's Report Form and 1991 Profile* Burlington, VT: University of Vermont, Department of Psychiatry.

Anti-Bullying Alliance. (n.d.). Prevalence of bullying. Anti-Bullying Alliance. https://anti-bullyingalliance.org.uk/tools-information/all-about-bullying/prevalence-and-impact-bullying/prevalence-bullying

Arseneault, L., Walsh, E., Trzesniewski, K., Newcombe, R., Caspi, A., & Moffitt, T. E. (2006). Bullying victimization uniquely contributes to adjustment problems in young children: a nationally representative cohort study. *PEDIATRICS, 118*(1), 130–138.

Arseneault, L., Bowes, L., & Shakoor, S. (2010). Bullying victimization in youths and mental health problems: 'Much ado about nothing'? *Psychological Medicine, 40*(5), 717–729.

Bandura, A., & Walters, R.H. (1963). Social learning and personality development. *Holt Rinehart and Winston:* New York.

Baldry, A. C. (2003). Bullying in schools and exposure to domestic violence. *Child Abuse & Neglect, 27*(7), 713–732.

Bar-Zomer, J., & Klomek, A. B. (2018). Attachment to parents as a moderator in the association between sibling bullying and depression or suicidal ideation among children and adolescents. *Frontiers in Psychiatry, 9*.

Bauer, J. M. & Kaiser, M. (2025). Can major life events explain the U-shape in subjective well-being over the lifespan? *Available at SSRN: https://ssrn.com/abstract=5133418.*

Bauman, S., Toomey, R. B., & Walker, J. L. (2013). Associations among bullying, cyberbullying, and suicide in high school students. *Journal of Adolescence, 36*(2), 341–350.

Bem, S. L. (1993). *The lenses of gender: Transforming the debate on sexual inequality*. Yale University Press.

Bond, L., Patton, G., Glover, S., Carlin, J. B., Butler, H., Thomas, L., & Bowes, G. (2004). The Gatehouse Project: can a multilevel school intervention affect emotional wellbeing and health risk behaviours? *Journal of Epidemiology & Community Health, 58*(12), 997–1003.

Bowes, L., Maughan, B., Ball, H., Shakoor, S., Ouellet-Morin, I., Caspi, A., Moffitt, T. E., & Arseneault, L. (2013). Chronic bullying victimization across school transitions: The role of genetic and environmental influences. *Development and Psychopathology, 25*(2), 333–346.

Brendgen, M., Girard, A., Vitaro, F., Dionne, G., & Boivin, M. (2016). Personal and familial predictors of peer victimization trajectories from primary to secondary school. *Developmental Psychology, 52*(7), 1103–1114.

Bronfenbrenner, U. (1979) *The Ecology of Human Development: Experiments by Nature and Design.* Cambridge, MA: Harvard University Press. 108, 104633.

Campbell, M., McKenzie, J. E., Sowden, A., Katikireddi, S. V., Brennan, S. E., Ellis, S., Hartmann-Boyce, J., Ryan, R., Shepperd, S., Thomas, J., Welch, V., &

Thomson, H. (2020). Synthesis without meta-analysis (SWiM) in systematic reviews: reporting guideline. *BMJ*, l6890.

CASP. (2014). *Critical appraisal skills programme*: *Cohort study checklist.* Online: https://casp-uk.net/casp-tools-checklists/cohort-study-checklist/.

Chen, C., Weider, K., Konopka, K., & Danis, M. (2014). Incorporation of Socioeconomic Status Indicators into Policies for the Meaningful Use of Electronic Health Records. *Journal of Health Care for the Poor and Underserved*, *25*(1), 1–16.

Clark, K. N., Eldridge, M. A., Dorio, N. B., Demaray, M. K., & Smith, T. J. (2022). Bullying, victimization, and bystander behaviour: Risk factors across elementary–middle school transition. *School Psychology, 37*(1), 37–46.

Copeland, W. E., Wolke, D., Lereya, S. T., Shanahan, L., Worthman, C., & Costello, E. J. (2014). Childhood bullying involvement predicts low-grade systemic inflammation into adulthood. *Proceedings of the National Academy of Sciences, 111*(21), 7570–7575.

Crick, N. R., & Bigbee, M. A. (1998). Relational and overt forms of peervictimization: A multiinformant approach. *Journal of Consulting and Clinical Psychology, 66,* 337–347.

Crick, N. R. and Dodge, K. A. (1994). A review and reformulation of social information processing mechanisms in children's social adjustment. *Psychological Bulletin, 115*, 74–101.

Cross, S. E., &Madson, L. (1997).Models of the self: self-construal's and gender. *Psychological Bulletin, 122*, 5–37.

Dantchev, S., & Wolke, D. (2019). Trouble in the nest: Antecedents of sibling bullying victimization and perpetration. *Developmental Psychology, 55*(5), 1059–1071.

Dantchev, S., Hickman, M., Heron, J., Zammit, S., & Wolke, D. (2019). The Independent and Cumulative Effects of Sibling and Peer Bullying in Childhood on Depression, Anxiety, Suicidal Ideation, and Self-Harm in Adulthood. *Frontiers in Psychiatry, 10*(651).

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44,* 113–126.

Field, A. (2014). Discovering statistics using IBM SPSS statistics (4th ed.). *SAGE Publications.*

Fox, B. H., Perez, N., Cass, E., Baglivio, M. T., & Epps, N. (2015). Trauma changes everything: Examining the relationship between adverse childhood experiences and serious, violent and chronic juvenile offenders. *Child Abuse & Neglect*, *46*, 163–173.

Fujikawa, S., Mundy, L. K., Canterford, L., Moreno-Betancur, M., & Patton, G. C. (2020). Bullying across late childhood and early adolescence: a prospective cohort of students assessed annually from grades 3 to 8. Academic *Paediatrics, 21*(2), 344–351.

Georgiou, S. N. (2008a) Bullying and victimization at school: the role of mothers. *British Journal of Educational Psychology, 78*, 109–25.

Glaser, R. R., Horn, M. L. V., Arthur, M. W., Hawkins, J. D., & Catalano, R. F. (2005). Measurement Properties of the Communities that Care youth Survey across demographic groups. Journal of Quantitative Criminology, 21(1), 73–102.

Goertz, G., & Mahoney, J. (2012). Concepts and measurement: Ontology and epistemology. *Social Science Information, 51*(2), 205–216.

Goldberg, S. (2000). Attachment and development. *In Routledge eBooks.*

Hawley, P. H. (1999). The Ontogenesis of Social Dominance: A Strategy-Based Evolutionary Perspective. *Developmental Review, 19*(1), 97–132.

Huebner, E. S. (2004). Research on Assessment of Life Satisfaction of Children and Adolescents. *Social Indicators Research, 66(*1-2), 3–33.

M., Korn, S., Brodbeck, F. C., Wolke, D., & Schulz, H. (2005). Bullying roles in changing contexts: The stability of victim and bully roles from primary to secondary school. *International Journal of Behavioral Development, 29*(4), 323-335.

Kovacs, M. (1992). *Children's Depression Inventory (CDI) Manual*. Toronto: Multi-Health Systems.

Krauss, S. E. (2005). Research Paradigms and meaning making: A primer. *The Qualitative Report, 10*(4), 758-770.

Lai, T., & Kao, G. (2018). Hit, robbed, and put down (but not bullied): Underreporting of bullying by minority and male students. *Journal of Youth and Adolescence, 47*(3), 619–635.

Lundh, L. (2017). Psychological Science within a Three-Dimensional Ontology. *Integrative Psychological and Behavioural Science, 52*(1), 52–66.

Lynn, P., Cabrera-Álvarez, P., Clarke, P., & Institute for Social and Economic Research, University of Essex. (2023). Sample composition and representativeness on Understanding Society. *Fiscal Studies, 44*, 341–359.

Main, M., Kaplan, N., & Cassidy, J. (1985). Security in infancy, childhood, and adulthood: A move to the level of representation. In I. Bretherton & E. Waters (Eds.), Growing points of attachment theory and research. *Monographs of the Society for Research in Child Development*, 50, 1−2.

March, J. S. (1997). *Multidimensional anxiety scale for children (MASC*). Multi-Health Systems.

Maslovskaya, O., Smith, P. W., & Durrant, G. (2024). Do respondents using smartphones produce lower quality data? Evidence from the first large-scale UK mixed-device survey – Understanding Society Wave 8. *International Journal of Social Research Methodology*, 1–14.

Masten, A. S., Morison, P., & Pellegrini, D. S. (1985). A revised class play scale for use in research and practice. *Developmental Psychology, 21*(2), 257-268.

Matthews, M. R. (1993). Constructivism and science education: Some epistemological problems. *Journal of Science Education and Technology, 2*(1), 359–370.

Maumary-Gremaud, A., (2000). *Things that you have done (Technical Report).* http://www.fasttrackproject.org/.

Monachino, C., Splett, J. W., Shen, Z., Cornett, S., Halliday, C. A., & Weist, M. D. (2021). Patterns and pathways of peer victimization across the transition to middle school. *School Psychology Review, 50(2–3),* 420–440.

Monks, C. P., Smith, P. K., Naylor, P., Barter, C., Ireland, J. L., & Coyne, I. (2009). Bullying in different contexts: Commonalities, differences and the role of theory. *Aggression and Violent Behaviour, 14*(2), 146–156.

Niemelä, S., Brunstein-Klomek, A., Sillanmäki, L., Helenius, H., Piha, J., Kumpulainen, K., Moilanen, I., Tamminen, T., Almqvist, F., & Sourander, A. (2010). Childhood bullying behaviors at age eight and substance use at age 18 among males. A nationwide prospective study. *Addictive Behaviours, 36*(3), 256–260.

Nixon, R. M., Wonderling, D., & Grieve, R. (2010). Nonparametric methods for cost-effectiveness analysis: The central limit theorem and the bootstrap compared. *Health Economics, 19*(3), 316, 333.

Oberle, E., Schonert-Reichl, K. A., & Zumbo, B. D. (2010). Life satisfaction in early adolescence: personal, neighbourhood, school, family, and peer influences. *Journal of Youth and Adolescence, 40*(7), 889–901.

Olweus, D. (1994). Bullying at School: Basic facts and effects of a school-based intervention program. *Journal of Child Psychology and Psychiatry*, *35*(7), 1171–1190.

Olweus, D. (1996). *The revised Olweus Bully/Victim Questionnaire for students*. Bergen: University of Bergen.

Olweus, D. (2010). Understanding and researching bullying: Some critical issues. In S. R. Jimerson, S. M. Swearer, & D. L. Espelage (Eds.), *Handbook of bullying in schools: An international perspective* (pp. 9–33). Routledge/Taylor & Francis Group.

Organization for Economic Co-operation and Development. (2013). Income distribution and poverty in OECD countries: *What are the drivers of income inequality? (*OECD Publishing).

Orpinas, P., & Frankowski, R. (2001). The Aggression Scale: A self-report measure of aggressive behaviour for young adolescents. *The Journal of Early Adolescence, 21*(1), 50–67.

Pellegrini, A. D. (2002). Bullying, victimization, and sexual harassment during the transition to middle school. *Educational Psychologist, 37*(3), 151–163.

Pellegrini, A. D., & Bartini, M. (2000). A Longitudinal Study of Bullying, Victimization, and Peer Affiliation during the Transition from Primary School to Middle School. *American Educational Research Journal, 37*(3), 699.

Pellegrini, A. D., & Long, J. D. (2002). A longitudinal study of bullying, dominance, and victimization during the transition from primary school through secondary school. *British Journal of Developmental Psychology, 20*(2), 259–280.

Popper, K. P. (1972). *Objective Knowledge*, Clarendon Press, Oxford.

Reijntjes, A., Kamphuis, J. H., Prinzie, P., Boelen, P. A., Van Der Schoot, M., & Telch, M. J. (2010). Prospective linkages between peer victimization and externalizing problems in children: a meta-analysis. *Aggressive Behaviour, 37*(3), 215–222.

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.

Salmivalli, C. (2010). Bullying and the peer group: A review. *Aggression and Violent Behaviour, 15*(2), 112–120.

Sapouna, M., & Wolke, D. (2013). Resilience to bullying victimization: The role of individual, family and peer characteristics. *Child Abuse & Neglect*, *37*(11), 997–1006.

Sener, A., Oztop, H., Dogan, N., & Gaven, S. (2008). Family, close relatives, friends: Life satisfaction among older people. *Educational Gerontology, 34*, 890–906.

Shepherd, D., Goedeke, S., Landon, J., Taylor, S., & Williams, J. (2020). The impact of sibling relationships on Later-Life Psychological and Subjective Well-Being. *Journal of Adult Development*, *28*(1), 76–86.

Sidanius, J. (1993). The psychology of group conflict and the dynamics of oppression: A social dominance perspective, in S. Iyengar and W. J. McGuire (eds), *Explorations in Political Psychology*. Durham, NC: Duke University Press, pp. 183–219.

Sourander, A., Jensen, P., RöNning, J. A., Niemela, S., Helenius, H., SillanmäKi, L., Kumpulainen, K., Piha, J., Tamminen, T., Moilanen, I., & Almqvist, F. (2007). What is the early adulthood outcome of boys who bully or are bullied in childhood? The Finnish “From a Boy to a Man” study. *PEDIATRICS, 120*(2).

Straus, M. A., Gelles, R. J., & Steinmetz, S. K. (2006). *Behind Closed Doors: Violence in the American Family.* Routledge.

Swearer, S. M., & Doll, B. (2001). Bullying in schools: An ecological framework. *Journal of Emotional Abuse, 2*(2-3), 7–23.

Swearer, S. M. and Espelage, D. L. (2004) ‘Introduction: a social-ecological framework of bullying among youth’, in D. L. Espelage and S. M. Swearer

(eds), *Bullying in American Schools: A Social-Ecological Perspective on Prevention and Intervention.* Mahwah, NJ: Lawrence Erlbaum, pp. 1–12.

Tikly, L. (2015). What works, for whom, and in what circumstances? Towards a critical realist understanding of learning in international and comparative education. *International Journal of Educational Development, 40*, 237–249.

Tippett, N., & Wolke, D. (2015). Aggression between siblings: Associations with the home environment and peer bullying. *Aggressive Behaviour*, *41*(1), 14–24.

Toseeb, U., McChesney, G., Dantchev, S., & Wolke, D. (2020). Precursors of sibling bullying in middle childhood: Evidence from a UK-based longitudinal cohort study. *Child Abuse & Neglect, 108*, 104633.

Tucker, C. J., Finkelhor, D., Turner, H., & Shattuck, A. (2013). Association of sibling aggression with child and adolescent mental health. *Paediatrics, 132*, 79–84.

Ttofi, M. M., & Farrington, D. P. (2010). School bullying: Risk factors, theories and interventions. *In Handbook on crime* (pp. 427-457). Willan.

Van Der Graaff, J., Branje, S., De Wied, M., Hawk, S., Van Lier, P., & Meeus, W. (2013). Perspective taking and empathic concern in adolescence: Gender differences in developmental changes. *Developmental Psychology*, *50*(3), 881-888.

Vaillancourt, T., Brittain, H., Farrell, A. H., Krygsman, A., & Vitoroulis, I. (2023). Bullying involvement and the transition to high school: A brief report. *Aggressive Behaviour, 49*(4), 409–417.

Wang, J., Iannotti, R. J., & Nansel, T. R. (2009). School bullying among adolescents in the United States: physical, verbal, relational, and cyber. *Journal of Adolescent Health*, *45*(4), 368–375.

Wang, W., Brittain, H., McDougall, P., & Vaillancourt, T. (2016). Bullying and school transition: Context or development? *Child Abuse & Neglect, 51*, 237–248.

Wildemuth, B. M. (1993). Post-positivist research: Two examples of methodological pluralism. *The Library Quarterly: Information Community, Policy, 63*(4), 450-468.

Williford, A. P., Brisson, D., Bender, K. A., Jenson, J. M., & Forrest-Bank, S. (2010). Patterns of aggressive behaviour and peer victimization from childhood to early adolescence: A latent class analysis. *Journal of Youth and Adolescence, 40(*6), 644–655.

Williford, A., Boulton, A. J., & Jenson, J. M. (2013). Transitions between subclasses of bullying and victimization when entering middle school. *Aggressive Behaviour, 40*(1), 24–41.

Williford, A., Boulton, A. J., Forrest-Bank, S. S., Bender, K. A., Dieterich, W. A., & Jenson, J. M. (2016). The effect of bullying and victimization on cognitive empathy development during the transition to middle school. *Child and Youth Care Forum, 45*(4), 525–541.

Wolke, D., Copeland, W. E., Angold, A., & Costello, E. J. (2013). Impact of bullying in childhood on adult health, wealth, crime, and social outcomes. *Psychological Science, 24*(10), 1958–1970.

Wiehe, V. (1997). Sibling Abuse: Hidden Physical, Emotional, and Sexual Trauma. *Journal of Interpersonal Violence, 36*(9–10).

Williams, S. G., Langhinrichsen-Rohling, J., Wornell, C., & Finnegan, H. (2017). Adolescents transitioning to high school: sex differences in bullying victimization associated with depressive symptoms, suicide ideation, and suicide attempts. *The Journal of School Nursing, 33*(6), 467–479

Wolke, D., & Skew, A. J. (2012). Family factors, bullying victimisation and wellbeing in adolescents. *Longitudinal and Life Course Studies, 3*(1), 101-119.

Yucel, D., & Yuan, A. S. V. (2016). Parents, Siblings, or Friends? Exploring Life Satisfaction among Early Adolescents. *Applied Research in Quality of Life, 11*(4), 1399–1423.

Xu, M., Macrynikola, N., Waseem, M., & Miranda, R. (2010). Racial and ethnic differences in bullying: Review and implications for intervention. *Aggression and Violent Behaviour*, *50*, 101340.

Zhang, S., Hong, J. S., Hao, Y., Lee, N. Y., & Piquero, A. R. (2020). A latent transition analysis of youth bullying victimization patterns over time and their relations to delinquency. *Journal of Interpersonal Violence, 37*(7-8), NP5442–NP5470.

Zych, I., Ttofi, M. M., Llorent, V. J., Farrington, D. P., Ribeaud, D., & Eisner, M. P. (2018b). A longitudinal study on stability and transitions among bullying roles. *Child Development*, *91*(2), 527–545.

Appendix 1

The Critical Appraisal Skills Program (CASP) Checklist for cohort studies that was used for quality appraisal of papers in the systematic literature review.

Section A: Are the results valid?	
1. Did the study address a clearly focused issue?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: *A question can be 'focused' in terms of* • *the population studied* • *the risk factors studied* • *is it clear whether the study tried to detect a beneficial or harmful effect* • *the outcomes considered*	
2. Was the cohort recruited in an acceptable way?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: • *Look for selection bias which might compromise the generalisability of the findings:* • *was the cohort representative of a defined population* • *was there something special about the cohort* • *was everybody included who should have been*	
3. Was the exposure accurately measured to minimise bias?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: *Look for measurement or classification bias:* • *did they use subjective or objective measurements* • *do the measurements truly reflect what you want them to (have they been validated)* • *were all the subjects classified into exposure groups using the same procedure*	
4. Was the outcome accurately measured to minimise bias?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: *Look for measurement or classification bias:* • *did they use subjective or objective measurements* • *do the measurements truly reflect what you want them to (have they been validated)* • *has a reliable system been established for detecting all the cases (for measuring disease occurrence)* • *were the measurement methods similar in the different groups*	

• *were the subjects and/or the outcome assessor blinded to exposure (does this matter)*	
5. (a) Have the authors identified all important confounding factors?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: • *list the ones you think might be important, and ones the author missed*	
b) Have they taken account of the confounding factors in the design and/or analysis?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: • *look for restriction in design, and techniques e.g. modelling, stratified-, regression-, or sensitivity analysis to correct, control or adjust for confounding factors*	
6. a) Was the follow up of subjects complete enough?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: • *the persons that are lost to follow-up may have different outcomes than those available for assessment* • *in an open or dynamic cohort, was there anything special about the outcome of the people leaving, or the exposure of the people entering the cohort*	
b) Was the follow up of subjects long enough?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: • *the good or bad effects should have had long enough to reveal themselves*	
Section B: What are the results?	
7. What are the results of this study?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: • *what are the bottom line results* • *have they reported the rate or the proportion between the exposed/unexposed, the ratio/rate difference* • *how strong is the association between exposure and outcome (RR)* • *what is the absolute risk reduction (ARR)*	

8. How precise are the results?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: • *look for the range of the confidence intervals, if given*	
9. Do you believe the results?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: • *big effect is hard to ignore* • *can it be due to bias, chance or confounding* • *are the design and methods of this study sufficiently flawed to make the results unreliable* • *Bradford Hills criteria (e.g. time sequence, dose-response gradient, biological plausibility, consistency)*	
Section C: Will the results help locally?	
10. Can the results be applied to the local population?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: • *Is a cohort study the appropriate method to answer this question* • *If the subjects covered in this study could be sufficiently different from your population to cause concern* • *If your local setting is likely to differ much from that of the study* • *If you can quantify the local benefits and harms*	
11. Do the results of this study fit with other available evidence?	☐ Yes ☐ No ☐ Can't Tell
12. What are the implications of this study for practice?	☐ Yes ☐ No ☐ Can't Tell
CONSIDER: • *one observational study rarely provides sufficiently robust evidence to recommend changes to clinical practice or within health policy decision making* • *for certain questions, observational studies provide the only evidence* • *recommendations from observational studies are always stronger when supported by other evidence*	

Appendix 2

Appendix 2 shows the full hierarchical regression stepwise model introducing peer and sibling bullying variables at step one, interaction effects at step two and covariates at step three for all dependent variables.

		Psychological Distress	**Negative self-view**	**Satisfaction with Life**	**Positive self-view**
		B (95% CI)	***B (95% CI)***	***B (95% CI)***	***B (95% CI)***
Block 1	Sib Consistently low	-.32 (-.54, -.12) **	.19 (-.02, .41)	REF	REF
	Sib Moderate	-.43 (-.57, -.12) **	.17 (-.06, .40)	-.12 (-.29, .05)	.16 (-.01, .33)
	Sib Consistently high	REF	REF	-.26 (-.47, -.05) *	.21 (-.00, .42)
	Peer Consistently low	-.60 (-1.14, .07) *	.47 (-.06, 1.00)	REF	REF
	Peer Moderate	-.38 (-.95, .20)	-.31 (-.59, -.04)	-.46 (-.74, -.19) ***	.35 (-.18, .88)
	Peer Consistently high	REF	REF	-.21 (-.74, .32)	.39 (.12, .66) **
Block 2	Sib Consistently low	-.37 (-.60, -.14) **	.26 (..00, .51) *	REF	REF
	Sib Moderate	-.41 (-.67, -.16) **	.26 (.03, .49) *	-.10 (-.28, .08)	.14 (-.04, .31)
	Sib Consistently high	REF	REF	-.32 (-.55, -.09) **	.27 (-.04, .50) *
	Peer Consistently low	-.51 (-1.22, .21)	.13 (-.59, .85)	REF	REF
	Peer Moderate	-.47 (-1.27, .33)	.03 (-.77, .83)	-.23 (-.69, .28)	-.09 (-.54, .37)
	Peer Consistently high	REF	REF	.05 (-.77, .66)	.84 (.13, 1.55) *
	ModPeer*LowSib	.22 (-.46, .91)	-.41 (-1.10, .29)	-.34 (-1.03, .36)	.85 (.16, 1.54) *
	ModPeer*ModSib	.42 (1.06, .46)	-.27 (-.91, .38)	-.37 (-1.03, .36)	.70 (.06, 1.34) *
	HighPeer*LowSib	-.54 (-2.06, .99)	.30 (-1.26, 1.86)	.15 (-1.40, 1.70)	-2.57 (-4.12, -1.03) ***
	HighPeer*ModSib	.35 (-.85, 1.54)	-1.24 (-2.46, -.02) *	-.53 (-1.75, .68)	-.52 (-1.73, .68)
Block 3	Sib Consistently low	-.35 (-.58, -.13) **	.25 (.02, .53) *	REF	REF

Sib Moderate	-.42 (-.67, -.17) **	.27 (.02, .48) *	-.08 (-.25, .10)	.10 (-.07, .28)
Sib Consistently high	REF	REF	-.32 (-.55, -.09) **	24 (.01, .46) **
Peer Consistently low	-.63 (-1.33, .08)	.18 (-.54, .89)	REF	REF
Peer Moderate	-.56 (-1.34, .23)	.05 (-.75, .84)	-.26 (-.71, .20)	-.05 (-.50, .39)
Peer Consistently high	REF	REF	-.14 (-.86, .57)	.84 (.14, 1.55) *
ModPeer*LowSib	.22 (-.46, .91)	-.39 (-1.08, .31)	-.34 (-1.03, .35)	.83 (.14, 1.51) *
ModPeer*ModSib	.42 (-.21, 1.06)	-.30 (-.94, .35)	-.41 (-1.05, .23)	.71 (.08, 1.35) *
HighPeer*LowSib	-.53 (-2.06, .99)	.33 (-1.21, 1.88)	.25 (-.30, 1.78)	-2.52 (-4.04, -.99) **
HighPeer*ModSib	.35 (-.85, 1.54)	-1.15 (-2.36, .07)	-.40 (-1.61, .81)	-.56 (-1.75, .06)
Sex=Male	-.39 (-.53, -.25) **	.28 (.14, .43) ***	.28 (.14, .42) **	-.21 (-.36, -.07) ***
Pov status = not poor	.10 (-.14, .33)	-.01 (-.25, .23)	-.13 (-.36, .11)	.07 (-.17, .30)
Ethnicity = British	.04 (-.13, .20)	-.13 (-.30, .04)	.05 (-.12, .21)	.28 (.11, .44) **
Household Income	.04 (-.03, .12)	.02 (-.06, .10)	.06 (-.02, .13)	-.04 (-.11, .04)

**p <.05, **p<.01, ***p<.001*

Note: Table shows stepwise model with three blocks for each dependent variable.

Appendix 3

Sensitivity analysis for the Rosenberg Self-Esteem scale as opposed to separating variables into positive self-view and negative self-view.

		Negative self-view	**Positive self-view**	**Overall Self-Esteem Scale**
		B (95% CI)	***B (95% CI)***	***B (95% CI)***
Block 1	Sib Consistently low	REF	REF	REF
	Sib Moderate	-.03 (-.19, .15)	.16 (-.01, .33)	.10 (-.07, .27)
	Sib Consistently high	-.19 (-.41, .02)	.21 (-.00, .42)	.21 (.00, .43) *
	Peer Consistently low	REF	REF	REF
	Peer Moderate	-.31 (-.59, -.04) *	.39 (.12, .66) **	.41 (.13, .68) **
	Peer Consistently high	-.47 (-1.0, .06)	.35 (-.18, .88)	.47 (-.07, .99)
Block 2	Sib Consistently low	REF	REF	REF
	Sib Moderate	-.00 (-.18, .17)	.14 (-.04, .31)	.08 (-.10, .25)
	Sib Consistently high	-.26 (-.49, -.03) *	.27 (-.04, .50) *	.29 (.06, .52) *
	Peer Consistently low	REF	REF	REF
	Peer Moderate	-.10 (-.56, .35)	-.09 (-.54, .37)	.05 (-.40, .51)
	Peer Consistently high	-.13 (-.85, .59)	.84 (.13, 1.55) *	.44 (-.27, 1.16)
	ModPeer*LowSib	-.41 (-1.10, .29)	.85 (.16, 1.54) *	.67 (-.02, 1.37)
	ModPeer*ModSib	-.27 (-.91, .38)	.70 (.06, 1.34) *	.49 (-.16, 1.13)
	HighPeer*LowSib	.30 (-1.26, 1.86)	-2.57 (-4.12, -1.03) ***	-1.34 (-2.89, .21)
	HighPeer*ModSib	-1.24 (-2.46, -.02) *	-.52 (-1.73, .68)	.64 (-.40, .08)
Block 3	Sib Consistently low	REF	REF	REF
	Sib Moderate	.03 (-.15, .20)	.10 (-.07, .28)	.04 (-.14, .21)
	Sib Consistently high	-.25 (-.48, -.02) *	.24 (.01, .46) **	.26 (.04, .49) *
	Peer Consistently low	.REF	REF	REF
	Peer Moderate	-.13 (-.59, .32)	-.05 (-.50, .39)	.09 (-.36, .53)
	Peer Consistently high	-.18 (-.89, .54)	.84 (.14, 1.55) *	.47 (-.24, 1.28)*

ModPeer*LowSib	-.39 (-1.08, .31)	.83 (.14, 1.51) *	.65 (-.04 (1.33)
ModPeer*ModSib	-.30 (-.94, .35)	.71 (.08, 1.35) *	.51 (-.12, 1.15)
HighPeer*LowSib	.33 (-1.21, 1.88)	-2.52 (-4.04, -.99) **	-1.34 (-2.86, .19)
HighPeer*ModSib	-1.15 (-2.36, .07)	-.56 (-1.75, .06)	.56 (-.64, 1.75)
Sex=Male	.28 (.14, .43) ***	-.21 (-.36, -.07) ***	-.29 (-.44, -.15)***
Pov status = not poor	-.01 (-.25, .23)	.07 (-.17, .30)	.05 (-.19, .28)
Ethnicity = British	-.13 (-.30, .04)	.28 (.11, .44) **	.23 (.07, .40) **
Household Income	.02 (-.06, .10)	-.04 (-.11, .04)	-.04 (-.11, .04)

*p<.05, **p<.01, ***p<.001