# The relationship between adolescent sibling bullying and emerging adult loneliness and psychological wellbeing

Georgina Elizabeth Pavey

A thesis submitted for the degree of Doctorate in Clinical Psychology

School of Health and Social Care

University of Essex

April 2025

**Acknowledgements**

I would like to start by thanking the households that have taken part in Understanding Society. Without your contributions, it would not have been possible to complete this research.

I would like to express my gratitude towards my thesis supervisors Dr Susan McPherson and Dr Laura Fumagalli. Thank you for all the support, guidance, and feedback you have given me over the last three years. This thesis has been undoubtedly the most difficult part of my academic career to date and I feel privileged to have had the opportunity to grow and learn from your expertise.

I also want to thank my personal tutor Dr Alison Spencer who has been a tremendous source of emotional, practical, and pastoral support throughout my studies.

I would like to thank my friends, both on the course and outside of the course, for their support. Thank you for giving me space to vent my frustrations and helping me to feel validated and less alone during this challenging process. I want to give a special mention to Lisa, Vicky, Amy, and my nephews Kiyan and Arlo. Thank you for uplifting me when I have been down and helping me to find balance and glimmers during my doctorate.

Finally, I would like to give a huge thank you to my fiancé Ollie. Thank you for uprooting your life without question or complaint to support me on this journey. Thank you for always being there and knowing exactly what I need in the hard moments, whether it be a witty remark, a hug, or watching reality TV. You have been there through the highest highs and the lowest lows. Thank you for believing in me always, even when I have struggled to believe in myself.

## Abstract

Social and emotional development are pivotal to later psychological health and can be understood through attachment theory and social learning theory. Sibling relationships are relatively under-researched yet important influences in child development, and one area related to psychological and social wellbeing is sibling bullying. Emerging adulthood is also an increasingly recognised unique life stage where psychosocial difficulties are common. The longitudinal evidence base has mostly focused on adolescent research and has not studied loneliness. There is also emerging evidence of dose-response associations. This study aimed to fill gaps in the literature by exploring the relationship between adolescent sibling victimisation and perpetration and emerging adult loneliness, psychological distress, and mental wellbeing. This study also aimed to explore the possible dose-response relationships of sibling victimisation and perpetration with these outcomes. This study involved secondary data analysis of data from Understanding Society, utilising a longitudinal observational design following participants from early adolescence into emerging adulthood. Regression analyses were run, and the results indicated that adolescent sibling perpetration was positively related to emerging adult loneliness and psychological distress for females. This study also found dose-response relationships for males, with more sibling victimisation and less sibling perpetration associated with higher loneliness scores, and sibling victimisation positively associated with psychological distress. No such relationships were found for mental wellbeing, although this may be due to sample limitations. The findings are discussed in relation to theory and recommendations for future research are considered in the context of the exploratory nature of this study and its strengths and limitations. Possible implications of the findings, including raising awareness of risk factors, and informing sibling bullying prevention and therapeutic intervention for those most at risk, are also discussed.

## Contents

## List of Statistical Symbols

% - Percentage

$\alpha$ – Cronbach's Alpha

*b* – Unstandardised Beta Coefficient

$\beta$ - Standardised Beta Coefficient

CI – Confidence Interval

F – ANOVA F Statistic

*M* - Mean

N – Number of Participants

OR – Odds Ratio

*p* – P Value; Significance Level

*r* – Pearson's c=Correlation

R - Range

$R^2$ – Pearson's Correlation (r) Squared

*SD* – Standard Deviation

*SE* – Standard Error

z – Standardised Score

# Chapter 1: Introduction

## Chapter Summary

This chapter offers an overview of the topic area that informed this research. The chapter starts with an explanation of the importance of sibling relationships in social and emotional development, before going on to explore theories of social and emotional development that have shaped the rationale for this research. It then examines emerging adulthood as a unique life stage as well as the relevance of loneliness and mental health as significant public health issues, with a focus on the UK. The chapter then homes in on sibling bullying, first outlining its definitions, prevalence and measurement, and then overviewing the existing literature. The chapter then leads into a systematic review and narrative synthesis.

## Sibling Relationships

The importance of sibling relationships has been highlighted by systemic theorists. Systemic thinking has many schools of thought, and is underpinned by the notion difficulties are not individually maintained, but rather are maintained by complex system dynamics, such as families (e.g. Dallos & Draper, 2015). One prominent systemic theorist was Salvador Minuchin who developed structural family therapy, which focuses on the family structure and places psychological difficulties in the wider context of problematic interactions in the family (S. Minuchin, 1974). Structural family therapy is informed by family systems theory, which views the family as a system made up of emotionally interdependent and reciprocal subsystems that cannot be fully understood in isolation, and dysfunction or harmony in one subsystem can influence the other subsystems (e.g. Cox & Paley, 1997; P. Minuchin, 1985; S. Minuchin, 1974). Thus, positive interactions in one subsystem can be protective for the functioning of other subsystems, and difficulties in one subsystem can bleed into other

subsystems. Much of this theory is rooted within a traditional family and focuses on the interdependence of parent-child, parent-parent and sibling subsystems, but it has been argued that this influence can also extend to subsystems outside the family, such as friendships, and can continue to exert an influence throughout a person's life (Cox & Paley, 1997). It is also theorised that interactions within and between subsystems, such as sibling dynamics, are essential factors in child development, including emotional and social development (e.g. Cox & Paley, 1997; P. Minuchin, 1985).

Other prominent voices in the discourse around the role of sibling relationships in cognitive, social, and emotional development were Alfred Adler in the early 1900's, and Judy Dunn in the later 20th Century. Adler articulated the relevance of sibling relationships in understanding individual development from a psychoanalytic perspective, highlighting how familial dynamics and particularly sibling rivalry are key to personality and self-esteem development (Ansbacher & Ansbacher, 1956; Whiteman et al., 2011). Adler wrote about the inferiority complex, where feelings of inferiority in social relationships can impact on a person's self-concept and lead to unhelpful behaviours in an attempt to improve their social standing, such as sibling rivalry and conflict to attain parental affection (Whiteman et al., 2011). Adler also advocated for the importance of differentiation in sibling relationships to counteract sibling rivalry and foster unique identity development, and the ways in which birth order and family constellations can interact with this (Ansbacher & Ansbacher, 1956; Whiteman et al., 2011). On the other hand, Dunn (1983, 1988) argued that focusing on structural family factors was insufficient in explaining individual child development, and this should be considered alongside the mutual relational influences within the family, more akin to family systems theory. Dunn (1983) emphasised how sibling relationships have features of both peer and parent-child relationships, and argued the theory of peer reciprocity as a

fundamental tenet of child development is also applicable to the sibling relationship. Dunn (1988) also writes about the unique developmental influence sibling relationships have for social and emotional development, including the development of aggression, social competence, and empathy, through direct sibling interactions and indirect interactions with the wider family.

Despite these early theorising's on sibling relationships, the role of sibling relationships in child development, adjustment, and wellbeing has generally been overlooked (Feinberg et al., 2012; Whiteman et al., 2011). However, research has demonstrated sibling relationships' associations with mental health and wellbeing, sometimes more so than that of parent-child relationships and peer-relationships (e.g. Feinberg et al., 2012; Jensen et al., 2022). Sibling relationships are also distinctively positioned in holding qualities of both peer relationships, where play, support and collaboration are privileged, and of parent-child relationships, where older siblings are seen as an authority figure to the younger siblings (Siegler et al., 2020). Therefore, siblings may shape each other's development through mutual social learning and power differentials. Most research has focused on childhood and adolescence, although sibling relationships may continue to exert influence in adulthood. Whilst the sibling relationship becomes less dominant in adulthood, this relationship tends to be the most enduring relationship in a person's life and is characterised by connection and closeness across the lifespan (Dunn, 2014; Whiteman et al., 2011). Hence it is important to consider the sibling relationship in child development and later life adjustment.

**Theories of Social and Emotional Development**

Given the usually concurrent nature of child development and the development of sibling bonds, it is important to consider how they may interact and influence each other. Two

areas of child development that are pertinent to the development of social relationships and psychological health are social and emotional development, with Attachment Theory and Social Learning Theory being particularly resonant.

### *Attachment Theory*

Attachment refers to the emotional connection one has with another person. John Bowlby (1969, 1973, 1980) proposed attachment theory, drawing on evolutionary theories to highlight how attachment is a biological and instinctive survival need we are born with, which serves to help us be cared for by others. Babies display innate attachment behaviours to establish emotional and physical security, and attachments also help children to develop emotional regulation skills (Siegler et al., 2020). Thus, our early attachments influence both our ability to seek care, and to self-soothe as we get older. Bowlby (1969, 1988) highlighted the importance of an infant's attachment to their primary caregiver and their ability to provide a secure base to help the child feel safe to explore. However, Bowlby also outlined how we have a hierarchy of secondary attachment figures, including other caregivers, siblings, and peers, and this hierarchy can evolve and change as a child develops. Siblings are arguably optimal candidates for secondary attachments considering common features of close proximity and sibling affectional bonds that mirror the qualities of other attachments, such as those with peers (Ainsworth, 1989; Whiteman et al., 2011). Research has also emphasised the interconnectedness of parent-child and sibling bonds, arguing that the quality of a child's attachment with their primary caregiver can shape the quality of the child's social relationships, such as with their siblings, and secure sibling attachments can also shield against adverse consequences of deficits in parent-child attachments (e.g. Whiteman et al., 2011). This shows how our attachments do not exist in isolation, and whilst most research is

focused on parent-child attachments, sibling bonds are evidently an important factor in attachment development.

Bowlby (1969, 1973, 1980) also introduced the idea of internal working models of attachment, which suggests that our interactions with our attachment figures help us to build a mental representation of ourselves, others, and the world, and shape our attachment style in future relationships. These early internal working models continue to exert influence throughout the lifespan, impacting on how we process, interpret and respond to social cues and information within our relationships (Collins, 1996; Dykas & Cassidy, 2011) leading to subsequent psychological distress in relation to negative appraisals of attachment based social information (Collins, 1996). In addition, interpersonal traumas in childhood are associated with attachment and psychological difficulties in adulthood (e.g. Dugal et al., 2016; Van Assche et al., 2020). It is also argued that traumatic experiences have a cumulative impact, with repeated, more frequent traumas being associated with worse outcomes (e.g. Bistricky et al., 2017; Dugal et al., 2016).

Evidence suggests a significant, albeit modest, relationship in the stability of attachment security from childhood to early adulthood (Fearon & Roisman, 2017), and attachment security has been found to influence interpersonal functioning with family, friends, and romantic partners in adulthood (Shaver & Mikulincer, 2006). Research has also underlined the relationship between attachment security and social and emotional wellbeing in childhood (e.g. Fearon & Roisman, 2017; McHale et al., 2012) and adulthood (e.g. Fransson et al., 2016; Shepherd et al., 2021). This further highlights the importance of considering the multitude of close relationships within a person's life when thinking about

attachment, as well as emphasising the impact attachment can have on later social and emotional adjustment.

### *Social Learning Theory*

Social learning theory (Bandura, 1977) describes how children learn behaviours through direct and indirect observation of others, imitation, reinforcement, and modelling. Social learning also encompasses learning from the consequences of behaviour through vicarious reinforcement (Siegler et al., 2020) and combines aspects of behavioural and cognitive learning theories to emphasise the importance of attention and memory, and their interplay with environmental and behavioural cues to understand social learning and development (Muro & Jeffrey, 2008; Siegler et al., 2020). Family members are ideal candidates for learning models, particularly parents and older siblings who occupy a space of authority and familiarity, and the sibling relationship is perhaps a fertile relational mechanism for reciprocal learning through reinforcement and modelling of sibling behaviour (McHale et al., 2012; Whiteman et al., 2011). Thus, the sibling relationship is one important source of social learning during a child's development, which may in turn influence the development of social skills, the quality of future relationships, and indirectly contribute to loneliness and psychological wellbeing.

The tenets of social learning theory were investigated through a series of experiments where some children were exposed to adults modelling aggressive behaviours toward Bobo dolls (Bandura, 1965; Bandura et al., 1961). The results evidenced how children who observed aggressive modelling displayed more aggressive behaviours when playing (Bandura, 1965; Bandura et al., 1961), although imitation of aggressive behaviour was significantly less when the children observed the model being punished for their behaviour

(Bandura, 1965). This demonstrates how aggressive behaviours can be learnt and reinforced as forms of social communication. Societal and gender norms are also important to consider, with more explicit displays of aggression being more acceptable for males, which may factor into how behaviours are modelled, displayed and reinforced (Khadka, 2024). Equally, exposure too and engagement in aggressive interactions, such as bullying, are interwoven with the formation of masculine identities (e.g. Malonda-Vidal et al., 2021; Rosen & Nofziger, 2019). Whilst this may help us to understand the transmission and reciprocity of aggression, it may also point to potential difficulties for individuals who learn social behaviours that violate societal and gender norms, such as female overt aggression and lack thereof for males. Therefore, aggressive behaviours have the capacity to be socially learnt, although the mechanisms and consequences of this process may differ for males and females.

## Developmental Stages and Sibling Relationships

### *Erikson's (1950, 1968) Theory of Psychosocial Development*

This theory posits humans go through eight stages of psychosocial development from birth to old age. Each is characterised by a unique crisis of conflicting personal and societal needs, with successful completion of each stage necessary to progress and move towards healthy development (Degges-White, 2017). Each stage represents a key transitional period within a person's life: Trust vs. Mistrust (birth to 18 months); Autonomy vs. Shame and Doubt (18 months to three years); Initiative vs. Guilt (three to five) Industry vs. Inferiority (five to 12); Identity vs. Confusion (12 to 18); Intimacy vs. Isolation (18 to 40); Generativity vs. Stagnation (40 to 65); Integrity vs. Despair (65 to death). This theory also emphasises how when a person struggles to fulfil a developmental stage this can have adverse consequences throughout the lifespan, including emotional, behavioural, and relational

difficulties (Degges-White, 2017; Schwartz et al., 2015). Two stages appear to be particularly applicable in the context of sibling bullying. The Industry vs. Inferiority stage spans from middle childhood to early adolescence and follows children during the transition from primary to secondary school. This stage is characterised by an accelerated period of learning educationally, socially, and personally, including learning about the possibility of failure, with successful completion providing the virtue of competency. As noted later, this appears to cover the most common ages for involvement in sibling bullying. Meanwhile, the identity vs. confusion stage encapsulates early to late adolescence, when the teenager works through the developmental changes that accompany puberty, pushing boundaries whilst exploring their roles as an individual and amongst their peers, with successful completion providing the virtues of fidelity and devotion. Whilst evidence suggests involvement in sibling bullying begins to dissipate as the person progresses through this stage, this is still a critical life stage in sibling bullying research. The importance of these stages is understandable, considering the likelihood of increased proximity to one's siblings during these phases and an emphasis on developing autonomy and social and emotional competence.

Difficulties in resolving the childhood and early adolescent crisis can lead to further complications at the teenage stage related to interpersonal difficulties and difficulties establishing a congruent identity (Degges-White, 2017). Difficulties forming positive and meaningful relationships at the teenage stage can also lead to feelings of isolation and impact on social competence and further psychosocial development (Degges-White, 2017). Research has also found that positive peer relations during adolescence are related to identity development (e.g. Ragelienė, 2016). Although this is often thought of in terms of peers, considering the similarities between peer and sibling relationships and the relative lack of sibling research, it is reasonable to wonder whether sibling relations would also be important

to consider. Difficulties in synthesising one's identity in adolescence and early adulthood have been linked to psychological difficulties (e.g. Schwartz et al., 2015). Furthermore, struggles in resolving the teenage stage may create additional obstacles in progressing through the young adult stage (intimacy vs. isolation) potentially giving rise to further psychosocial difficulties. During this stage the young adult begins to explore romantic relationships and the pull of cultural expectations of marriage and children, with successful completion providing the virtues of love and affiliation.

### *Emerging Adulthood*

However, Erikson's conceptualisation of young adulthood has been critiqued for being outdated in modern industrialised societies where it is commonplace to remain in education and to explore romantic and sexual relationships more fluidly during teenage years and early twenties, and people are leaving home, marrying, and having children later in life (Arnett, 2000, 2007). Instead, Arnett (2000, 2024) proposes a transitional life stage between adolescence and young adulthood, approximately between the ages of 18 and 25, although this is sometimes extended to age 29, which he termed emerging adulthood. Emerging adulthood is arguably less fixed in its developmental features than other life stages and Arnett (2024) proposes five characteristics that are apparent in emerging adulthood; identity exploration, instability, self-focus, feeling in-between and possibilities/optimism.

Identity exploration points to emerging adults exploring who they are and what they want in different aspects of their life, such as relationships and work. Whilst this is similar to the teenage crisis described by Erikson's psychosocial model, it is argued the identity formation that starts in adolescence continues to develop and strengthens in emerging adulthood (Arnett, 2024). Instability refers to repeated and rapid changes during this life

stage as they explore their path in life, and self-focus emphasises the unique opportunity to focus on oneself during this life stage to develop independence, free from the childhood responsibilities of answering to parents or adult responsibilities such as marriage. Feeling in-between demonstrates a life stage where they no longer feel like an adolescent, but not yet an adult either, and possibilities/optimism highlights how during this life stage many different options and futures seem possible as they carve out a life they want to live.

Childhood and adolescent experiences are important in understanding adjustment in emerging adulthood. Wood et al. (2018) highlights both attachment theory and social learning theory to emphasise how secure early life attachments and familial relationships characterised by love and connection, and free of abuse, can influence emotional and social wellbeing in emerging adulthood. Whilst they predominately focus on parent-child bonds, as discussed earlier in this chapter, it would be presumptuous to assume sibling dynamics and bonds are not also important to consider. Emerging adulthood is also increasingly recognised as a unique developmental life stage accompanied by its own mental health and psychosocial challenges (e.g. Arnett et al., 2014; Baggio et al., 2017).

**The UK Context**

Loneliness, mental health, and bullying are significant public health concerns within the UK. There have been multiple initiatives focused on addressing loneliness in recent years, including the Campaign to End Loneliness, [CtEL] (n.d.a) established in 2011, and the UK Government Tackling Loneliness Strategy (Department for Culture, Media and Sport [DCMS], 2023a). Mental health difficulties are also a prominent issue, with the latest NHS long-term plan pledging additional mental health funding and expansion of mental health provision (NHS, 2019). Equally, there has been interest in initiatives to reduce peer and

cyber-bullying within the UK government (e.g. Department for Education, 2017), as well as in anti-bullying programmes within schools in the UK (Gaffney et al., 2021).

The family and school context are important to consider in relation to loneliness, mental health, and bullying, with the relevance of parent-child, peer, and sibling relationships in social and emotional development, and the interconnection of these relationships already highlighted. The UK is a western individualistic society, whereby independence and nuclear families made of parents and children are the norm, in contrast with more collectivist societies, which champion interdependence and families often include extended family members (e.g. Georgas et al., 1997; Hofstede, 1980). It is possible that as a society steeped in individualistic values, people may feel they have less social support, potentially contributing to loneliness and distress. Whilst this relationship is complex, recent research suggests individualistic cultures are associated with more loneliness (Barreto et al., 2021) and poorer individual wellbeing (Humphrey & Bliuc, 2022). Equally, the importance of positive parent-child and peer relationships and school environments, and the negative impact of peer bullying, for psychological health have been highlighted (e.g. Long et al., 2021; Oldfield et al., 2016). Interestingly, it has been theorised that aggression, such as bullying, is more acceptable and common in individualistic societies, although lower prevalence of school bullying victimisation was found in individualistic societies including the UK in recent years, which the authors suggest may be related to the success of school-based anti-bullying policies (Smith & Robinson, 2019).

However, a recent review outlined how the family structure of the UK has evolved in recent decades, evidencing a reduction in traditional ‘nuclear’ families (Children’s Commissioner, 2022a). In addition, the UK has a relatively high yet stable percentage of

lone-parent families compared to mainland Europe, with lone parents who are predominantly female, from a lower socioeconomic status, and more likely to experience poverty (Children's Commissioner, 2022a, 2022b).This emphasises the unique structural family make-up of the UK that may be pertinent to consider, and evidence suggests a link between lower socioeconomic status, poverty and mental health difficulties (e.g. Public Health England, 2019) and loneliness (e.g. Kung et al., 2022).

Another important contextual consideration is the notable political instability in the UK over the last 15 years. Firstly the introduction of austerity policies in 2010, where government spending was reduced effecting many public services, including education, welfare, and healthcare, have had a profound impact on social, physical and mental health, particularly for marginalised and disadvantaged groups (e.g. Berman & Hovland, 2024; Stuckler et al., 2017). Equally, whilst the Conservative Party were in power throughout this period, there was considerable in-party conflict and ideological disagreement that contributed to multiple changes in leadership, exacerbated by the 2016 Brexit referendum where the UK voted to leave the European Union (Hayton, 2024). The impact of Brexit on the financial stability of the UK, on welfare and healthcare systems, and on the country's ability to manage the 2020 Covid-19 pandemic has been emphasised (Arrieta, 2022; Dayan et al., 2020). Societal trust in the government was also further impacted by their handling of pandemic (Weinberg, 2022), and the pandemic contributed to the cost of living crisis aggravating financial instability and societal inequalities (The Lancet Public Health, 2022). The Covid-19 pandemic has also been associated with poor mental health and loneliness outcomes, particularly for emerging adults (e.g. Milicev et al., 2023; Pierce et al., 2020), and people experiencing socioeconomic disadvantage in the UK (e.g. Jaspal & Breakwell, 2022; Li & Wang, 2020).

## Loneliness

Loneliness has been defined as “the unpleasant experience that occurs when a person's network of social relationships is significantly deficient in quantity or quality” (Perlman & Peplau, 1998, p. 571), highlighting the distinct quality of loneliness in the dissonance between what a person wants from their social relationships, and what they currently experience (CtEL, n.d.a). Evidence from the 2021/2022 community life survey found 6% of people in England felt lonely ‘often’ or ‘always’, and 8% scored in the most often range for indirect measures of loneliness (DCMS, 2023b), using the Three-Item Loneliness Scale [TILS] (Hughes et al., 2004). Office for National Statistics [ONS] data from March 2020-January 2023 also highlights a rise in ‘often’ or ‘always’ loneliness rates from 6-7.1% in Britain (CtEL, 2023). In addition, the ONS (2024) found 7% of the British public reported feeling lonely ‘often’ or ‘always’, and 20% felt lonely ‘sometimes’, in December 2023. Thus, despite an increased awareness of loneliness, it is evident rates of loneliness are slowly increasing.

### *Theories of Loneliness*

Some loneliness theories have placed the developmental mechanisms of loneliness within our early social relationships (e.g. Merz & Jak, 2013; Solomon, 2000). Social learning theory is one theoretical framework considered in understanding loneliness. As discussed earlier, social learning theory emphasises the importance of the family environment in learning social behaviours and developing healthy social relationships, and loneliness may develop as a consequence of neglected or inadequate opportunities to observe and model prosocial skills (Solomon, 2000). Thus, if a person learns unhelpful social behaviours from models within their early social relationships, such as social withdrawal or aggressive

communication skills, this may bleed into other social relationships or their relationships later in their life and contribute to feelings of loneliness. Equally, negative social interactions may lead to avoidance through negative reinforcement, limiting social relationships and opportunities to have positive social experiences in the future, and this lack of social reinforcement potentially amplifies feelings of loneliness (Peplau & Perlman, 1982). Solomon (2000) also emphasises that aversive and aggressive social behaviours are a common response to feelings of loneliness, which can create a cyclical process whereby these behaviours prevent the person from developing meaningful social relationships, thus causing more loneliness and an increase in maladaptive behaviours, and so on.

Equally, attachment theory can be helpful in understanding the development of loneliness. It is argued the internal working models developed as part of our early life attachments shape our perceptions of and interactions within our social relationships throughout the life course (Merz & Jak, 2013; Solomon, 2000). In light of this, it is postulated those with secure early life attachments will have more positive representations and greater capacity to form trusting and close relationships (Merz & Jak, 2013). On the other hand, those who have insecure attachments and experiences of violence and aggression early in life may develop more negative perceptions of themselves and others, giving rise to mistrust, lack of social connection and feelings of isolation (Merz & Jak, 2013). Attachment ruptures and interpersonal trauma has also been linked with increased loneliness and decreased interpersonal competence (e.g. Bachem et al., 2019; Bistricky et al., 2017). Thus, difficulties in early life relationships may impact on a person's social competence and ability to form close relationships in adulthood and increase feelings of loneliness. Although loneliness theories have largely focused on early parent-child and peer relationships, as highlighted

previously, siblings are also important agents in social and emotional development that may help us to better understand loneliness.

### *Loneliness Risk Factors*

Some established risk factors for increased loneliness include female gender, health conditions, and being aged 16-24 (CtEL, 2023; DCMS, 2023a). A 2023 survey found 12% of 17-22 year olds reported feeling lonely ‘often’ or ‘always’ in England (NHS Digital, 2023b). This age category appears to align with the concept of emerging adulthood (Arnett, 2000, 2024). In line with this, loneliness in emerging adults is a prominent area of current research (e.g. Kirwan et al., 2025). Furthermore, evidence suggests negative social and familial relationships may be linked to experiences of loneliness, particularly for adolescents and emerging adults (CtEL, n.d.b; DCMS, 2023a). For example, isolation, sibling warmth, and peer bullying have been found to be longitudinally associated with loneliness (e.g. Matthews et al., 2023). The CtEL (2023) also argue recent loneliness trends in Great Britain potentially highlight the enduring impact of Covid-19 long after the pandemic. The Tackling Loneliness Strategy recommends further research into prevalence rates of loneliness, particularly in at risk groups, and longitudinal studies to explore predictors of loneliness and the long-term consequences (DCMS, 2023a).

### *Sibling Relationships and Loneliness*

Positive sibling relationships are linked to the development of healthy social relationships and less loneliness (e.g. Jensen et al., 2022). Lockwood et al. (2001) found more sibling warmth was associated with increased social competence with peers and less loneliness. Equally, Yeh and Lempers's (2004) longitudinal research found positive sibling relationships predicted higher quality peer friendships and self-esteem, which in turn

predicted less loneliness. The impact of sibling conflict across the lifespan has also been evidenced, predicting more loneliness in adolescents (e.g. Feng et al., 2019), emerging adults (e.g. Ponzetti & James, 1997), and older adults (e.g. Stocker et al., 2020). Therefore, sibling relationships appear to be central when considering the development of other social relationships, and consequently feelings of loneliness.

**Mental Health and Psychological Wellbeing**

Mental health and psychological wellbeing are multifaceted, and they include the ability to maintain relationships and cope with stress, and mental health difficulties are often characterised by distress and functional impairment (World Health Organisation [WHO], 2022). In childhood and adolescent research, mental health difficulties are often operationalised using the Strengths and Difficulties Questionnaire [SDQ] (R. Goodman, 1997; R. Goodman et al., 1998), which is often conceptualised as a measure of three domains. Internalising symptoms summarise the emotional symptoms and peer relationship problems subscales of the SDQ, measuring emotional and social difficulties that are often internal experiences, such as anxiety and low mood. Externalising symptoms encapsulate the conduct problems and hyperactivity/inattention subscales of the SDQ, often characterised by outwardly directed behaviours that challenge, such as restlessness, lack of concentration and aggression. Finally, the prosocial behaviour subscale of the SDQ denotes positive social behaviours, such as showing empathy, care and concern for others. For adult research, commonly used measures include the General Health Questionnaire (Goldberg & Williams, 1988) which measures psychological distress, the Clinical Interview Schedule-Revised (Lewis et al., 1992) designed to measure common mental health problems, and the short version of the Warwick -Edinburgh Mental Wellbeing Scale (Stewart-Brown et al., 2009), measuring mental wellbeing.

A nationally representative survey of people aged 16+ in England found that in 2014, one in six people met criteria for common mental health problems, and 9.3% met criteria for severe common mental health problems, an increase from 6.9% in 1993 (McManus et al., 2016). Equally, in 2016 19% of people aged 16+ in England were found to have probable mental ill health compared to 15% in 2012, and the increase was most evident in younger adults (NHS Digital, 2017). Meanwhile, a recent survey found 20.3% of 8-16 year olds in England had a probable mental disorder, compared to 12.5% in 2017 (NHS Digital, 2023b). Thus, mental health difficulties continue to be a concern, with evidence suggesting prevalence rates are slowly increasing, highlighting a need to better understand factors related to mental health difficulties to aid prevention and treatment.

### *Mental Health Risk Factors*

Recently reported UK prevalence rates highlight female gender as a risk factor for mental health difficulties, and the gender gap is particularly stark for people aged 16-25 (McManus et al., 2016; NHS Digital, 2023b). Evidence also highlights many individual, social and relational factors that are associated with mental health difficulties, including lack of social support, familial conflict, socioeconomic status, victimisation, and preexisting mental health difficulties (e.g. Pinto et al., 2014; Silva et al., 2016). In addition, the WHO (2022) highlights the weight of childhood risk factors that can endure throughout the lifespan, such as harsh parenting and bullying experiences, and young people in England who experienced bullying were more likely to have a probable mental disorder (NHS Digital, 2023b).

**Emerging Adulthood and Mental Health.** Emerging adulthood appears to be a pertinent life stage when considering mental health and wellbeing. The prevalence of mental health difficulties, such as anxiety and depression, during this transitional life stage between

adolescence and adulthood has been evidenced in many industrialised countries (e.g Arnett et al., 2014; Tanner, 2016). In addition, people with mental health difficulties are more likely to experience this in emerging adulthood than later adulthood, although emerging adults are less likely to access mental health services (National Collaborating Centre for Mental Health [NCCMH], 2022; Tanner, 2016). Mental health during emerging adulthood also arguably plays an important role in laying the foundations for health and wellbeing in adulthood (e.g. Howard et al., 2010; Tanner, 2016).

In England, a 2023 survey found 23.3% of 17-19 year olds and 21.7% of 20-25 year olds had a probable mental disorder, and prevalence rates were twice as high for females compared to males for both age groups (NHS Digital, 2023b). This suggests more than 1 in 5 emerging adults appear to meet criteria for mental health problems based on their scores on the SDQ. In addition, a recent report highlighted the increasing incidences of mental health problems for this age group in the UK, and the associated negative impact this appears to have for educational and work prospects (McCurdy & Murphy, 2024). The gap in mental health provision between adolescent and adult services is also becoming increasingly recognised, with the most recent NHS long-term plan emphasising the need to improve services for young people, including plans to increase the age criteria for children and young people's services to 25 and to implement more mental health support in schools, colleges, and universities (NHS, 2019). NHS England also commissioned a report to outline and make recommendations for the creation of services to meet the specific developmental and mental health needs of 18-25 year olds, including developing age specific services (NCCMH, 2022), highlighting the growing public health interest in supporting emerging adults in the UK.

### *Sibling Relationships and Mental Health*

Research suggest sibling warmth and low levels of sibling conflict are associated with less internalising, externalising and social difficulties in adolescence (e.g. Buist et al., 2013; Edels et al., 2024). Similarly, sibling relationships characterised by closeness are linked to more positive developmental, social, and psychological wellbeing outcomes, whereas sibling conflict is related to more negative outcomes for adolescents and emerging adults (e.g. Jensen et al., 2022). In addition, Shepherd et al. (2021) found sibling attachment quality in childhood predicted higher psychological wellbeing and life satisfaction in adulthood, more so than father-child attachment. Thus, there is a growing body of evidence highlighting the importance of sibling relationship quality on psychological adjustment in adolescence and emerging adulthood.

## Sibling Bullying

Sibling violence is under researched, despite it being the most common form of familial violence (Eriksen & Jensen, 2009), leading to an increased interest in studying sibling aggression and its consequences in the last decade. One form of aggression is sibling bullying. The most common definition in the bullying literature comes from Olweus (1993, 2013), who defines bullying as repeated exposure to a negative behaviour/interaction with intent by the perpetrator(s) who are from a similar social group that includes an imbalance of power between the victim and perpetrator(s). Wolke et al. (2015) adapted this definition in his writing on sibling bullying, defining it as “any unwanted aggressive behaviour(s) by a sibling that involves an observed or perceived power imbalance and is repeated multiple times…; bullying may inflict harm or distress on the targeted sibling including physical, psychological, or social harm” (p. 918). This definition encompasses the key features of

bullying within a sibling context and highlights the different forms and consequences of bullying behaviours.

A variety of validated tools are used to measure sibling bullying, the most common being adapted versions of the Olweus Bullying Questionnaire/Sibling Bullying Questionnaire, the Juvenile Victimisation Questionnaire, and the Conflict Tactics Scale (Brett et al., 2023; Wolke et al., 2015). However, even within these tools there is little accord in the way in which they are implemented and used to determine sibling bullying, with different conceptualisations, including abuse, aggression, and conflict, frequency criteria and measurement timeframes (Brett et al., 2023; Wolke et al., 2015). Therefore, there remains a lack of consensus and uniformity within the sibling bullying literature, with differing terminology and measurement.

There has been much interest in reporting the prevalence rates of sibling bullying. The literature often categorises bullying into four subgroups – victim-only, bully-only, bully-victim, and neutral (meaning no evidence of victimisation or perpetration). Research suggests sibling bullying is more common than peer bullying, with prevalence rates reported between 14-79% within different research samples regardless of role (Brett et al., 2023). Research has also found bully-victim's are consistently the largest of the involved subgroups, with as many as 33% of participants falling within this subtype in research samples, emphasizing the reciprocal nature of these behaviours (Brett et al., 2023; Wolke et al., 2015). Social learning theory (Bandura, 1977) perhaps helps us understand why bully-victim subtypes are common in sibling relationships as victimisation may result in imitation and thus engagement in bullying behaviours. However, the lack of uniformity in the way in which sibling bullying is operationalised and measured perhaps explaining the large disparity in reported prevalence

rates within the literature and emphasising the importance of considering these findings carefully.

Although there is a plethora of research looking at the prevalence of sibling bullying, there is little research on the key ages when this occurs, with only one study investigating this directly across childhood finding victimisation prevalence rates of 45-46% for 2-9 year olds, compared to 35% for 10-13 year olds and 27% for 14-17 year olds in a nationally representative sample of American children (Tucker, Finkelhor, Shattuck, et al., 2013). However, it is important to note the relatively high prevalence rates even in the older age groups. Similarly, Eriksen and Jensen (2006) found older age was negatively associated with sibling violence perpetration and Tippett and Wolke (2015) found higher victimisation prevalence rates for 10-12 years olds compared to 13-15 year olds. In addition, peer bullying is reportedly most frequent at ages 11-13 (Eslea & Rees, 2001) and, given the limited research into sibling bullying specifically, this may be useful to consider. Thus, although there is limited evidence focused on age as a risk factor for sibling bullying, it seems later childhood and early adolescence may be particularly relevant, and prevalence rates appear to fall in later adolescence.

### *Sibling Bullying, Attachment and Trauma*

Bullying experiences are becoming increasingly recognised as a unique form of interpersonal trauma (e.g. Cour et al., 2022; D'Andrea et al., 2012). A review of the school and workplace bullying literature also highlights a potential association with Post-Traumatic Stress Disorder symptoms (e.g. Nielsen et al., 2015). There is also evidence of a dose-response effect of bullying victimisation on psychological health, meaning repeated exposure to bullying has a stronger relationship with mental health (e.g. Evans et al., 2014). Whilst

little attention has been attributed to sibling bullying specifically, likely due to the lack of importance placed on studying this form of bullying until recently, it is appropriate to posit this may also be applicable to sibling bullying. Recent research indicates a potential dose-response relationship between peer and sibling bullying victimisation and mental health outcomes (e.g. Dantchev et al., 2018, 2019), as well as the dose-response relationship for different forms of sibling bullying victimisation and perpetration (e.g. X. Liu et al., 2020). There is also emerging evidence of a dose-response association between repeated sibling victimisation (e.g. Sellars et al., 2024; Sharpe et al., 2022) and perpetration (e.g. Dantchev et al., 2018; Dantchev & Wolke, 2019) and psychological health.

### *Sibling Bullying and Adolescent Mental Health*

The sibling bullying evidence base has grown over the last decade. Research has shown sibling victimization and perpetration is associated with increased internalising symptoms (e.g. Bar-Zomer & Klomek, 2018; Coyle et al., 2017; Liu et al., 2020), psychotic symptoms (e.g. X. Liu et al., 2021), and problem behaviours (e.g. Wolke & Samara, 2004; Wolke & Skew, 2011) in adolescence. Research has also investigated sibling bullying subgroups. For example, Wolke and Skew (2011) found only the bully-victim subgroup scored in the clinical range on the SDQ and were three times more likely to have behavioural problems compared to uninvolved. Alternatively, Foody et al. (2020) found associations between victim-only, bully-only, and bully-victim subgroups and internalising and externalising symptoms in adolescence. Therefore, the relationship between sibling bullying and psychological wellbeing in adolescence is evident, although most research is cross-sectional in nature.

There is also a small pool of literature exploring the relationship between sibling bullying and mental health outcomes longitudinally. For example, a study of children in the UK found victim-only, bully-only, and bully-victim subgroups in early adolescence exhibited more internalising, externalising, and self-harming behaviours, more psychological distress, and lower levels of wellbeing in late adolescence compared to those uninvolved in sibling bullying (Toseeb & Wolke, 2022). Additionally, Deniz and Toseeb (2023) found that sibling bullying in early adolescence predicted lower self-esteem in mid adolescence, which in turn predicted worse mental health and wellbeing outcomes for autistic individuals.

### *Sibling Bullying and Adult Mental Health*

Research into the relationship between sibling bullying and adult outcomes is relatively scarce when compared to the pool of literature on adolescent outcomes. Adolescent sibling bullying subgroups were found to be associated with higher risk of depression, anxiety, and psychotic disorder (Dantchev et al., 2018, 2019), and high-risk behaviours such as criminality and substance use (Dantchev & Wolke, 2019a) in emerging adulthood. Bowes et al. (2014) also found that sibling victimisation in early adolescence was associated with more depression, anxiety, and self-harm, at age 18. Retrospective accounts of sibling victimisation were also associated with lower wellbeing (Plamondon et al., 2021), and sibling perpetration accounts with lower self-esteem (Graham-Bermann et al., 1994) for university students. Sibling bullying may also continue to exert influence into late adulthood, with research finding retrospective accounts of victimisation predicted depression in older adults in China (C. Liu et al., 2023; Wang, 2020). Hence, there is tentative evidence to suggest adolescent bullying experiences may be related to psychological difficulties in later life.

### *Sibling Bullying and Loneliness*

One area of development that pertains to sibling bullying is the development of social skills. Positive sibling interactions have been linked to the development of social competence, prosocial behaviours, and the fostering of positive social relationships (e.g. Feinberg et al., 2012; Jensen et al., 2022). Linking this to social learning theory and the transmission of aggressive behaviour (Bandura, 1965, 1977, 1980; Bandura et al., 1961), exposure to sibling victimisation may lead to the learning of aggressive behaviours in social contexts and influence the development of social relationships, such as with peers. Equally, when positive sibling interactions are limited, such as through exposure to sibling victimisation or perpetrating sibling bullying, this may impact on one's ability to learn prosocial cues and develop social capital in adulthood.

Ponzetti and James (1997) argue for the importance of considering sibling relationships in the development of adult loneliness, although research in this area appears lacking. Nevertheless, sibling bullying may play a contributing role by relating to both the quality of the sibling relationship and one's ability to form other meaningful connections, potentially increasing loneliness and isolation and decreasing social support and connection. Despite evidence highlighting the link between sibling relationships and future social relationships and loneliness, research looking at sibling bullying in this context is sparse. Duncan (1999) found sibling bullying was significantly associated with increased loneliness in adolescence. Bouchard and Sonier (2023) also found retrospective accounts of childhood sibling bullying predicted dysfunctional social problem solving and reports of more unkindness within the family as emerging adults. However, both studies utilised cross-sectional designs, limiting the strength of their findings. Similarly, Solomon (2000) contended peer victimisation was linked to childhood loneliness, which can have a persistent

impact throughout a person's life. Equally, Matthews et al. (2022, 2023) followed participants from age 12 to age 18 and found bullying victimisation was longitudinally associated with loneliness. Whilst these studies focused on peer bullying, in the absence of longitudinal sibling bullying research, it is useful to consider these findings and the potential parallels with sibling bullying. Hence, there is a small yet fruitful pocket of research suggesting a possible relationship between sibling bullying and loneliness, that warrants further exploration.

### *Limitations of Current Research*

Early reviews outlining emerging evidence of the potentially negative consequences of sibling bullying on emotional and psychological wellbeing highlighted the need for further research, particularly longitudinal research, to better understand possible causal mechanisms (Wolke et al., 2015; Wolke & Skew, 2012). Whilst a recent scoping review by Brett et al. (2023) evidences the growth of empirical research in this topic area in the last decade, there are still many limitations within the evidence base. Firstly, it is important to note many studies continue to use cross-sectional designs, making it difficult to draw conclusions regarding change over time or how the factors relate temporally. Secondly, research continues to be predominantly focused on mental health and wellbeing outcomes in adolescence and has focused on disorder or symptom specific mental health outcomes. Thus, little is known about the relationship between sibling bullying and emerging adult psychological wellbeing. Equally, there is limited research on how sibling bullying may relate to loneliness, with no adult or longitudinal research measuring these constructs directly. Thus, whilst this growing body of literature shows there is a relationship between sibling bullying and mental health and wellbeing outcomes, there are limitations and gaps that point to a need for further investigation.

# Chapter 2: The Relationship Between Sibling Bullying and Social and Emotional Wellbeing Across Transitional Life Stages: A Systematic Review and Narrative Synthesis

## Chapter Summary

This chapter outlines a systematic review with narrative synthesis of the small body of longitudinal research exploring the relationship between sibling bullying and social and emotional wellbeing across transitional life stage. The chapter concludes by highlighting the gaps in the literature and the current research aims, with questions devised to address some of these gaps.

## Introduction

Evidence highlights the significant impact different forms of bullying and difficult familial experiences in childhood can have on psychological health. There is a substantial body of research finding peer bullies and victims have poorer mental health outcomes in adolescence (e.g. Bhat & Amin, 2022). Equally, there has been some interest in the longitudinal negative consequences of peer bullying (e.g. Halliday et al., 2021; Klomek et al., 2010), workplace bullying (e.g. Boudrias et al., 2021), and childhood maltreatment (e.g. Xiao et al., 2023). However, whilst the importance of sibling bullying has become more apparent in recent years, sibling bullying as an independent phenomenon has not received the same attention and research is relatively limited compared with peer bullying.

A recent scoping review concerning sibling bullying during childhood further highlighted the growing interest and importance of understanding this phenomenon (Brett et al., 2023). This review by its nature was broad in its aims, looking at an array of factors including prevalence, predictors, and outcomes. Longitudinal research was relatively sparse

when compared to the pool of cross-sectional literature, however the review provides tentative evidence to suggest the impact of adolescent sibling bullying can endure into later life. The review provides an initial summary of outcomes research, the majority of which was in childhood and adolescence, and points to the relevance and impact of adolescent sibling bullying, warranting further in depth and critical exploration.

This is the first review to the author's knowledge aiming to synthesise literature longitudinally investigating the relationship between sibling bullying and long-term social and emotional health and wellbeing outcomes. Considering the recent focus on this topic area, this review is exploratory in nature, allowing for a comprehensive examination of these concepts. This review uses Erikson's (1950, 1968) psychosocial model and Arnett's (2000, 2007) conceptualisation of emerging adulthood to support the operationalisation of transitional phases, such as early to mid-adolescence or adolescence to emerging adulthood, to answer the following question; Is sibling bulling longitudinally associated with social and emotional health and wellbeing outcomes across transitional life stages?

## Methods

### *Search Strategy*

A literature search was completed in October 2024 on the following databases: APA PsycINFO, APA PsycARTICLES, CINAHL Ultimate, MEDLINE Ultimate, and Web of Science Core Collection. Keywords and phrases were chosen to capture sibling bullying and social and emotional wellbeing in line with the review questions and aims. Considering the lack of consistency in definition and terminology for bullying within the literature (Brett et al., 2023; Wolke et al., 2015), many differing terms were used similarly to Brett et al.'s (2023) scoping review search terms. A multitude of terms were also used to encapsulate social and

emotional health and wellbeing, conceptualised similarly to the term ‘internalising symptoms’ commonly used in childhood research (A. Goodman et al., 2010; R. Goodman, 1997, 2001). Table 1 shows the search terms used, including Boolean phrases and truncations, as well as the total database hits. Searches were completed at the abstract level, were limited to journal articles and human studies where the databases allowed, and all date ranges were included. Total hits for each search per database are outlined in Appendix A. The decision was made not to include a search term to symbolise longitudinal research or transitional life stages as this would significantly reduce the number of database hits meaning potentially relevant papers would be missed, and instead this was screened for manually during eligibility assessment. The final search resulted in 374 papers for screening.

**Table 1**

*Systematic Search Terms and Database Results*

| Search No. | Search Terms | Total |
|---|---|---|
| S1 | AB "sibling bull*" OR "sibling abuse" OR "sibling violence" OR "sibling aggression" OR “sibling conflict” or "sibling victim*" OR "sibling perp*" | 1,187 |
| S2 | AB "mental health" OR "mental illness" OR "mental disorder" OR "psychiatric illness" OR "psychiatric disorder" OR adjustment OR resilience OR anxiety OR depression OR well-being OR wellbeing OR distress* OR "emotional difficult*" OR "psychological difficult*" OR "emotional problem*" OR "psychological problem*” OR internalising OR lonel* OR "social isolation" OR “social support” OR “social connect*” OR “social strain” | 3,600,589 |
| S3 | AB S1 AND S2 | 374 |

*Note.* Databases: APA PsycINFO, APA PsycARTICLES, CINAHL Ultimate, MEDLINE Ultimate, Web of Science Core Collection. Limiters: Scholarly (Peer Reviewed) Journals, Human Studies. Expanders: Apply Equivalent Subjects. AB – Abstract.

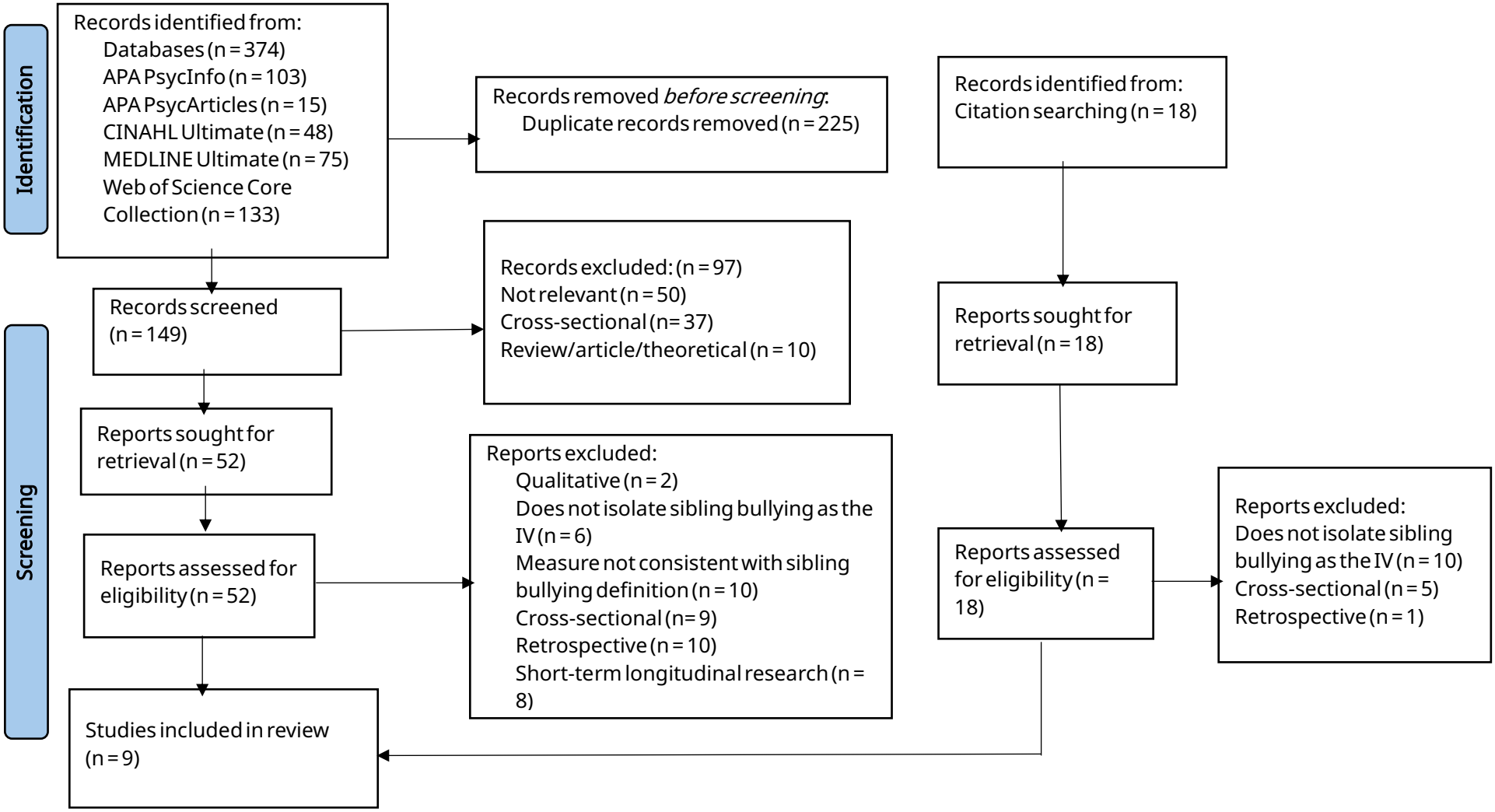
### *Study Selection*

Duplicate studies across databases were removed using Zotero software, leaving 149 studies to be screened for eligibility following the inclusion and exclusion criteria. A PRISMA flow diagram detailing study selection and eligibility assessment is provided in Figure 1. In the first stage of title and abstract screening, 97 records were excluded, leaving 52 studies eligible for full text assessment. Seven studies were assessed to be eligible for inclusion. Citation searching was conducted for these studies, as well as the Brett et al. (2023) scoping review, finding two further studies suitable for inclusion. Therefore, nine studies were deemed appropriate for this review, published between 2014 and 2024.

**Inclusion and Exclusion Criteria.** Studies were included in the review if they a) Were peer-reviewed, quantitative, prospective, longitudinal research following participants across transitional life stages; b) Included an isolated measure of sibling bullying, i.e. not combined with other concepts such as peer bullying, in childhood/adolescence that is operationalised in line with Wolke et al.'s (2015) definition; c) Included a measure of psychological, social and/or emotional health or wellbeing as a dependent variable; d) Included inferential analysis of the relationship between these measures; and e) Could be accessed in English. Non-peer-reviewed research was excluded to ensure a high quality of research. Qualitative, cross-sectional and retrospective research, reviews, and theoretical articles were excluded as they were not relevant to the aims of this review. Short-term longitudinal research over a period of one year or less that did not measure long-term relationships across transitional life stages, studies that did not include a measure of sibling bullying in isolation or that was consistent with Wolke et al.'s (2015) definition, and studies that only measured outcomes consistent with externalising symptoms, such as criminality and substance misuse, were also excluded as they were deemed to measure concepts inconsistent with the review aims.

**Figure 1**

*PRISMA Flow Diagram (Page et al., 2021) of Study Selection*



### *Quality Appraisal*

The Effective Public Health Practice Project (EPHPP) Quality Assessment Tool for Quantitative Studies (McMaster University, n.d.) was used to assess the methodological quality and potential bias of the included studies. This tool was chosen as it can be used to appraise the quality of studies that use diverse quantitative methodologies and it has been demonstrated to be a valid and reliable critical appraisal tool (Armijo-Olivo et al., 2012; Thomas et al., 2004). The EPHPP has also been used in previous systematic reviews investigating social relationships and familial abuse (e.g. Santini et al., 2015; Vaillancourt et al., 2017). The EPHPP has six key components: selection bias, study design, confounders, blinding, data collection methods, and withdrawals and dropouts. Each component is assessed as being either weak, moderate, or strong, and based on these assessments each study is given a global rating. The EPHPP stipulates that a study is rated as strong if it has no weak components, as moderate if only one weak component is identified, and if it has two or more weak components it is rated as weak. The overall quality rating for each study is included in Table 3, and the full quality assessment is provided in Appendix B.

### *Data Extraction and Synthesis*

A meta-analysis was not conducted due to the lack of homogeneity in the included studies methodologies and operationalisations of sibling bullying and emotional and social wellbeing. The findings were qualitatively synthesised using narrative synthesis. Popay et al.'s (2006) guidance encourages a systematic approach to narrative synthesis and reducing bias, including exploring relationships within and between studies included in the review, and assessing the trustworthiness of the synthesis by considering methodological quality throughout. Using this approach, key features of each study in relation to the review question

were extracted and summarised in Tables 3 and 4. Although some papers analysed other concepts, only findings relevant to the review question were extracted for synthesis. The data was then translated into themes.

## Results

Going forward, standardised beta coefficients (β) and Odds Ratios (OR) for individual predictors were interpreted as effect sizes following the guidance of Fey et al. (2023). Table 2 outlines the effect size cut off values. Effect sizes were not reported for three studies (Toseeb, McChesney, Oldfield, et al., 2020; Toseeb & Wolke, 2022; Tucker et al., 2024).

**Table 2**

*Effect Size Cut Off Values for Standardised Beta Coefficients (β) and Odds Ratio (OR)*

| | β | OR |
|---|---|---|
| Small Effect | < 0.20 | 1.5 |
| Medium Effect | 0.20 | 2 |
| Large Effect | > = 0.50 | > = 3 |

### *Study Characteristics and Quality Appraisal*

The main methodological characteristics and global quality assessment ratings for each study are outlined in Table 3. Operationalisations of sibling bullying and wellbeing, as well as the main analyses and findings for included studies, are outlined in Table 4.

Considering the review question, all studies utilised a longitudinal design and all used secondary data from large nationally representative prospective cohort studies. Three studies were from the Avon Longitudinal Study of Parents and Children (ALSPAC) and followed participants from early adolescence to emerging adulthood (Bowes et al., 2014; Dantchev et

al., 2018, 2019); Five were from the Millenium Cohort Study (MCS) and followed participants across adolescent stages (Deniz & Toseeb, 2023; Sellars et al., 2024; Sharpe et al., 2022; Toseeb, McChesney, Oldfield, et al., 2020; Toseeb & Wolke, 2022); and one was from the National Survey of Children's Exposure to Violence (NSCEV) and followed both children and adolescents (Tucker et al., 2024). All studies were conducted in the UK but one, which was conducted in the USA (Tucker et al., 2024). All studies that reported on ethnicity had a majority white sample. Whilst this reflects the areas in which the studies were conducted, this does limit the generalisability of the findings to non-western countries and countries with more ethnic diversity. All studies that reported on gender had a relatively even split of males and females, with the exception of Deniz and Toseeb (2023), who had a predominantly male sample. However, given their focus on autistic adolescents and the historical gender bias in autism diagnosis (e.g. Haney, 2016), this is understandable and likely represents the target population.

The included studies had sample sizes ranging from 416 to 17,157 participants. None of the studies commented on their sample sizes in terms of statistical power. Field (2024) demonstrated through G*Power that samples sizes of 77, 160, and 1,043 were adequate to detect large, medium, and small effects respectively, for regression models with up to 20 predictors. Thus, all studies had large sample sizes that appear adequate to detect small effects, with the exception of Deniz and Toseeb (2023) whose sample of 416 participants may only be sufficient to detect medium or larger effects. Nevertheless, it may have been useful for post-hoc power analyses to be conducted to clarify the power of their statistical analyses. Seven studies completed multiple statistical tests, three of which did not use a correction to mitigate the risk of a type 1 error (Bowes et al., 2014; Dantchev et al., 2019; Toseeb, McChesney, Oldfield, et al., 2020).

**Table 3**

*Included Studies Methodological Characteristics and Quality Assessment*

| Study | Design (T/Y) | Country | Participants (F) | Ethnicity | SB Age (Y) | MH/W Age (Y) | Quality |
|---|---|---|---|---|---|---|---|
| Bowes et al. (2014) | Cohort ALSPAC (2/6) [a] | UK | 5,715 (NR) | NR | 12 | 18 | Moderate |
| Dantchev et al. (2018) | Cohort - ALSPAC (2/6) [a] | UK | 3,559 (NR) | NR | 12 | 18 | Moderate |
| Dantchev et al. (2019) | Cohort - ALSPAC (3/12) [a] | UK | 3,881 (NR) | NR | 12 | 18 & 24 | Moderate |
| Deniz and Toseeb (2023) | Cohort - MCS (3/6)[a] | UK | 416 autistic adolescents (22%) | 88% White | 11 & 14 | 17 | Moderate |
| Sellars et al. (2024) | Cohort - MCS (3/6)[a] | UK | 8,682 (NR) | NR | 11 & 14 | 17 | Strong |
| Sharpe et al. (2022) | Cohort – MCS (2/3)[a] | UK | 13,912 (49%) | 80% White | 11 & 14 | 11 & 14 | Strong |

| Study | Design (T/Y) | Country | Participants (F) | Ethnicity | SB Age (Y) | MH/W Age (Y) | Quality |
|---|---|---|---|---|---|---|---|
| Toseeb, McChesney, Oldfield, et al. (2020) | Cohort - MCS (2/3)[a] | UK | 8,411 (49%) | 84% White | 11 & 14 | 14 | Moderate |
| Toseeb and Wolke (2022) | Cohort - MCS (3/6)[a] | UK | 17,157 (48%) | 81% White | 11 & 14 | 17 | Weak |
| Tucker et al. (2024) | Cohort - NSCEV (2/2) | USA | 1,936 (48%) | 59% White Non-Hispanic | T1: 2-9, *M* = 5.67, (C). 10-17, *M* = 13.28, (A). T2: NR | NR (Approx. 2Y Later) | Moderate |

*Note.* T – Timepoint(s). Y – Years. F – Female. SB – Self-Reported Sibling Bullying. D/W – Self-reported Mental Health/Wellbeing. ALSPAC – Avon Longitudinal Study of Parents and Children. NR – Not reported. MCS – Millenium Cohort Study. NSCEV – National Survey of Children's Exposure to Violence. *M* – Mean. C – Children. A – Adolescents. [a]Some Covariates Collected at Earlier Timepoints.

**Table 4**

*Included Studies Concepts, Analyses and Key Findings*

| Study | Sibling Bullying Concept & Measure | Wellbeing Concept & Measure | Analysis |
|---|---|---|---|
| Bowes et al. (2014) | T1: Bullying (Victim) – Adapted OBQ/SBQ | T2: Depression & Anxiety Diagnosis, Self-Harm - CIS-R | Logistic Regression |
| Dantchev et al. (2018) | T1: Bullying (Victim, Perpetrator & Bullying Subgroups) – Adapted OBQ/SBQ | T2: Psychotic Disorder - Psychosis-like Symptoms Interview | Logistic Regression |
| Dantchev et al. (2019) | T1: Bullying (Bullying Subgroups) – Adapted OBQ/SBQ | T2-3: Depression & Anxiety Diagnosis – CIS-R T2-T3: Self-Harm. T3: Suicidal Ideation. | Logistic Regression |
| Deniz and Toseeb (2023) | T1-2: Bullying (Victim and Perpetrator Combined) – Adapted two-item SBQ | T1-2: Self-Esteem - RSE. T3: Internalising -SDQ. Wellbeing -SWEMWBS. | Structural Equation Modelling |
| Sellars et al. (2024) | T1-2: Victimisation (Victim scale summed Across Ts) – Adapted Single-Item SBQ | T3: Internalising - SDQ. Wellbeing -SWEMWBS. Self-Harm[a] | Linear and Logistic Regression |
| Sharpe et al. (2022) | T1-2: Victimisation (Consistently Low, Consistently High, Increasing & Decreasing) - Adapted Single-Item SBQ | T1-T2: Depression – SMFQ. Life Satisfaction – One Item. Self-Esteem – RSE. Body Image – One Item. | Linear Regression |
| Toseeb, McChesney, Oldfield, et al. (2020) | T1-2: Bullying (Bullying Subgroups) – Adapted two-item SBQ | T2: Internalising and Prosocial Skills – SDQ (Parent Reports). | Linear Regression |
| Toseeb and Wolke (2022) | T1-2: Bullying (Bullying Subgroups and Transient/Repeated Victims) – Adapted two-item SBQ | T3: Wellbeing – SWEMWBS. Self-Esteem – RSE. Self-Harm[a]. Distress – K6. Internalising – SDQ. | Linear Regression |
| Tucker et al. (2024) | T1-T2: Victimisation (None, New Onset, Desist, Persist) – Juvenile Victimisation Questionnaire (Self Report or Parent Report) | T2: MH Distress – Trauma Symptom Checklist for Young Children (parent report) or Children (self-report) | ANCOVA |

| Study | Key Findings |
|---|---|
| Bowes et al. (2014) | Victims were more likely to experience depression, anxiety, and self-harm. No gender interactions. |
| Dantchev et al. (2018) | Victims and perpetrators were more likely to meet criteria for psychotic disorder. Linear trends were also found. Victim-only, bully-only, and bully-victim subgroups were also more likely to experience psychotic disorder. |
| Dantchev et al., 2019) | Bully-victims had a higher risk of depression, anxiety, and self-harm age 18. At age 24 this remained significant for depression. Victim-only group was more likely to experience suicidal ideation and suicidal self-harm. |
| Deniz and Toseeb (2023) | Sibling bullying was negatively associated with self-esteem, which was associated with internalising problems and wellbeing. Self-esteem fully mediated the relationship between sibling bullying and mental health outcomes. |
| Sellars et al. (2024) | Victimisation was associated with worse internalising symptoms, wellbeing, and self-harm. The authors summed scores at ages 11 and 14 and posit this as evidence of dose-response relationship. |
| Sharpe et al. (2022) | The consistently high group was associated with worse depression, life satisfaction, self-esteem, and body image for males and females. Similar associations were found for the increasing group with slightly smaller coefficients but not for self-esteem and body image in males. No associations were found for the decreasing group. |
| Toseeb, McChesney, Oldfield, et al. (2020) | Victim-only, bully-victim, and bully-only groups were associated with internalising symptoms. Bully-victim and bully-only groups were associated with prosocial skills. This was similar irrespective of autism diagnosis. |
| Toseeb and Wolke (2022) | Victim-only group associated with worse internalising symptoms, distress, self-harm, wellbeing, and self-esteem. Similar findings for bully-victims. Bully-only group only associated with distress. Transient and repeated victimisation were associated with poorer outcomes for all measures, as was repeated when compared to transient. |
| Tucker et al. (2024) | Victimisation group had a main effect for children and adolescents. Persist and new onset groups reported greater distress than none, and persist group also reported greater distress than desist. |

*Note*. MH – Mental Health. T – Timepoint. OBQ – Olweus Bullying Questionnaire. SBQ – Sibling Bullying Questionnaire. CIS-R – Clinical Interview Schedule-Revised. MH – Mental Health. DV – Domestic Violence. RSE – Rosenberg Self-Esteem Scale. SDQ – Strengths and Difficulties Questionnaire. SWEMWBS – Short Warwick-Edinburgh Mental Wellbeing Scale. SMFE – Short Mood and Feelings Questionnaire.
[a]binary yes or no items taken from Edinburgh Study of Youth and Transitions.

**Quality Assessment.** Using the EPHPP tool, most studies were rated moderate and two studies were rated strong globally (Sellars et al., 2024; Sharpe et al., 2022). There was only one study rated weak (Toseeb & Wolke, 2022). There was considerable homogeneity in component ratings across studies. All studies were rated as moderate for selection bias. Although all were deemed very likely to represent the target population, the number of participants who agreed to participate either ranged between 60% and 79% or they did not report this information. They were also all rated moderate for study design owing to their longitudinal observational designs. Longitudinal designs are considered a somewhat weaker methodology compared to experimental designs due to the lack of control and manipulation of the independent variable and an inability to determine causality (e.g. Reio, 2016). All studies were rated strong for blinding as, considering their use of secondary data, participants and assessors were blinded to the research questions during data collection. Finally, all studies were rated strong for data collection methods, owing to their use of established tools with good reliability and validity.

One component where there were differences in assessed quality was confounders. Five studies were rated strong for controlling confounders (Bowes et al., 2014; Dantchev et al., 2018; Sellars et al., 2024; Sharpe et al., 2022; Toseeb, McChesney, Oldfield, et al., 2020), three were rated moderate (Dantchev et al., 2019; Deniz & Toseeb, 2023; Tucker et al., 2024), and one study was rated weak as only a few confounders were controlled for in the analyses (Toseeb & Wolke, 2022). Another area with some variance was drop-out rates. Most studies were rated as weak, either because they did not report drop-out rates or because attrition between the first and last wave was greater than 40%. The two studies rated as strong had drop-out rates between 21-40% (Sellars et al., 2024; Sharpe et al., 2022). However, although attrition is a commonly cited weakness of long-term longitudinal research, evidence suggests there is still value in research with high attrition (e.g. Gustavson et al., 2012). Equally there

are techniques to counteract low retention which were utilised in the majority of studies, with seven studies using multiple imputation models (Bowes et al., 2014; Dantchev et al., 2018, 2019; Deniz & Toseeb, 2023; Sellars et al., 2024; Sharpe et al., 2022; Toseeb & Wolke, 2022) and four studies using weights (Sellars et al., 2024; Sharpe et al., 2022; Toseeb, McChesney, Oldfield, et al., 2020; Toseeb & Wolke, 2022) to account for missing data and attrition across time points. Thus, although most studies were rated weak using the EPHPP tool, it does not account for the unique challenges, advantages, and ways of addressing attrition in longitudinal research and therefore may underestimate the value of their contributions.

### *Sibling Bullying Measurement*

All studies measured sibling bullying via self-report or parent-report questionnaires. Eight studies used an adapted version of the Sibling Bullying Questionnaire (SBQ), which is adapted from the Olweus Bullying Questionnaire. However, there was evident heterogeneity in the way in which the measure was utilised. Three studies used the ALSPAC dataset, in which participants were provided with a definition of bullying and then asked about their bullying experiences over the last 6 months. ALSPAC utilised 6-item scales to measure victimisation and perpetration, measuring different types of bullying behaviour on a 5-point Likert scale. Conversely, five studies utilised the MCS dataset, which created an adapted single item SBQ measure for victimisation and perpetration in the MCS. Participants were not provided with a definition or timeframe, and the items were scored on a 6-point Likert scale.

Alternatively, one study was unique in using an aggregated sibling victimisation scale from the Juvenile Victimisation Questionnaire (JVQ) (Tucker et al., 2024). In the JVQ, participants answered questions about whether incidents of mild and severe physical victimisation, property victimisation, or psychological victimisation had occurred in the previous year. All studies that categorised participants into bullying subgroups considered

participants to be involved if they were involved in one or more type of victimisation or perpetration. There were differences in frequency cut offs for categorisation, ranging from at least once in the last year (Tucker et al., 2024), to at least several times a month (Dantchev et al., 2018) to at least once a week (Dantchev et al., 2019; Sharpe et al., 2022; Toseeb, McChesney, Oldfield, et al., 2020; Toseeb & Wolke, 2022).

### *Mental Health and Wellbeing Measurement*

The ways in which mental health and wellbeing were conceptualised varied. Many studies looked at negative aspects of mental health. Three studies looked at criteria for later mental health diagnoses for anxiety and depression (Bowes et al., 2014; Dantchev et al., 2019); and psychosis (Dantchev et al., 2018). One study looked at depression symptoms (Sharpe et al., 2022). Four studies investigated associations with self-harm and/or suicidal ideation (Bowes et al., 2014; Dantchev et al., 2019; Sellars et al., 2024; Toseeb & Wolke, 2022). Four studies used the SDQ, with four focusing on internalising symptoms (Deniz & Toseeb, 2023; Sellars et al., 2024; Toseeb, McChesney, Oldfield, et al., 2020; Toseeb & Wolke, 2022). In addition, two studies included a measure of psychological distress (Toseeb & Wolke, 2022; Tucker et al., 2024).

Some studies also investigated associations between sibling bullying and positive aspects of mental health. Three studies used the Short Warwick-Edinburgh Mental Wellbeing Scale to measure participants' wellbeing (Deniz & Toseeb, 2023; Sellars et al., 2024; Toseeb & Wolke, 2022). Three studies analysed self-esteem, measured using the Rosenberg Self-Esteem Scale (Deniz & Toseeb, 2023; Sharpe et al., 2022; Toseeb & Wolke, 2022), and Sharpe et al. (2022) measured participants' life satisfaction and body image via single item measures. Furthermore, Toseeb, McChesney, Oldfield, et al. (2020) measured prosocial behaviours using the SDQ.

### *Victimisation and Perpetration Scales*

Forthwith, when discussing the results, statistical findings adjusted for covariates, and imputed where applicable, will be reported.

Four studies looked at sibling bullying victimisation and/or perpetration as frequency scales. Bowes et al. (2014) found that participants who were victimised several times a week at age 12 were more likely to meet criteria for depression (OR = 1.64, 95% CI [1.12, 2.42], $p < .05$) and anxiety (OR = 1.43, 95% CI [1.03, 1.99], $p < .05$) with small effects, and were twice as likely to engage in self-harm (OR = 2.18, 95% CI [1.41, 3.10], $p < .05$) with a medium effect at age 18. However, the relationship was non-significant for anxiety for the non-imputed adjusted sample. Similarly, Dantchev et al. (2018) found several times a week victims and perpetrators at age 12 were 2-3 times more likely to meet criteria for psychotic disorder at age 18 (OR = 2.74, 95% CI [1.28, 5.87], $p < .01$ & OR 3.16, 95% CI [1.35, 7.41], $p < .01$ respectively) with medium to large effects.

On the other hand, Deniz and Toseeb (2023) found more sibling bullying involvement at age 11 (victimisation and perpetration combined) was not directly associated with internalising symptoms or wellbeing at age 17 for autistic individuals. However, sibling bullying was negatively associated with self-esteem at age 14 ($\beta$ = -0.16, 95% CI [-0.25, -0.05], $p < .01$) with a small effect, which was associated with internalising problems and wellbeing at age 17 ($\beta$ = -0.32, 95% CI [-0.51, -0.12], $p < .001$ and $\beta$ = .32, 95% CI [0.19, 0.45], $p < .001$ respectively) with medium effects. Furthermore, there was evidence of an indirect effect, with self-esteem fully mediating the relationship between sibling bullying and internalising problems and wellbeing ($z$ = 0.05, 95% CI [0.01, 0.10], $p < .05$ and $z$ = -0.05, 95% CI [-0.09, -0.01], $p < .01$ respectively).

***Bullying Subgroups***

Four studies investigated the four bullying subgroups; uninvolved, bully-only, victim-only, bully-victim. Dantchev et al. (2018) found victim-only, bully-only, and bully-victim groups were 2-3 times more likely to meet criteria for psychotic disorder at age 18 compared to uninvolved, with medium-large effects and the victim-only group most at risk (IA OR = 3.10, 95% CI [1.48, 6.50], $p < .01$, IA OR = 2.68, 95% CI [1.04, 6.89], $p < .05$, & IA OR = 2.66 95% CI [1.24, 5.69], $p < .05$ respectively). Likewise, Toseeb, McChesney, Oldfield, et al. (2020) analysed a sample of individuals with and without an autism diagnosis, and found victim-only, bully-only, and bully-victim groups at age 11 were positively associated with internalising symptoms at age 14 when compared to the uninvolved group ($b = 0.28$, 95% CI [0.02, 0.53], $p < .05$, $b = 0.54$ 95% CI [0.12, 0.96], $p < .05$ & $b = 0.32$, 95% CI [0.13, 0.51], $p < .01$ respectively). However, only bully-victim and bully-only groups at age 11 were associated with prosocial behaviours at age 14 ($b = -0.19$, 95% CI [-0.33, -0.05], $p < .05$ & $b = -0.34$, 95% CI [-0.60, -0.08], $p < .01$ respectively). Similar associations were found irrespective of autism diagnosis.

In addition, Toseeb and Wolke (2022), found being in the victim-only group at age 11 was associated with worse internalising ($b = 0.97$, 95% CI [0.62, 1.33]), distress ($b = 0.96$, 95% CI [0.60, 1.31]), self-harm ($b = 0.12$, 95% CI [0.05, 0.19]), wellbeing ($b = -0.83$, 95% CI [-1.11, -0.13]), and self-esteem ($b = -0.48$, 95% CI [-0.72, -0.23]) at age 17 when compared to the uninvolved group. Similar associations were found for the bully-victim group, but with slightly smaller coefficients. On the other hand, the bully-only group was only associated with distress ($b = 0.80$, 95% CI [0.17, 1.43]). This study was also unique in comparing victim-only, bully-only and bully-victim groups with each other, although no significant associations were found. However, this was the only study rated as weak for

quality, with notably less control over potential covariates, and so it is unclear whether the results were unduly influenced by other factors.

Alternatively, Dantchev et al. (2019) found only bully-victims at age 12 had a higher risk of depression (OR = 2.06, 95% CI [1.41, 3.22], $p < .001$) with a medium effect, anxiety (OR = 1.57, 95% CI [1.11, 2.23], $p = .011$), and self-harm (OR = 1.85, 95% CI [1.31, 2.61], $p = .001$) with small effects at age 18 compared to uninvolved. Depression had the strongest relationship, and this was the only association that remained significant at age 24 (OR = 1.78, 95% CI [1.23, 2.58], $p = .002$) with a small effect. Interestingly, although being in the victim-only group was not associated with outcomes at age 18, at age 24 the victim-only group were more likely to experience suicidal ideation (OR = 1.47, CI [1.12, 1.92], $p = .005$) indicating a small effect, and two times more likely to engage in suicidal self-harm (OR = 2.19, CI [1.34, 3.59], $p = .002$), indicating a medium effect. It is important to note this study used a Bonferroni correction, meaning a more stringent alpha criterion was employed to interpret the results. As the only study in this review that follows participants past the age of 18, this is particularly notable when considering the potential longer-term consequences of sibling bullying.

### *Dose-Response Relationship*

Six studies were also interested in a potential dose-response relationship, although the way in which this was conceptualised varied. Toseeb and Wolke (2022) categorised victimisation scores into three groups; uninvolved, transient (victim at age 11 or 14), and repeated (victim at age 11 and 14). They found, compared to uninvolved and transient victimisation, repeated victimisation was associated with worse internalising symptoms ($b$ = 1.53, 95% CI [1.15, 1.90], & $b$ = 0.76, 95% CI [0.40, 1.11]), distress ($b$ = 1.90, 95% CI [1.52, 2.25], & $b$ = 1.19, 95% CI [0.81, 1.56]), self-harm ($b$ = 0.24, 95% CI [0.16, 0.32], & $b$ = 0.17, 95% CI [0.09, 0.25]), wellbeing ($b$ = -1.37, 95% CI [-1.67, -1.07], & $b$ = -0.75, 95%

CI [-1.04, -0.46]), and self-esteem ($b$ = -0.82, 95% CI [-1.07, -0.58], & $b$ = -0.54, 95% CI [0.10, -0.29]) at age 17. However, as one of the CIs for self-esteem appears to be incorrectly reported, this does further bring into question the quality and accuracy of the findings.

Additionally, Sellars et al. (2024), rated strong for quality, investigated this dose-response relationship using a frequency scale of reported victimisation, summing scores at both age 11 and 14. They found higher victimisation was associated with internalising symptoms ($\beta$ = 0.14, 95% CI [0.12, 0.16], $p < .001$), wellbeing ($\beta$ = -0.13, 95% CI [-0.15, -0.11], $p < .001$), and self-harm (OR = 1.09, 95% CI [1.07, 1.11], $p < .001$) at age 17, indicating small effects. Interestingly, Dantchev et al. (2018) found linear trends for both victimisation (OR = 1.29, 95% CI [1.08, 1.54], $p < .01$) and perpetration (OR = 1.35, 95% CI [1.12, 1.62], $p < .01$) on later diagnosis of psychotic disorder with small effects, which they argued evidenced a dose-response relationship. In addition, Bowes et al. (2014) also found victimisation linear trends for depression diagnosis (OR = 1.18, 95% CI [1.09, 1.28], $p < .05$) and self-harm (OR = 1.20, 95% CI [1.08, 1.30], $p < .05$) at age 18 with small effects.

In a different vein, Sharpe et al. (2022), also rated strong for quality, categorised four groups based on involvement in victimisation at age 11 and 14; consistently high, consistently low, increasing at ages 11 to 14, and decreasing at ages 11 to 14. Similar small-medium effects were found in males and females, with the consistently high victimisation group being associated with worse depression ($\beta$ =.30, 99% CI [0.19, 0.41], $p < .001$ & $\beta$ = .30, & 99% CI [0.18, 0.42], $p < .001$ respectively), life satisfaction ($\beta$ = .25, 99% CI [0.14, 0.36] & $\beta$ =.28, 99% CI [0.16, 0.41], $p < .001$ respectively), self-esteem ($\beta$ = -.14, 99% CI [-0.26, -0.02], $p < .01$ & $\beta$ = -.24, 99% CI [-0.35, -0.12], $p < .01$ respectively), and body image ($\beta$ = .19, 99% CI [0.07, 0.31], $p < .001$, & $\beta$ = .23, 99% CI [0.12, 0.35], $p < .001$ respectively) at age 14 when compared to the consistently low group. Similar associations were found for the increasing victimisation group with slightly smaller coefficients, but associations were not

found for self-esteem and body image in males, and no associations were found for the decreasing group when compared to consistently low. Correspondingly, Tucker et al. (2024) categorised victims into four groups based on their victimisation responses at two timepoints approximately two years apart; None, new onset at second timepoint, persist across two timepoints, and desist across two timepoints. They found a significant main effect for children ($F$ (3, 914) = 6.01, $p < .01$), with the persist and new onset victimisation groups reporting greater distress then none, and the persist group also reporting more distress than the desist group. There was also a significant main effect for adolescents ($F$ (3, 831) = 7.45, $p < .01$), and both the persist and new onset groups reported greater distress then none and desist.

**Discussion**

The most consistent findings were for depression, self-harm, self-esteem, and distress, where associations were found with at least one aspect of sibling bullying, including all studies focused on dose-response relationships, and both strongly rated studies (Bowes et al., 2014; Dantchev et al., 2019; Deniz & Toseeb, 2023; Sellars et al., 2024; Sharpe et al., 2022; Toseeb & Wolke, 2022; Tucker et al., 2024). However, for studies that reported effect sizes, most were small, with some studies finding medium effects for depression and self-harm, bringing into question the practical relevance of the findings. Pertinently, sibling bullying remained related to both depression and self-harm, although in different roles, in the one study that explored outcomes past the age of 18 (Dantchev et al., 2019), suggesting these areas of mental health may be particularly important to consider in emerging adulthood.

There were inconsistent findings for anxiety, with the significance of a relationship with victimisation being questionable in one sample (Bowes et al., 2014), and another study finding bully-victims were more likely to meet diagnostic criteria for anxiety, albeit with a small effect (Dantchev et al., 2019). This perhaps points to the importance of both bullying

roles in future anxiety. There was also some inconsistency in the findings for internalising symptoms and wellbeing. Whilst the majority of studies investigating these concepts found a significant relationship with an aspect of sibling bullying, again with small effects, (Sellars et al., 2024; Toseeb, McChesney, Oldfield, et al., 2020; Toseeb & Wolke, 2022), one study found sibling bullying involvement was only indirectly associated with these concepts through self-esteem (Deniz & Toseeb, 2023). However, this study only included participants with a diagnosis of autism, which may in part explain this discrepancy.

Although loneliness was notably absent from the longitudinal evidence base, one study explored the relationship between sibling bullying subgroups and prosocial behaviours, finding a significant relationship for the bully-only and bully-victim groups (Toseeb, McChesney, Oldfield, et al., 2020). This perhaps highlights the role of being a bully in the development of prosocial skills. In addition, Dantchev et al. (2018) evidenced the strongest relationship for sibling bullying, with victimisation and perpetration scales, and all involved bullying subgroups, being at higher risk of psychotic disorder, with medium-large effects.

Thus, the evidence base indicates that - irrespective of whether sibling bullying was measured as victimisation/perpetration scales, bullying subgroups, or dose-response categorisations - sibling bullying is related to some aspects of later social and emotional health. The research into bullying subgroups perhaps offers a more nuanced insight into how sibling bullying interacts with social and emotional outcomes, with different bullying roles appearing to be more strongly related to different facets of mental health and wellbeing, as well as offering a way to explore the impact of being both a bully and a victim, which is the most common category of sibling bullying. The recent interest in dose-response associations, which was the focus of both strongly rated studies, has also yielded promising evidence of this relationship, particularly between repeated and increasing victimisation and later mental health and wellbeing.

### *Limitations*

When considering the findings of this review it is important to acknowledge the reviews limitations. One limitation relates to the exclusion of non-peer reviewed research. Whilst this exclusion is standard practice when conducting systematic reviews to uphold academic rigour, it also means insightful relevant literature may be missed. This is particularly pertinent to recent research that is yet to be formally published, and when considering publication bias where non-significant findings are less likely to be published (e.g. Torgerson, 2006), despite their innate value (e.g. Mehler et al., 2019). This review also aimed to be broad in its scope considering the small body of expected literature in a relatively new research area. However, this also means the ways in which both sibling bullying and social and emotional health and wellbeing were operationalised were diverse, and thus synthesis and comparability of findings was complicated. The current evidence base is also from predominantly Western white samples, mostly within the UK and from two nationally representative cohort studies; the ALSPAC and the MCS, impacting on the generalisability of the findings of this review. Additionally, there were only two studies that were assessed to be methodologically strong, and therefore the findings of the review should be considered with caution considering the potential bias within the research.

### *Gaps in the Literature and Recommendations for Future Research*

Firstly, most of the literature is focused on adolescent outcomes, with only three studies looking at outcomes at age 18, and one study extending this to the age of 24. Thus, further research would benefit from exploring this relationship in emerging adulthood and, in time, in adulthood. Secondly, the potential dose-response associations for sibling bullying appears to be an exciting new area of research, although this has solely been conducted in adolescent samples, and thus may benefit from an extension into emerging adulthood and a focus on victimisation and perpetration. In addition, loneliness is notably absent from the

longitudinal evidence base, despite tentative cross-sectional evidence, as outlined in the introduction chapter. Exploratory research into possible longitudinal relationships may be beneficial. Future research using different nationally representative longitudinal datasets, and if possible cross-cultural datasets or datasets from non-Western countries, would be advantageous to diversify the sample populations and investigate sibling bullying in different cultures. Finally, efforts to improve robustness and mitigate bias in future research is important. Areas of note were commenting on selection uptake and dropouts, interventions to reduce attrition, although many of the included studies in this review employed analytic techniques to address high non-response rates, and controlling for covariates.

### *Conclusions*

This review highlights the relationship between sibling bullying and later social and emotional health, although the presence and strength of this relationship appears to fluctuate depending on how sibling bullying and social and emotional health are conceptualised. The recency of much of the research highlights its relevance, and the potential dose-response relationships for sibling bullying appears to be a new area of interest with promising exploratory evidence. This review is not without its limitations, and due to the substantial variance in the conceptualisation and measurement of sibling bullying and social and emotional health outcomes, it is challenging to make direct comparisons. However, some provisional patterns have emerged. Further exploratory research following participants into emerging adulthood with more diverse samples, and investigation of the longitudinal relationship with loneliness would be beneficial, as well as further research to strengthen the existing literature to allow for more nuanced reviews in future.

### *Current Study Aims and Objectives*

This research aims to fill some of the gaps in the literature, namely; Longitudinal research into adolescent sibling bullying and loneliness outcomes; Longitudinal research into adolescent sibling bullying and general psychological distress and wellbeing outcomes in emerging adulthood; Exploratory longitudinal research into the dose-response relationship between adolescent sibling victimisation and perpetration, and emerging adulthood outcomes.

The research questions are:

1) Does adolescent sibling bullying predict emerging adult loneliness?
2) Does adolescent sibling bullying predict emerging adult psychological distress and mental wellbeing?
3) Does repeated sibling victimisation and/or perpetration have a dose-response relationship with loneliness and psychological wellbeing outcomes?

## Chapter 3: Methods

### Chapter Summary

This chapter summarises the methodology of the secondary data source and the current research. First this chapter outlines the researcher's epistemological positioning. It then explains the research design and data collection procedure for the secondary data source, the measures selected, the sample for this research, and the analysis methods used. The chapter ends by outlining ethical and dissemination considerations.

### Epistemological Positioning

#### *Quantitative Methodology*

Quantitative research methods involve use of numerical data; and precise and robust measurement of variables in large representative samples, often using statistical analyses to

empirically test research hypotheses (Barker et al., 2016; Marks & Yardley, 2004). Quantitative psychological research highlights the importance of a rigorous approach to observing and measuring abstract psychological constructs (Barker et al., 2016). This contrasts with qualitative research methods, which comprise a diverse catalogue of methodological techniques that champion the interpretation of detailed sources of data, predominantly language-based, and are often used to explore the subjective social realities of individuals (Howitt, 2019). Whilst there is a lot of debate within clinical psychology on the methodological merits of quantitative versus qualitative approaches, some psychological researchers advocate methodological pluralism in which all methodological approaches are equally valued and it is more important to find a methodological approach that suits the research questions (Barker et al., 2016). There are three main types of quantitative research design within the social sciences; experimental designs, quasi-experimental designs and non-experimental designs (Barker et al., 2016; Kennedy & Edmonds, 2017). Non-experimental designs, such as correlational studies, are not concerned with establishing causation. They are observational, meaning they do not involve any manipulation from the researcher and instead are comparing naturally occurring measured phenomena.

### *Ontology and Epistemology*

Ontology is a philosophical area of metaphysics that is concerned with what is true and real, beyond our understanding of material objects, honing in on the nature of existence and reality (Effingham, 2013). Meanwhile, epistemology is a branch of philosophy that is concerned with the nature of knowledge, how we acquire knowledge, and what is possible to know (Barker et al., 2016; Feast & Melles, 2010).

It is argued that there are three categories of epistemology, objectivism, constructionism, and subjectivism, each containing a spectrum of approaches that are theoretically and philosophically aligned with the overarching paradigm (Feast & Melles,

2010). Objectivism assumes that reality is objective and empirically measurable, irrespective of how we relate to objects. A prominent epistemological position in objectivism is positivism, which posits that knowledge represents objective truths, and utilises hypothetico-deductive models to test theoretically underpinned hypotheses to access knowledge and allow separation between the participants and researchers (Park et al., 2020). It is argued to be aligned with the ontological positioning of realism, which theorizes that there is only one objective and measurable reality (Coolican, 2024; Park et al., 2020). On the other hand, subjectivism, such as postmodernism, is rooted in the idea that we all individually construct knowledge in the ways in which we interact and relate to the world (Feast & Melles, 2010; White, 2007). This is in line with the ontological positioning of relativism, which argues that there are no universal truths, and reality is constructed only through our unique subjective experiences and interpretations (Coolican, 2024; White, 2007). Alternatively, constructionism, aligned with interpretivism, incorporates aspects of objectivism and subjectivism, taking the view that knowledge and reality are contextual and socially co-constructed, accounting for personal, cultural, historical and social factors that mean multiple truths and realities can co-exist (Feast & Melles, 2010; Ward et al., 2015).

### *Researcher Positioning*

Quantitative research tends to be rooted in positivism, which argues that scientific research should be focused on observable objective fact rather than subjective experience (Barker et al., 2016). Equally, the research aims and questions align with a positivist position. However, positivism has been debated and criticised within psychological research due to its strict stance on objective truth that seems at odds with the core tenets of psychology and the experience of being human (Barker et al., 2016; Coolican, 2024). The researcher also recognised the psychological constructs in this study, namely bullying, loneliness, distress, and wellbeing, as undeniably subjective and socially constructed phenomena. Therefore, the

researcher was not aligned with a purely positivist position and instead felt it most appropriate to adopt a critical realist position.

Critical realism is arguably a distinct paradigm that acknowledges some of the tenets of objectivism and positivism, in that an external reality does exist, but reality exists at different levels and something does not need to be tangible to be considered ‘real’ (Lauzier-Jobin et al., 2025). Critical realism also postulates we only indirectly experience reality, and therefore our knowledge is partial and fallible, but also perfectible through the pursuit of theoretically underpinned research (Lauzier-Jobin et al., 2025). This allows wider scope for the scientific enquiry of more subjective feeling states and socially contextualised experiences, and thus critical realism has become a prominent philosophical position within psychology and social sciences (Barker et al., 2016; Pilgrim, 2014).

Critical realism champions methodological pluralism and highlights the utility of different multidisciplinary approaches to gain understanding, particularly emphasising the importance of studying phenomena within a real-world context (Lauzier-Jobin et al., 2025; Pilgrim, 2014). Therefore, the observational nature of this study aligns with this position, whilst aiming to quantitatively measure these constructs at one level of reality. However, from a critical realist position, it is also important to consider this study in the context of other forms of knowledge on the topic, whilst also holding any inferences from research lightly as reality is multi-faceted and the imperfection of knowledge means there may be aspects of these constructs that we cannot fully grasp or understand.

**Design**

This research used a longitudinal correlational design involving quantitative analysis of secondary data. Correlational designs are often criticised for their inability to make definitive causal statements, as the lack of control of the variables within the research design

means it is often not possible to separate out causal effects (Barker et al., 2016). However, correlational studies are useful when practical and ethical considerations mean experimental manipulation is not possible, such as experiences of bullying.

Longitudinal research is considered the highest quality design for correlational research, owing to its ability to establish a timeline of exposure and outcome factors as it follows individuals over several timepoints (Caruana et al., 2015; McNair & Lewis, 2012). Designing a cross-sectional study with retrospective accounts of adolescent sibling bullying was an alternative option and has been used in previous sibling bullying research, however evidence suggests retrospective reports of adverse childhood experiences are more susceptible to bias, recall, and measurement error (e.g. Hardt & Rutter, 2004). Equally, it was not practically possible to design a longitudinal study that would be able to address the research questions due to resource, time, and cost restraints. Thus, the decision was made to utilise an established longitudinal dataset, in line with all the studies included in the literature review. Secondary datasets often use large scale representative samples with rigorous data collection methods, although they also have limitations, particularly in relation to attrition, missing data, and lack of control over data collection and variables measured (Andersen et al., 2011). On balance, the researcher felt secondary data analysis was a well suited and pragmatic way to address the research questions and aims for the current study.

### *Dataset Selection*

Andersen et al. (2011) highlights important considerations when selecting a secondary dataset, including whether their aims, constructs, and sample align with your research questions and aims, and the accessibility of the data. One dataset that was considered based on previous research was the Millenium Cohort Study (MCS); however, the most recent data release does not include loneliness measures and only goes up to age 17, which would not cover emerging adulthood. Similarly, the Avon Longitudinal Study of Parents and Children

(ALSPAC) was also considered, however this dataset is not freely accessible and thus not a viable option.

### *Understanding Society*

The researcher chose to address the research questions using the UK Household Longitudinal Study, also called Understanding Society, which is based in the Institute for Social and Economic Research (ISER) at the University of Essex, and is majority funded by the Economic and Social Research Council (Understanding Society, n.d.b). The data are freely available for the purposes of research via the UK Data Service (see Appendix C). Information on the Understanding Society main survey can be found on the website (Understanding Society, n.d.g) and in the user guide (ISER, 2024b). Understanding Society aims to take a multidisciplinary approach to researching household and individual changes over time and across the lifespan that may influence the wellbeing of people living in the UK. Understanding Society measures social, economic, familial, and health related factors, and therefore aligned with the research questions and aims for this study. Thus, Understanding Society provided an opportunity to conduct longitudinal research with a large scale nationally representative sample, with scope to consider both individual and household factors and to follow participants from childhood into adulthood.

Households were contacted in each wave (covering approximately a 24-month period, but individuals were contacted at approximately yearly intervals) to complete face-to-face interviews, telephone interviews, paper self-completion questionnaires, or online surveys. Wave 15 data is currently being collected. Understanding Society began in 2009, and the core sample comprised of around 40,000 households. Data was collected for all members of a household, including children, with parents reporting on children up to age 10. 10–15-year-olds were invited to complete a paper youth questionnaire, and at age 16 participants were invited to join the mainstage survey. Those aged 16–21 also completed a young adult module

as part of the mainstage survey. Sample size fluctuated across waves as people joined and left core households, and when core participants moved out, they formed new core households, with members of the new household becoming participants in the study. Sample size also fluctuated due to attrition over time, or non-response in certain waves.

Unlike the MCS and ALSPAC, children and adolescents only made up a subsample of the Understanding Society core sample, meaning the sample size was smaller in comparison with 5,182 youth respondents in wave one (Boreham et al., 2012). As Understanding Society is a panel study rather than a cohort study, participants joined the survey at different ages, and many youth participants who formed the core sample were older than 11 when joining the study. Similarly, Understanding Society did not measure some of the variables of interest, including sibling bullying, in every wave. However, it was felt this dataset would still offer fruitful insights, particularly given the exploratory nature of the research questions, as a longitudinal design can provide exploratory evidence for tentative causal inferences that may inform future research when more data are available (Barker et al., 2016).

**Data Collection Procedure**

A randomly selected nationally representative sample of households across the UK was invited to take part in the first wave of Understanding Society. Households selected were sent advance communications about Understanding Society (see Appendix D) and participants were offered gift vouchers ranging from £3-£20 each wave as an incentive prior to taking part and after taking part in the study. Participants were also sent information leaflets on Understanding Society (see Appendix E) and were given further information by the interviewer if they completed the survey face-to-face or by telephone. Understanding Society also has a more detailed information sheet for new participants on their website (See Appendix F). Participants were provided with information on the purpose of the study, why they were selected to take part, how their data would be used, and on the protection of the

participants and their data. Participants were asked for consent to take part and were given information about Understanding Society research to highlight the importance of the study and to reassure participants by demonstrating how their data was being used. Participants were contacted by trained interviewers to complete a face-to-face or telephone interview of approximately 30-60 minutes. As part of the interview adult participants were given a self-completion form, and children aged 10-15 in the household were given the self-completion youth questionnaire, with the caregiver's consent, to fill in and return to the interviewer. From wave eight, adult participants were given the option to complete the main survey via online questionnaires using a unique username and password, becoming the main source of survey completion in later waves.

**Understanding Society Participants**

Understanding Society used address-based sampling to create a core sample of 40,000 households made up of several sub-samples. A nationally representative sample of approximately 26,000 households across the UK were randomly and systematically selected and responded to invites to take part in Wave 1, forming the general population sample (GPS) (ISER, 2024b; Lynn, 2009). The GPS was selected using clustered and stratified probability sampling in Great Britain, and unclustered simple random sampling in Northern Ireland (ISER, 2024b). In wave 2 around 8,000 households from the British household panel survey, which was completed across 18 waves from 1991-2008, were added to the Understanding Society core sample (ISER, 2024b; Lynn, 2009). The core sample also incorporated data from 4,000 households from an ethnic minority boost sample (EMBS) in wave 1, and about 2,900 households from an immigrant and ethnic minority boost sample (IEMBS) in wave 6 using clustered, stratified sampling (Berthoud et al., 2009; ISER, 2024b; Lynn, 2009; Lynn et al., 2018). The Northern Irish, EMBS and IEMBS samples were selected using higher selection

probability to boost the sample size of target sub-groups with relatively small numbers in the general population of the UK (ISER, 2024b).

Eligible households invited to take part in wave one had a response rate of 57% for the general population sample and 40% for the EMBS at the household level (Boreham et al., 2012). In wave one there was a response rate of 87% and 70% respectively for the adult individual self-report questionnaire, and 77% and 63% of 10–15-year-olds completed the youth questionnaire respectively (Boreham et al., 2012). Waves two to fourteen reported household response rates between 47.4% and 83.8% for eligible households each wave (ISER, 2024b). Response rates for adults at the individual level ranged between 59.4% and 71.9%, and response rates for the youth questionnaire ranged between 51% and 80% across the fourteen waves (Boreham, 2012; Boreham et al., 2012; Carpenter, 2016, 2017, 2018, 2019, 2020, 2021, 2022; ISER, 2024b; Jessop, 2015; Jessop & Oskala, 2014; Kantar Public, 2023; Scott & Jessop, 2013; Verian, 2024).

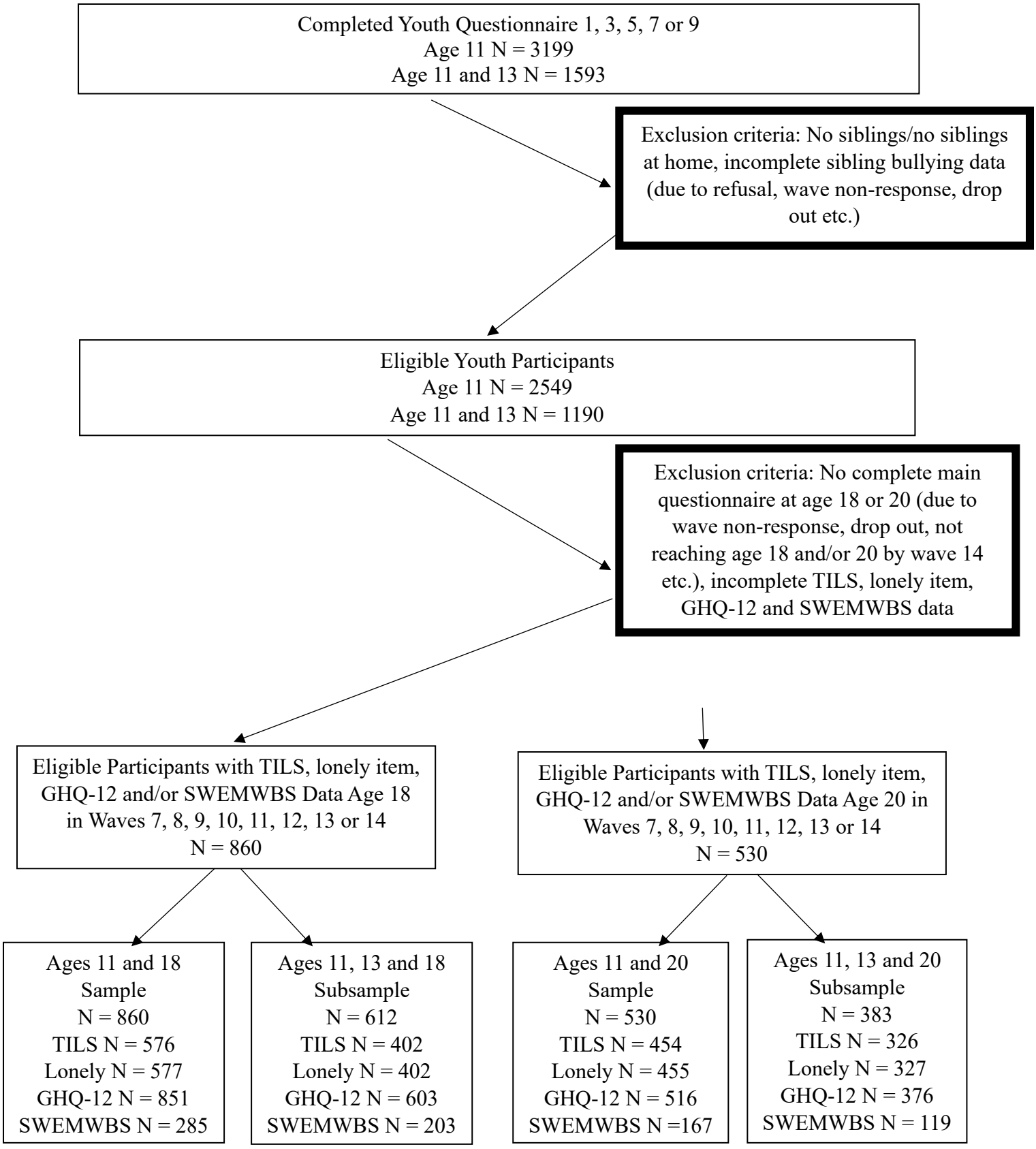
## Sample for Study

### *Participant Inclusion and Exclusion Criteria*

Figure 2 outlines a flow diagram of the sample creations based on the inclusion and exclusion criteria. The inclusion criteria for this research sample was as follows: participants were invited to take part in Understanding Society by age 11; they had at least one sibling living in the family home at age 11; they completed all sibling victimisation and perpetration items at age 11 as part of the youth questionnaire in waves one, three, five or seven of Understanding Society; they completed at least one main self-completion questionnaire, and had data for at least one of the outcome variables of interest at age 18 and/or 20 in waves seven to fourteen of Understanding Society.

**Figure 2**

*A Flow Diagram of Sample Creation and Sample Sizes Based on Inclusion and Exclusion Criteria*



Participants were excluded if they were an only child or did not live with their siblings at age 11, or if they did not complete all sibling bullying items in the youth questionnaire in waves one, three, five, or seven, and at least one of the outcome measures of interest in the self-completion main questionnaire at age 18 or 20. Additional subsamples were created to explore the dose-response relationships. The inclusion and exclusion criteria were the same as above, with the additional inclusion criterion of completing all sibling victimisation and perpetration items at age 11 and age 13 as part of the youth questionnaire in waves one, three, five, seven or nine of Understanding Society.

Ages 11 and 13 were chosen to represent transitional adolescent phases using Erikson's psychosocial model, whilst also accounting for the limitations of sibling bullying data only being collected every other wave. Age 18 was chosen as it represents the start of emerging adulthood. Age 20 was selected as the latest viable age to allow subsample analyses following participants into established emerging adulthood, whilst logistically considering the current wave and time constraints of the Understanding Society dataset and the impact this would have on sample size. Similarly, the waves chosen for inclusion were selected based on measurement of the variables of interest, and waves where it was possible for there to be data available at the ages of interest (e.g. an 11-year-old in wave one was 18 in wave seven at the earliest).

### *Sample Size and Demographics*

This study followed participants across two or three timepoints. Samples were extracted for ages 11 and 18 (N = 860) and ages 11 and 20 (N = 530) to answer research questions 1 and 2. Subsamples including participants with sibling bullying data at age 13 were created to answer research question 3; ages 11, 13, and 18 (N = 612) and ages 11, 13, and 20 (N = 383). Samples sizes differ across samples and variables of interest for a variety of reasons. Whilst not an exhaustive list, reasons include non-response, withdrawal, or drop

out, refusal to answer questions related to the variables of interest, proxy completion of questionnaires, variables of interest not being collected in every wave, and limitations of the data available. For example, participants aged 11 in wave nine were not 18 by wave 14 so wave nine was only used to collected 13-year-old data for the subsamples, and only participants in waves one, three and five of the youth survey had available data at age 20 by wave 14.

Table 5 outlines demographic and household information for the ages 11 and 18, and 11 and 20 samples. Characteristics were similar across the samples, although more participants had only one sibling in the ages 11 and 20 sample (76% compared to 55% in the 11 and 18 sample). For both samples, the majority identified as Female and White British, had only one sibling, were in households whose monthly income was above the poverty line, and were not in lone parent households. The samples had a slightly higher proportion of females than the most recent UK 2021 Census, which reported 51% of those surveyed were female (ONS, 2023). The samples also had a slightly lower percentage of participants identifying as White (75.2% and 76.4%) when compared to the Census (81.7% White), although the proportion of people identifying as British were similar at 74.4% (ONS, 2022).

**Table 5**

*Sample Characteristics for the ages 11 and 18, and ages 11 and 20 Subsamples*

| | Age 11 and 18 N | Age 11 and 20 N |
|---|---|---|
| **Gender** | | |
| Male | 378 (44%) | 221 (41.7%) |
| Female | 482 (56%) | 309 (58.3%) |
| **Ethnicity** | | |
| **White** | 647 (75.2%) | 405 (76.4%) |
| British | 625 (72.7%) | 393 (74.2%) |
| Irish | 16 (1.9%) | 9 (1.7%) |
| Any Other White Background | 6 (0.7%) | 3 (0.6%) |
| **Ethnic Minority** | 213 (24.8%) | 125 (23.6%) |
| White and Black Caribbean | 14 (1.6%) | 7 (1.3%) |
| White and Black African | 6 (0.7%) | 3 (0.6%) |
| White and Asian | 15 (1.7%) | 9 (1.7%) |
| Any Other Mixed Background | 8 (0.9%) | 4 (0.8%) |
| Indian | 46 (5.3%) | 26 (4.9%) |
| Pakistani | 57 (6.6%) | 31 (5.8%) |
| Bangladeshi | 26 (3%) | 14 (2.6%) |
| Chinese | 2 (0.2%) | 1 (0.2%) |
| Any Other Asian Background | 4 (0.5%) | 4 (0.8%) |
| Caribbean | 14 (1.6%) | 8 (1.5%) |
| African | 17 (2%) | 14 (2.6%) |
| Any Other Black Background | 0 | 2 (0.4%) |
| Arab | 1 (0.1%) | 1 (0.2%) |
| Any Other Ethnic Group | 3 (0.3%) | 1 (0.2%) |
| **Number of Natural/Step/Adopted Siblings in Household** | | |
| Only One Sibling | 473 (55%) | 405 (76.4%) |
| Two or More Siblings | 387 (45%) | 125 (23.6%) |
| **Equivalised Monthly Household Income in Pounds** | 857 ($M$ = 1424.90, $SD$ = 819.83) | 530 ($M$ = 1399.89, $SD$ = 891.11) |
| **Poverty Status** | | |
| Not In Poverty | 713 (82.9%) | 441 (83.2%) |
| In Poverty | 144 (16.7%) | 89 (16.8%) |
| Missing | 3 (0.3%) | 0 |
| **Lone Parent Household** | | |
| No | 712 (82.8%) | 431 (81.3%) |
| Yes | 145 (16.9%) | 99 (18.7%) |
| Missing | 3 (0.3%) | 0 |

## Measures

This study used secondary data from Understanding Society, meaning there was no autonomy on the part of the researcher in decisions regarding the inclusion of, and the development of, the measures used in the surveys. The questionnaires included questions created and selected within ISER at the University of Essex by a team of co-investigators with different areas of expertise, and all questions were extensively tested prior to being added to the main survey (Understanding Society, n.d.e). The waves and measures used in this research were carefully considered based on existing literature and potential gaps, the research aims and objectives, and practical considerations of the availability of the data. The measures used in the current study are outlined below and in Appendix G. Information about the main survey, including all questions asked in each wave, is available on the website (Understanding Society, n.d.d). The variables of interest for this study came from the self-completion adult and youth questionnaires, and most measures were not included in every wave. Covariates were also collected from household interviews.

### *Response and Responder Bias*

It is important to acknowledge that the measures utilised in this research and discussed below relied on self-reporting, which is susceptible to response and responder bias. Response bias refers to how people respond to self-report measures, and the tendency for people to respond inaccurately due to individual response patterns or social appraisals of the measure (Wetzel et al., 2016). Response bias can refer to an individual's preference for types of response, such as consistently choosing certain responses points, or acquiescence bias where an individual will agree with statements, irrespective of the item or response schedule presented. It is also important to consider how the measures collected, namely, perpetration, victimisation, loneliness, psychological distress and mental wellbeing, could be sources of shame and stigma and relying on a self-report measure could be affected by social desirability

response bias, whereby individuals may have responded inaccurately to present themselves in a more socially acceptable light. On the other hand, it possible there is responder bias, whereby characteristics or traits of individuals may mean they were more likely to participate in the study, or more likely to report socially undesirable behaviours or experiences. These limitations could have led to misreporting when completing the measures or selection effects meaning the responses are not representative of the population being studied, impacting on their validity and reliability. Further critique related to specific measures are discussed in turn.

### *Independent Variables*

**Sibling Bullying (Victimisation and Perpetration).** This variable was derived from a self-reported measure in the youth questionnaire (youth file), measured every other wave from wave one, and was extracted from waves one, three, five, seven and nine. It consisted of eight items, four asking 'how often do any of your brothers or sisters do any of the following to you at home?', and four asking 'how often do you do any of the following to your brothers or sisters at home?', over the last 6 months. The behaviours asked about were 'hit, kick or push you/them', 'take your/their belongings', 'call you/them nasty names', 'make fun of you/them'. The measure is an adapted version of the Sibling Bullying Questionnaire (SBQ), which was adapted from the Olweus Bully Questionnaire [OBQ] (Olweus, 2007; Wolke & Samara, 2004). Understanding Society scored items on a four-point Likert scale with the following options: **'never'** [1], **'not much (1-3 times in the last 6 months)'** [2], **'quite a lot (more than 4 times in the last 6 months)'** [3] **and 'a lot (a few times every week)'** [4]. This has been constructed and validated as a four factor model of bullying subgroups in previous Understanding Society research (e.g. Wolke & Skew, 2011). This measure has also been shown to be valid and reliable in previous Understanding Society research as a two factor

model of perpetration and victimisation (Tippett & Wolke, 2015; Yucel & Yuan, 2016), reporting Cronbach alphas of $\alpha$ = .80-.81 for both subscales.

Participants were categorised as being involved in sibling victimisation or perpetration if they reported involvement **'quite a lot (more than 4 times in the last 6 months)'** or **"a lot (a few times every week)"** on at least one of the respective items, a cut off that has been used in previous Understanding Society research (e.g. Wolke & Skew, 2011). For descriptive purposes, involvement was then used to categorise participants into sibling bullying subgroups; uninvolved (not involved in victimisation or perpetration), victim-only (involved in victimisation but not perpetration), bully-only (involved in perpetration but not victimisation), and bully-victim (involved in perpetration and victimisation). For research questions 1 and 2, victimization and perpetration scale scores were also created, summing the four victimisation items and the four perpetration items respectively.

For descriptive purposes, victimisation involvement at ages 11 and 13 was used to categorise participants into dose-response categories as used by Sellars et al. (2024); uninvolved at ages 11 and 13, involved at ages 11 or 13, and involved at ages 11 and 13. The same process was used to categorise participants into dose-response categories for perpetration involvement at ages 11 and 13. Similarly to Sellars et al. (2024), for research question 3 dose-response was conceptualised as a frequency scale, with victimisation and perpetration scales created summing the raw scores on all respective items across two timepoints (ages 11 and 13). For scale scores, higher scores indicated more sibling victimisation or sibling perpetration respectively. In this study, the sibling victimisation scales had acceptable internal consistency ranging from $\alpha$ = .76-.77, and the sibling perpetration scales had acceptable internal consistency ranging from $\alpha$ = .76-.78 for different subsamples.

However, there is heterogeneity in how the SBQ has been adapted. For example, Understanding Society used an adapted eight-item measure, the ALSPAC used an adapted 14-item version of the SBQ/OBQ, and MCS used an adapted two-item measure of the SBQ. In addition, the SBQ originally incorporated a 5-point Likert scale (Wolke & Samara, 2004), a response schedule replicated in ALSPAC research, whereas Understanding Society used a four-point Likert scale. It is also important to note that what was operationalised as 'quite a lot' by Understanding Society could be less frequent than what was labelled as rarely (2 or 3 times a month) by Wolke and Samara (2004). Thus, this makes comparability across different studies challenging. Moreover, whilst it is useful that what may have been considered abstract labels were quantified, there seems a big jump and some crossover between 'quite a lot' and 'a lot', something which is less prominent in the five-point version.

### *Dependent Variables*

**Psychological Distress.** A self-reported measure in all waves of the main self-completion questionnaire (indresp file), with data extracted from waves seven to fourteen. The General Health Questionnaire (GHQ-12) is a 12-item measure of psychological distress and minor psychiatric disorders developed by Goldberg and Williams (1988). The GHQ-12 is commonly used in non-clinical samples where it has been demonstrated to be a valid and reliable measure (e.g. Goldberg et al., 1997; Hardy et al., 1999). The GHQ-12 asked how participants felt over the last few weeks, was made up of positively and negatively phrased questions, and items were measured on a four-point Likert scale scored from 0-3 (see Appendix G). Whilst there has been debate over the factor structure of the GHQ-12, bringing into question its validity, it is still commonly operationalised as unidimensional (e.g. Hystad & Johnsen, 2020; Romppel et al., 2013). The GHQ-12 has also been validated in different countries and cultures (e.g. Endsley et al., 2017).

The GHQ-12 can be measured as a Likert score, where responses are summed with higher scores indicating more distress (total scores of 0-36). The GHQ-12 can also be measured as a bimodal caseness score, where scores of 2 or 3 on each item are above caseness and are scored 1 meaning distress is present, and scores of 0 or 1 on each item are scored 0 meaning distress is not present (total scores of 0-12). The decision was made to focus on the Likert method of scoring, as is recommended when the aim is to investigate intensity and severity of distress, rather than clinical caseness (e.g. Goldberg et al., 1997). The GHQ-12 Likert score already derived by Understanding Society was utilised for this study, so a Cronbach alpha score was not calculated. However, the GHQ-12 has been found to have good internal consistency, with reported alphas of $\alpha = .89$ (Hardy et al., 1999), and $\alpha = .91$ in recent Understanding Society research (Wolska & Creaven, 2023).

The GHQ-12 is useful in tracking individual change over time, asking how someone feels compared to their 'usual', but may also fail to detect psychological distress for individuals who experience long-term difficulties where feelings of distress are their baseline. The different scoring methods for the GHQ-12 may also complicate research comparisons. The response schedules also differ for positively and negatively phrased questions and it has been argued the GHQ-12 suffers from measurement error due to response bias on negatively phrased questions, possibly due to lack of concentration in noticing the different response schedule (Hankins, 2008; Hystad & Johnsen, 2020), with Hankins arguing this limits the reliability of the measure. Whilst the GHQ-12 is a short measure, it was just one of a large battery of measures used in Understanding Society, meaning participants may be more susceptible to reporting errors due to response fatigue.

**Loneliness.** This was measured from wave nine using a self-report measure, with data extracted from waves nine to fourteen of the main self-completion questionnaire (indresp file). It was noted in wave 12 data collection for the loneliness module was not implemented

until part way through the data collection period, leading to a greater proportion of missing and inapplicable data in this wave (Understanding Society, n.d.c). Loneliness was measured in two ways; the UCLA three-item loneliness scale [TILS] (Hughes et al., 2004), adapted from the revised UCLA loneliness scale (Russell et al., 1980), and designed to measure indirect loneliness through relational and social connectedness and perceived isolation; and a single item designed to be a direct measure of loneliness– 'how often do you feel lonely?'. Items were measured on a three-point Likert scale from **'hardly ever or never'** [1] to **'often'** [3], with higher scores indicating more loneliness. The TILS has been found to have good internal consistency, with alphas of $\alpha$ = .72 in its initial validation study (Hughes et al., 2004) and $\alpha$ = .86 in recent Understanding Society research (Wolska & Creaven, 2023). It has also been found to have good convergent and discriminant validity, and it correlated highly with the Revised UCLA Loneliness Scale from which it was adapted (Hughes et al., 2004). The TILS has also been validated in other countries and languages (e.g. Igarashi, 2019). The use of the TILS and one direct item measuring loneliness is recommended by the Office for National Statistics [ONS] (2018) as the 'gold standard' to measure national indicators of loneliness and comprises the UK Government Statistical Service's (2020) harmonised standards of loneliness. However, a recent study comparing the TILS with the UCLA loneliness scale found the TILS did not have adequate sensitivity and specificity, and stipulated a note of caution in using the TILS to categorise loneliness (Gosling et al., 2024). A scale score summing the TILS items was created, which had good internal reliability of $\alpha$ = .82-.86 across the different subsamples.

**Mental Wellbeing**. This was measured using a self-reported measure in waves four, seven, ten and thirteen, with data extracted from wave seven, ten and thirteen of the main self-completion questionnaire (indresp file). The Short Version of the Warwick-Edinburgh Mental Wellbeing Scale (SWEMWBS) consisted of seven items providing a unidimensional

measure of general mental wellbeing (Stewart-Brown et al., 2009). Participants were asked to indicate how they felt over the last two weeks, and items were scored on a five-point Likert scale from **'none of the time'** [1] to **'all of the time'** [5], with higher scores indicating better wellbeing. In the UK the SWEMWBS has been found to be a reliable and valid measure with good construct and convergent validity, that is a more robust and less biased measure of mental wellbeing than its full scale counterpart, albeit more focused on psychological and eudemonic wellbeing (Bartram et al., 2013; Ng Fat et al., 2017; Stewart-Brown et al., 2009). However, the potential for the SWEMWBS to overestimate population norms due to non-response bias related to groups who are perhaps associated with lower wellbeing has been acknowledged (Ng Fat et al., 2017). The SWEMWBS Likert score already derived by Understanding Society was utilised for this study, so a Cronbach alpha score was not calculated. However, the SWEMWBS was found to have good internal consistency in the UK population, $\alpha$ = .82 (Ng Fat et al., 2017). The measure has been similarly validated in other countries (e.g. Sun et al., 2019). Unlike many measures of psychological wellbeing which are problem focused, this measure was useful in highlighting positive aspects of wellbeing. This in combination with the GHQ-12 meant we could look at the relationship between sibling bullying and both positive and negative elements of wellbeing.

### *Covariates*

Previous research has indicated the following variables may be related to both sibling bullying and loneliness and psychological wellbeing and were therefore controlled for during analysis.

**Age.** Extracted from the youth and main self-completion questionnaires (youth and indresp files)**.** Age was controlled for by limiting the analyses to certain age groups. Research suggests younger age is a predictor of sibling victimisation and perpetration (e.g. Eriksen & Jensen, 2009; Tucker et al., 2013). Younger age has also been highlighted as a risk factor for

loneliness and mental health difficulties (e.g. CtEL, 2023; Tanner, 2016). Therefore, age has been controlled for in previous sibling bullying research (e.g. Sellars et al., 2024).

**Gender.** Extracted from dataset of stable participant characteristics across waves (file xwavedat). Understanding Society only had two options for gender, male and female, meaning other gender identity expressions may have been missed within the sample. Gender was dummy coded with male gender as the reference group. Male gender has been related to sibling bullying, with boys being more likely to perpetrate bullying and less likely to be victims or bully-victims (Dantchev & Wolke, 2019b). Female gender has also been associated with increased loneliness and mental health difficulties (e.g. CtEL, 2023; NHS Digital, 2023b). Hence, gender was consistently controlled for in the studies examined within the literature review (e.g. Bowes et al., 2014).

**Ethnicity.** Extracted from dataset of stable participant characteristics across waves (file xwavedat). In Understanding Society ethnicity was broken down into 18 categories to represent the diversity of the UK population. Whilst it is a reductionist view of ethnicity, due to the relatively small numbers of participants within most of the categories, for the purposes of the analyses ethnicity was categorised into a binary variable, White and Ethnic Minority. This was dummy coded with White ethnicity as the reference group. White ethnicity has been identified as a risk factor for being a victim and a bully-victim (Toseeb, McChesney, Dantchev, et al., 2020). Evidence also suggests individuals from ethnic minority backgrounds are at higher risk of experiencing mental health difficulties and loneliness (e.g. Bignall et al., 2019; Victor et al., 2012). Thus, ethnicity has been controlled for in previous sibling bullying research (e.g. Deniz & Toseeb, 2023).

**Number of Siblings in the Household.** Extracted at age 11 from the youth questionnaire (youth file). Number of siblings was computed into a binary categorical variable (one sibling,

and two or more siblings), similarly to Deniz and Toseeb (2023), dummy coded with one sibling as the reference group. Research has found risk of sibling victimisation and perpetration increases as number of siblings increases (e.g. Toseeb, McChesney, Dantchev, et al., 2020). Number of siblings is also a common confounder in sibling bullying research (e.g. Bowes et al., 2014).

**Equivalised Monthly Household Income.** Household Income was extracted at age 11 from the household interview (hhresp file). This represents the total net monthly income from all family members within the household, including employment income, benefits income, pension income and investment income. However, this alone does not take into account the differing financial needs of a household depending on composition, and therefore The Organization for Economic Co-operation and Development [OECD] equivalence conversion score was used as recommended by Understanding Society (Fisher et al., 2019). The OECD gives different weights to different family members, with the first adult being given a weight of 1, additional adults being given a weight of 0.5, and children being given a weight of 0.3. Net monthly household income was divided by the OECD score for the household to produce an equivalised monthly household income. The equivalised household income was also divided by 100 for correlational and regression analyses to interpret the coefficient relationships by differences of hundreds of pounds rather than single pounds. Poorer families are at higher risk of sibling victimisation and perpetration (e.g. X. Liu et al., 2021). Lower household income is also linked to poor mental health outcomes (e.g. Lê-Scherban et al., 2016) and loneliness (e.g. Kung et al., 2022; NHS Digital, 2023a). Household income is therefore commonly controlled for in sibling bullying research (e.g. Sellars et al., 2024).

**Poverty Status.** Derived from equivalised monthly household income at age 11. Firstly, the corresponding cross-sectional weight was applied to the hhresp file. The median equivalised monthly household income for all households in that wave was then calculated. A

variable was then computed to establish the poverty line by calculating 60% of the median equivalised monthly household income for that wave. Another binary poverty variable was then created to signify whether the person was in poverty or not in poverty at age 11 by computing whether the household income for the individual was above the poverty line. The variable was dummy coded with not in poverty as the reference group. The poverty variable was then extracted alongside the other household level covariates for each wave. Poverty has been identified as a risk factor for sibling bullying (e.g. Tippett & Wolke, 2015). Poverty has also been found to be both a predictor of poor mental health, and an outcome of poor mental health (Public Health England, 2019). Poverty has therefore been controlled for in previous sibling bullying research (e.g. Toseeb & Wolke, 2022).

**Lone Parent Households.** Extracted at age 11 from the household interview (hhresp file). Lone parent households were categorised as a binary variable (lone parent household and not lone parent household) and was dummy coded with not lone parent household as the reference group. Although findings are mixed, there is some evidence to suggest having a lone parent increases the risk of sibling victimisation (e.g. Tucker et al., 2014). Research also suggests growing up with a single parent can have an impact on social and emotional wellbeing (e.g. Chavda & Nisarga, 2023). Thus, lone parent households have been included as covariates in sibling bullying research (e.g. Sharpe et al., 2022).

**Other Covariate Considerations.** Several other covariates that are related to sibling bullying and loneliness and psychological wellbeing based on previous research were explored, such as child mental health, peer bullying, disability, special education needs, long-term illness, parenting styles, parental mental health, birth order, sibling gender constellations, and parental education. However, they were deemed unsuitable or unattainable for several reasons. Firstly, some potential covariates were not viable as participants joined the study at different ages and many variables were only collected at certain ages or in certain

waves, and some variables were only collected in later waves. In addition, most participants included in this study were not part of the study at birth or during early childhood when many of these variables were collected, and participants who were aged 11 in wave one do not have available data before this age. Thus, this data was missing for many participants prior to sibling bullying exposure and inclusion of these variables would greatly reduce the sample size. In addition, data for other potential covariates were not collected by Understanding Society, such as IQ/cognitive ability, domestic violence, or other maltreatment. Also, the complexity of the data collection and data files meant it was not possible within the scope of this research to include some covariates that required significant manipulation and linkage of household member data.

**Methods of Analysis**

The use of weights is recommended when analysing data from complex survey and sampling designs, such as Understanding Society, to enhance the representativeness of the findings by accounting for unequal selection and non-response (Andersen et al., 2011; ISER, 2024b). However, at the time of completing this study, Understanding Society had not created longitudinal weights for the youth sample. The use of the most appropriate sub-optimal longitudinal weight available in Understanding Society was considered, however the use of this would have excluded most of the eligible sample. Hence, the decision was made to conduct the research without weights. Missing data was handled by excluding participants from individual analyses using listwise deletion where they had missing data for the independent or dependant variable. Missing data within individual variables was relatively small after consideration of wave availability. Whilst this may allow more scope for bias and reduce the generalisability of the findings, it was felt given the exploratory nature of this research the findings could still bear fruitful insights that may prove useful in future research.

***Data Preparation***

Waves one to fourteen (University Of Essex ISER, 2024) were downloaded from the UK Data Service (project number 231712) using IBM Statistical Package for the Social Sciences (SPSS) 29. All identifiable information was removed prior to data access and all participants were given a personal identifier (pipd) and household identifier (hipd) to match their data. Participant data for the variables of interest were extracted for waves one to nine of the youth questionnaire (youth files) and waves seven to 14 of the main self-completion questionnaire (indresp files). Covariates were also extracted from the household questionnaire (hhresp files) and the participant stable characteristics datafile (xwavedat file). From the extracted datasets, participants were excluded based on the inclusion and exclusion criteria in Figure 2.

The extracted variable datasets were combined and the participants' pipd was used to match and link each individual's responses across all waves. Participants who did not have both an eligible youth and main questionnaire response at the ages of interest were excluded and removed. Four individual datasets representing the different samples in line with the research questions and ages of interest were created matching participants with available data; ages 11 and 18; ages 11 and 20; ages 11, 13, and 18; and ages 11, 13, and 20.

For each dataset, as this study includes participants who were at the ages of interest in different waves and to support longitudinal analyses, the extracted data was combined in long format, meaning individuals had data in multiple rows in the dataset representing each timepoint completed, and additional variables were created to signify the youth or main wave represented by each row. For a small subgroup of participants who had more than one observation available at age 18 or 20, the later wave observation was excluded. Variables were created and recoded where appropriate to create dummy variables and to signify sibling bullying subgroups. Continuous items were also summed to create scale variables for sibling

perpetration, sibling victimisation, and the TILS. Understanding Society had already derived Likert scale scores for the GHQ-12 and SWEMWBS. The aggregate function was used to copy youth variable and covariate data to the main questionnaire data row to allow for longitudinal analyses.

### *Preliminary and Descriptive Statistics*

Descriptive statistics including means and standard deviations of continuous variables, frequencies of categorical variables, and correlations between variables for the total sample and separately for males and females were performed for each dataset.

### *Main Analyses*

Hierarchical regression was considered an appropriate form of analysis given the epistemological positioning of the researcher, the analysis methods used in previous research allowing closer comparability of the findings, the focus on individual level longitudinal data, and the aims and research questions for this study.

Similarly to Sellars et al. (2024), prior to running the regression models, simple linear regressions were run to check for significant sibling victimisation and gender interactions and/or significant sibling perpetration and gender interactions for each of the dependent variables. If a significant interaction was found, the regression models were run separately for males and females for that dependent variable. In block one, sibling victimisation was entered considering its prominence in the sibling bullying literature. In block two sibling perpetration was added, and in block three the covariates were included. Only covariates that had significant correlations with the independent and/or dependent variables were included for each regression model to increase statistical power

There were some concerns about possible multicollinearity in the model due to the strong correlation between sibling victimisation and sibling perpetration. However, Field

(2024) suggests predictor correlations of up to .9 may be acceptable, and further checks were completed to ensure VIF values were below 10 and Tolerance values above 0.2, indicating acceptable limits when considering the potential impact of multicollinearity on the regression models standard errors. As a robustness check, the regression models were estimated with bias-corrected and accelerated (BCa) bootstrapping, with standard errors and significance levels estimated based on 1000 bootstrapped samples, and BCa 95% Confidence Intervals (CIs) estimated based on 1000 bootstrapped samples and adjusted to account for skewness and bias in the bootstrap distribution, for each dependent variable. The aim was to calculate standard error and confidence interval estimates that were robust to the presence of multicollinearity and other potential violations of regression assumptions (Field, 2024).

**Statistical Analysis Research Question 1 and 2**. Post-hoc power analyses were conducted using G* Power for each regression model. Hierarchical regression analyses were conducted for the ages 11 and 18, and ages 11 and 20 datasets. The independent variables were sibling victimisation and sibling perpetration at age 11. The dependent variables were the TILS, lonely item, GHQ-12 and SWEMWBS at age 18 or 20.

**Statistical Analysis Research Question 3.** Post-hoc power analyses were conducted using G* Power for each regression model. Hierarchical regression analyses were conducted for the ages 11, 13 and 18, and ages 11, 13 and 20 datasets. The independent variables were sibling victimisation and sibling perpetration summed across ages 11 and 13. The dependent variables were the TILS, lonely item, GHQ-12 and SWEMWBS at age 18 or 20.

## Ethical Considerations

Understanding Society has received ethical approval from the University of Essex Ethics Committee (see Appendix H). The use of secondary data from Understanding Society in this research fell under this ethical approval, therefore additional ethical approval was not

required. Understanding Society and the researcher complied with professional codes of ethical research practice, including those set out by The Health and Care Professions Council [HCPC] (2016, 2023) and The British Psychological Society [BPS] (2021a, 2021b). Ethical standards of particular importance in this piece of research are outlined below.

### *Informed Consent*

All participants were sent advance card letters and information leaflets (see Appendix D & Appendix E) prior to each wave, informing participants of the aims and purpose of the study, why they had been selected to take part, how and by who the study was conducted, and how their data would be used. Participants were also reminded that their participation in the study was voluntary, and they were provided with the different contact options and the website details for Understanding Society if they had any questions or wanted more information. There is also a dedicated section of the Understanding Society website for participants (Understanding Society, n.d.d), including information on confidentiality, frequently asked questions, and a participant information sheet for new participants (See Appendix F). Participants were given information about the study by the interviewer if they attended a face-to-face or telephone interview and were given the opportunity to ask the interviewer questions. Participants were also reminded of their participation being voluntary during the introduction to the household and individual survey and were informed they could skip any questions they did not want to answer (see Appendix I for example). Whilst the new participant information sheet on the website explained how the anonymised data is available on the UK Data Service for academic research, the information sheets sent directly to participants at each wave were less detailed and referenced the use of the data for research purposes generally. Participants gave verbal consent to take part in face-to-face or telephone interviews, or gave consent by selecting to continue with the web-based survey.

### *Anonymity and Confidentiality*

Participants were informed of Understanding Society's commitment to protecting their confidentiality, and their compliance with The Data Protection Act (1998) and, in later waves, the General Data Protection Regulation (The Data Protection Act, 2018) in the advance cards and information leaflets sent to participants. Participants were also informed of their rights to see their details and to withdraw from the study and request their personal details be removed from the database. Understanding Society (n.d.i) has a section of their website dedicated to informing participants about confidentiality and the protection of their data. Participant data were anonymised with identifiable information such as names, addresses and exact dates of birth removed. Each participant was assigned a personal identifier and each household a household identifier to allow for their data to be matched across questionnaires and waves. Understanding Society held information securely on an ISO-27001 compliant system, meaning it met international standards for information security management. The data were made available for research purposes via the UK Data Service, and the researcher registered with the service and agreed to the End User Licence to access the data (project number 231712). The End User Licence level data were fully anonymised prior to the data being made available for access, and any data that would be considered a potential disclosure risk, such as month of birth and detailed information about occupation, were removed. A Special User Licence can be applied for to access disclosive data, but this was not required for this study. Therefore, the researcher did not have access to any data that would make participants identifiable. The data was accessible via a password protected account on the UK Data Service website and the data were held securely by the researcher on a password protected one drive on a password protected laptop that was only accessible by the researcher. All data will be deleted by the researcher on completion of the project, in line with the terms of the End User Licence Agreement.

### *Risk Management*

**Risk of Harm to Participants.** Whilst the Understanding Society surveys were not anticipated to cause distress or harm to participants, steps were put in place to mitigate potential risks. All face-to-face and telephone interviews were conducted by trained interviewers, and participants were given the opportunity to discuss any concerns or questions with the interviewers. They were also given the contact information for the Understanding Society team if they wanted to speak to someone before or after the interview. When the web-based surveys were introduced in wave eight, participants were encouraged to contact the Understanding Society team if they had any questions when completing the online survey. Participants also had the option to continue with face-to-face or telephone interviews if preferred. This study did not pose a risk of harm to participants as there was no direct contact with participants and it used secondary data that had already been collected.

**Risk of Harm to the Researcher.** The researcher felt the risk of harm to themselves in conducting this research was low, given it did not involve direct contact with participants and utilised secondary quantitative data. It was recognised that this research may involve themes, such as bullying and loneliness, that could be distressing to the researcher, and the researcher had access to regular supervision were they to need additional support. The researcher did not feel they were harmed when conducting this research.

## Dissemination

Findings will be disseminated by submitting this thesis, which will be accessible via grey literature databases and the University of Essex Research Repository. Findings will also be disseminated via the University of Essex Health and Social Care Staff-Student Conference, where doctoral students are given the opportunity to submit a poster or conferences paper each year of the course. The possibility of presenting at other conferences

in future, such as the Understanding Society Scientific Conference, will also be explored. Attempts will be made to disseminate the findings further by submitting a paper for publication. Possible journals being considered include the Journal of Social and Personal Relationships, Frontiers in Psychiatry, Frontiers in Psychology, and the Journal of Youth and Adolescence. Findings could also be shared by adding the thesis or publication to the Understanding Society publications library, accessible via their website.

# Chapter 4: Results

## Chapter Summary

The findings based on statistical analyses are outlined in this chapter. Firstly, descriptive statistics in respect to the sibling bullying, loneliness and psychological wellbeing variables are outlined. Findings in relation to research questions 1 and 2, including hierarchical regressions exploring the associations between sibling bullying at age 11 and loneliness, psychological distress and mental wellbeing at age 18 or 20 are then described. It then goes on to outline the findings in relation to research question 3, including hierarchical regressions exploring the dose-response associations between sibling bullying at ages 11 and 13 and loneliness, psychological distress and mental wellbeing at age 18 or 20.

It is important to note, due to the research aims and questions, several multiple regression analyses were completed. Because of this, there is an increased risk of a statistically significant effect being found by chance, rather than there being a true effect, resulting in a type I error. A Bonferroni correction to determine a more conservative alpha level was considered to reduce the risk of type I error due to the number of statistical analyses performed. However, due to the exploratory nature of the research and the relatively modest sample size, the decision was made to retain the traditional alpha level of $p < .05$. Therefore, it is pertinent to hold this in mind when considering the results.

## Sibling Bullying Prevalence and Descriptives

**Table 6**

*Sibling Victimisation, Sibling Perpetration and Bullying Subgroup Frequencies at Ages 11 and 13*

| | Age 11 N[a] | Age 13 N[a] | Age 11 N[b] | Age 13 N[b] |
|---|---|---|---|---|
| **Sibling Victimisation** | | | | |
| Present | 424 (49.3%) | 281 (45.9%) | 258 (48.7%) | 174 (45.4%) |
| Not Present | 436 (50.7%) | 331 (54.1%) | 272 (51.3%) | 209 (54.6%) |
| Uninvolved age 11 and 13 | - | 217 (35.5%) | - | 138 (36%) |
| Victimisation age 11 or 13 | - | 211 (34.5%) | - | 130 (33.9%) |
| Victimisation age 11 and 13 | - | 184 (30.1%) | - | 115 (30%) |
| **Sibling Perpetration** | | | | |
| Present | 294 (34.2%) | 194 (31.7%) | 178 (33.6%) | 121 (31.6%) |
| Not Present | 566 (65.8%) | 418 (68.3%) | 352 (66.4%) | 262 (68.4%) |
| Uninvolved age 11 and 13 | - | 313 (51.1%) | - | 198 (51.7%) |
| Perpetration age 11 or 13 | - | 198 (32.4%) | - | 121 (31.6%) |
| Perpetration age 11 and 13 | - | 101 (16.5%) | - | 64 (16.7%) |
| **Sibling Bully Subgroups** | | | | |
| Uninvolved | 412 (47.9%) | 312 (51%) | 260 (49.1%) | 197 (51.4%) |
| Victim Only | 154 (17.9%) | 106 (17.3%) | 92 (17.4%) | 65 (17%) |
| Bully Only | 24 (2.8%) | 19 (3.1%) | 12 (2.3%) | 12 (3.1%) |
| Bully-Victim | 270 (31.4%) | 175 (28.6%) | 166 (31.3%) | 109 (28.5%) |

*Note.* [a]18 year old matched participants. [b]20 year old matched participants.

Table 6 outlines the frequency of sibling victimisation, sibling perpetration, and sibling bullying subgroups across the four samples. Sibling victimisation was more common than sibling perpetration across all samples (45.4-49.3% vs. 31.6-34.2%), and both were slightly more common at age 11 compared to age 13. Interestingly there was a mostly even split in the subsample analyses of sibling victimisation groups at ages 11 and 13 (35.5-36% uninvolved, 33.9-34.5% victimised at one timepoint, 30-30.1% victimised at both timepoints). Repeated perpetration was less common (51.1-51.7% uninvolved, 31.6-32.4%

perpetrated at one timepoint, 16.5-16.7% perpetrated at both timepoints), and uninvolved at both timepoints was the largest group in both subsamples. In terms of bullying subgroups, whilst there were slight proportional differences across the four samples, uninvolved was the most common bullying group (47.9% -51.4%), followed by the bully-victim group (28.5-31.4%). The victim-only group was prevalent in 17-17.9% of the samples, and the bully-only group was notably small, ranging from 2.3-3.1% prevalence across the four samples.

**Sibling Bullying and Outcome Descriptives**

Table 7 shows the sample sizes, ranges, means, and standard deviations for the independent and dependent variables for each of the samples. For all variables, higher scores indicate higher levels of victimisation, perpetration, loneliness, psychological distress, and mental wellbeing. Sibling victimisation mean scores were 7.70-7.72 for one timepoint, and 15.08-15.10 for two timepoints. Sibling perpetration mean scores were 6.80-6.85 for one timepoint, and 13.50-13.55 for two timepoints.

For the TILS, mean scores ranged from 4.83-5.03. For the lonely item, mean scores ranged from 1.68-1.75. Mean scores for the GHQ-12 were between 12.13 and 12.58. Finally, mean scores for the SWEMWBS were between 23.38 and 23.98.

**Table 7**

*Descriptive for the Independent and Dependent Variables Across All Four Sub Samples*

| | Age 11 and 18 | | | | Age 11, 13 and 18 | | | | Age 11 and 20 | | | | Age 11, 13 and 20 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | N | R | *M* | *SD* | N | R | *M* | *SD* | N | R | *M* | *SD* | N | R | *M* | *SD* |
| **Sum of Sibling Victimisation** | 860 | 4-16 | 7.72 | 3.00 | 612 | 8-31 | 15.10 | 5.04 | 530 | 4-16 | 7.70 | 3.06 | 383 | 8-31 | 15.08 | 5.17 |
| **Sum of Sibling Perpetration** | 860 | 4-16 | 6.85 | 2.56 | 612 | 8-32 | 13.55 | 4.28 | 530 | 4-16 | 6.80 | 2.60 | 383 | 8-32 | 13.50 | 4.39 |
| **Loneliness** | | | | | | | | | | | | | | | | |
| TILS | 576 | 3-9 | 4.97 | 1.88 | 402 | 3-9 | 5.03 | 1.89 | 454 | 3-9 | 4.83 | 1.78 | 326 | 3-9 | 4.83 | 1.76 |
| Lonely item | 577 | 1-3 | 1.75 | 0.75 | 402 | 1-3 | 1.75 | 0.74 | 455 | 1-3 | 1.69 | 0.71 | 327 | 1-3 | 1.68 | 0.71 |
| GHQ-12 | 851 | 0-36 | 12.13 | 6.28 | 603 | 0-36 | 12.15 | 6.23 | 516 | 0-36 | 12.58 | 6.48 | 376 | 0-36 | 12.56 | 6.34 |
| **SWEMWBS** | 285 | 8-35 | 23.82 | 4.81 | 203 | 11-35 | 23.98 | 4.70 | 167 | 7-35 | 23.51 | 4.88 | 119 | 7-35 | 23.38 | 4.90 |

*Note.* Higher Scores = Higher Levels of Victimisation/Perpetration/ Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS) Respectively.

## Research Questions 1 and 2 - Does Adolescent Sibling Bullying Predict Emerging Adult Loneliness?; Does Adolescent Sibling Bullying Predict Emerging Adult Psychological Distress and Mental Wellbeing?

Due to the small size of the bully-only group, further meaningful analysis of bullying subgroups was not possible. Thus, the decision was made to use a summed scale score of victimisation items and a summed scale score of perpetration items to form frequency scales, as has been used in previous research (e.g. Deniz & Toseeb, 2023; Tippett & Wolke, 2015).

### *Descriptives Age 11 and 18 Sample*

Throughout the results, only significant correlations will be specified. Appendix J shows correlations between the independent, dependant, and covariate variables for the total sample. Sibling victimisation was positively correlated with the lonely item ($r$ = .09), and sibling perpetration was positively correlated with the TILS ($r$ = .09) and lonely item ($r$ = .09). Female gender was negatively correlated with sibling victimisation ($r$ = -.08) and perpetration ($r$ = -.10), and associated with higher clinical scores for all dependent variables. Being from a lone parent household was positively correlated with sibling victimisation ($r$ = .09) and perpetration ($r$ = .10). Household income was also positively associated with the GHQ-12 ($r$ = .07). Whilst significant, all correlations were small (Cohen, 1992). Correlations were repeated separately for males and females and are displayed in Table 8.

**Table 8**

*Correlations For All Independent, Dependent, and Covariate Variables For Males and Females in the Age 11 and 18 Sample*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 1 | .68*** | .03 | .05 | .07 | .03 | .06 | .01 | -.05 | .09^ | -.07 |
| 2. | .77*** | 1 | .02 | .01 | .04 | .01 | .04 | .05 | -.07 | .10* | -.02 |
| 3. | .11* | .16** | 1 | .85*** | .56*** | -.56*** | -.01 | .13* | .01 | .04 | -.05 |
| 4. | .13* | .17** | .83*** | 1 | .56*** | -.57*** | -.03 | .13* | -.02 | .06 | -.11^ |
| 5. | .07 | .05 | .52*** | .59*** | 1 | -.62*** | -.08 | .09^ | -.06 | .02 | -.02 |
| 6. | .002 | -.03 | -59*** | -.60*** | -.78*** | 1 | .07 | -.06 | .13 | .05 | .02 |
| 7. | -.01 | -.04 | -.07 | -.07 | .01 | -.05 | 1 | -.22*** | .15** | .04 | .19*** |
| 8. | .01 | -.01 | <.001 | .02 | .07 | -.03 | -.18*** | 1 | -.39*** | -.18*** | -.15** |
| 9. | -.05 | -.03 | -.02 | -.02 | -.05 | -.07 | .20** | -.52*** | 1 | .06 | .26*** |
| 10. | .09* | .11* | .02 | .08 | .05 | -.18* | -.06 | -.22*** | .12** | 1 | .03 |
| 11. | -.03 | -.02 | -.05 | -.05 | -.02 | .03 | .14** | -.10* | .21*** | .05 | 1 |

*Note*.1 = Sibling Victimisation age 11. 2 = Sibling Perpetration age 11. 3 = TILS. 4 = Loneliness Item. 5 = GHQ 12. 6 = SWEMWBS. 7 = Number of Siblings (Dummy Coded as 0 = Only One Sibling, 1 = Two or More Siblings). 8 = Equivalised Monthly Household Income divided by 100. 9 = Poverty Status (Dummy Coded as 0 = Not In Poverty, 1 = In Poverty). 10 = Lone Parents (Dummy Coded as 0 = Not Lone Parent Household, 1 = Lone Parent Household). 11 = Ethnicity (Dummy Coded as 0 = White, 1 = Ethnic Minority). * $p < .05$, ** $p < .01$, ***$p < .001$. Males above the diagonal line, Females below the diagonal line. Higher Scores = Higher Victimisation/Perpetration/ Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS)/Equivalised Household Income Respectively. *$p < .05$, **$p < .01$, ***$p < .001$. ^$p < .10$.

Table 8 shows there were no significant correlations between sibling victimisation or perpetration and loneliness, psychological distress, and mental wellbeing variables for males. However, for females, sibling victimisation and perpetration were positively correlated with the TILS ($r$ = .11 and $r$ = .16 respectively) and lonely item ($r$ = .13 and $r$ = .17 respectively). For males, household income was positively associated with the TILS ($r$ = .13) and lonely item ($r$ = .13). Being from a lone parent household was positively associated with more sibling perpetration for both males and females ($r$ = .10 and $r$ = .11 respectively). For females, it was also correlated with more sibling victimisation ($r$ = .09). Again, the correlations were small.

Sibling victimisation and perpetration were highly positively correlated with each other in the total sample ($r$ = .73), and for males ($r$ = .63) and females ($r$ = .77), with the relationship being stronger in females. Scatterplots of the relationship between sibling victimisation and perpetration were also investigated (see Appendix K), which also highlights this relationship and the small number of participants with high perpetration and low victimisation scores, particularly in females. This is in line with the earlier finding of a higher prevalence of bully-victims and a small number of participants in the bully-only group. It is possible that this strong correlation between victimisation and perpetration means their potential relationship with loneliness and psychological wellbeing may overlap.

### *Hierarchical Regression Analyses Age 11 and 18 Sample*

A series of bias corrected and accelerated (BCa) bootstrapped simple linear regressions were run to check for gender interactions with sibling victimisation and perpetration for each dependent variable, similarly to Sellars et al. (2024). This revealed a significant interaction between sibling victimisation and gender, and sibling perpetration and gender, for the TILS and lonely item. Therefore, separate regression analyses for males and females were run. Considering the earlier reported significant correlations, the lone parent

household dummy was entered into both regression models as covariates for males and females, and equivalised household income was also entered into the regression models for males. There were no significant sibling victimisation and gender or sibling perpetration and gender interactions for the GHQ-12 and SWEMWBS. Thus, regression analyses were run for the total sample. Gender and the lone parent household dummy were entered into the final models as covariates, and household income was also included for the GHQ-12.

Post-hoc power analyses were also conducted. For the TILS and lonely item in males, the sample size of 254 was sufficient to detect medium and large effects with four predictors with over 99% power, however, was only sufficient to detect a small effect with 61% power in model one, 51% power in model two, and 40% power in model three. For the TILS and lonely item in females, the sample size of 319 and 320 respectively was sufficient to detect medium and large effects with three predictors with over 99% power, however, was only sufficient to detect a small effect with 71% power in model one, 61% power in model two, and 54% power in model three. For the GHQ-12, the sample size of 848 was sufficient to detect small, medium and large effects with five predictor variables with at least 91% power. For the SWEMWBS, the sample size of 285 was sufficient to detect medium and large effects with four predictors with over 99% power, however, was only sufficient to detect a small effect with 66% power in model one, 56% power in model two, and 44% power in model three.

Due to the strong relationship between sibling victimisation and perpetration, and the potential impact this may have on the interpretability of the individual effects of each predictor, multicollinearity was investigated. The highest VIF value for predictors across all the regression models was 2.278 and the lowest tolerance value was .439, which were within acceptable limits (Field, 2024). Table 9 summarises the results of the hierarchical regression analyses, including the unstandardised beta coefficients (*b*), bootstrapped standard errors and

significance levels based on 1000 bootstrapped samples, and BCa bootstrapped and adjusted 95% Confidence Intervals (CIs) for each dependent variable. The standardised beta coefficients (β) were also reported and interpreted when describing the results to allow for comparability of the contribution and effect size of individual predictors. Please refer to Table 2 for a reminder of the effect size interpretations for β**.**

**Table 9**

*Hierarchical Linear Regression Output with BCa Bootstrapping based on 1000 samples for the TILS, Lonely Item, GHQ-12, and SWEMWBS for Age 11 and 18 Sample*

| | Model one *b* (*SE*) | Model two *b* (*SE*) | Model three *b* (*SE*) | Model three BCa 95% CI |
|---|---|---|---|---|
| *TILS Males*[a] | | | | |
| Sibling Victimisation | 0.02 (0.04) | 0.01 (0.06) | 0.02 (0.05) | [-0.09, 0.14] |
| Sibling Perpetration | - | 0.01 (0.07) | -0.01 (0.07) | [-0.14, 0.12] |
| Lone Parent | - | - | 0.30 (0.36) | [-0.36, 0.98] |
| Household Income | - | - | 0.03* (0.02) | [-0.003, 0.06] |
| $R^2$ | .001 | .001 | .02 | |
| *F* | 0.20 | 0.10 | 1.22 | |
| *TILS Females*[b] | | | | |
| Sibling Victimisation | 0.06 (0.04) | -0.01 (0.05) | -00.01 (0.05) | [-0.12, 0.09] |
| Sibling Perpetration | - | 0.12* (0.06) | 0.12* (0.06) | [0.02, 0.23] |
| Lone Parent | - | - | 0.04 (0.30) | [-0.54, 0.66] |
| $R^2$ | .01 | .02 | .02 | |
| *F* | 3.16 | 3.37* | 2.25 | |
| *Lonely Item Males*[a] | | | | |
| Sibling Victimisation | 0.01 (0.02) | 0.02 (0.02) | 0.02 (0.02) | [-0.02, 0.06] |
| Sibling Perpetration | - | -0.01 (0.03) | -0.02 (0.03) | [-0.06, 0.03] |
| Lone Parent | - | - | 0.17 (0.15) | [-0.10, 0.43] |
| Household Income | - | - | 0.01^ (0.01) | [-0.002, 0.02] |
| $R^2$ | .002 | .003 | .03 | |
| *F* | 0.60 | 0.35 | 1.73 | |

| | Model one *b* (*SE*) | Model two *b* (*SE*) | Model three *b* (*SE*) | Model three BCa 95% CI |
|---|---|---|---|---|
| *Lonely Item Females*[c] | | | | |
| Sibling Victimisation | 0.03* (0.01) | 0.002 (0.02) | 0.002 (0.02) | [-0.04, 0.04] |
| Sibling Perpetration | - | 0.05* (0.02) | 0.05* (0.02) | [0.004, 0.09] |
| Lone Parent | - | - | 0.12 (0.12) | [-0.11, 0.34] |
| $R^2$ | .02 | .03 | .03 | |
| *F* | 4.89* | 4.15* | 3.14* | |
| *GHQ-12*[d] | | | | |
| Sibling Victimisation | 0.10 (0.08) | 0.16 (0.11) | 0.17 (0.11) | [-0.04, 0.38] |
| Sibling Perpetration | - | -0.09 (0.12) | -0.05 (0.12) | [-0.29, 0.19] |
| Household Income | - | - | 0.07** (0.02) | [0.02, 0.11] |
| Lone Parent | - | - | 0.78 (0.61) | [-0.36, 1.91] |
| Gender | - | - | 2.76*** (0.42) | [1.95, 3.56] |
| $R^2$ | .002 | .003 | .06 | |
| *F* | 2.08 | 1.28 | 10.30*** | |
| *SWEMWBS*[e] | | | | |
| Sibling Victimisation | 0.06 (0.09) | 0.09 (0.13) | 0.10 (0.12) | [-.12, .34] |
| Sibling Perpetration | .- | -0.05 (0.16) | -0.11 (0.15) | [-0.42, 0.21] |
| Lone Parent | - | - | -0.94 (0.71) | [-2.28, 0.41] |
| Gender | - | - | -1.62** (0.53) | [-2.67, -0.53] |
| $R^2$ | .001 | .002 | .04 | |
| *F* | 0.36 | 0.23 | 2.63* | |

*Note.* [a]N = 254. [b]N = 319. [c]N = 320. [d]N = 848. [e]N = 285. Higher Scores = Higher Victimisation/Perpetration/ Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS)/Equivalised Household Income Respectively. Lone Parent Household (Dummy Coded as 0 = Not Lone Parent Household, 1 = Lone Parent Household). Gender (Dummy Coded as 0 = Male, 1 = Female). All Estimations Include Constant Terms. ^$p < .10$ *$p < .05$, *$p < .01$, ***$p < .001$.

**TILS for Males.** Sibling victimisation and perpetration at age 11 were not significant predictors of indirect loneliness scores in males at age 18. The only significant predictor of higher loneliness scores was higher household income ($b = 0.03$, $\beta = .13$, $p = .038$). The

results derived from computing the standard errors using a simple bootstrap suggest that the coefficient is statistically significant. However, the BCa 95% CI did cross zero (-0.003, 0.06). This highlights uncertainty in the parameter estimate and suggests this result is not robust when accounting for potential bias and skew in the data using the BCa bootstrapping method. The final regression model was not significant and predicted 2% of the variance in indirect loneliness.

**TILS for Females.** Sibling victimisation was not a significant predictor of indirect loneliness in females at age 18, however sibling perpetration at age 11 was a positive predicter of loneliness scores at age 18 in models two and three ($b$ = 0.12, β = .16, $p$ = .027). The β was small and suggests that when sibling perpetration increases by one standard deviation, indirect loneliness scores increase by 0.16 standard deviations when sibling victimisation and lone parent households are held constant. Model two was significant ($F$(2, 316) = 3.37, $p$ = .035) and accounted for 2% of the variance in indirect loneliness, however the final model was not significant with the inclusion of lone parent households.

**Lonely Item for Males.** Sibling victimisation and perpetration at age 11 were not significant predictors of direct loneliness in males and the final regression model was not significant, only predicting 1% of the variance. There were no significant predictors.

**Lonely Item for Females.** Sibling victimisation at age 11 was a significant positive predictor of direct loneliness age 18 in model one ($b$ = 0.03, β = .12, $p$ = .027) with a small effect, however it was no longer significant in model two with the inclusion of sibling perpetration at age 11. Sibling perpetration was a significant positive predictor of loneliness scores in models two ($b$ = 0.05, β = .15, $p$ = .023) and three ($b$ = 0.05, β = .15, $p$ = .034). The β was small and suggests that when sibling perpetration increases by one standard deviation, direct loneliness scores increase by 0.15 standard deviations when sibling victimisation and

lone parent households are held constant. All three models were significant ($F(1, 318) = 4.89$, $p = .028$, $F(2, 317) = 4.15$, $p = .017$, $F(3, 316) = 3.14$, $p = .026$), however the inclusion of lone parent households did not improve the model. The final model accounted for 3% of the variance.

**GHQ-12.** Sibling victimisation and perpetration at age 11 did not significantly predict psychological distress at age 18. Higher household income at age 11 ($b = 0.07$, $\beta = .09$, $p = .003$) and female gender ($b = 2.76$, $\beta = .22$, $p < .001$) were the only significant predictors in the model. The final regression model was significant ($F(5, 842) = 10.30$, $p < .001$) and accounted for 6% of the variance in psychological distress.

**SWEMWBS.** Sibling victimisation and perpetration at age 11 did not significantly predict mental wellbeing at age 18. Gender was the only significant predictor of mental wellbeing ($b = -1.62$, $\beta = -.17$, $p = .003$), with the negative coefficient demonstrating females had lower scores on the SWEMWBS than males. The final regression model was significant ($F(4, 280) = 2.63$, $p = .035$) and accounted for 4% of the variance in mental wellbeing.

### *Descriptives Age 11 and 20 Sample*

Appendix J shows the correlations between the independent, dependent, and covariate variables for the total sample. Sibling victimisation and perpetration were positively correlated with the lonely item ($r = .12$ and $r = .15$ respectively) and GHQ-12 ($r = .13$ and $r = .13$ respectively). Being from a lone parent household was positively correlated with sibling victimisation ($r = .11$) and perpetration ($r = .15$). Female gender was associated with higher scores for the TILS ($r = .11$) and GHQ-12 ($r = .13$). Household income was also positively associated with SWEMWBS scores ($r = .20$).

**Table 10**

*Correlations For All Independent, Dependent, and Covariate Variables For Males and Females in the Age 11 and 20 Sample*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 1 | .69*** | .003 | .08 | .15* | .02 | .07 | -.01 | -.04 | .10 | .01 |
| 2. | .82*** | 1 | .02 | .06 | .08 | .01 | .08 | .03 | -.06 | .18** | .06 |
| 3. | .12^ | .15* | 1 | .68*** | .49*** | -.14 | .01 | .04 | .03 | -.02 | -.01 |
| 4. | .16* | .24*** | .78*** | 1 | .43*** | -.38** | -.09 | .03 | .03 | -.05 | -.01 |
| 5. | .14* | .19** | .58*** | .60*** | 1 | -.54*** | .02 | -.08 | .06 | .04 | .18* |
| 6. | -.17^ | -.19^ | -.53*** | -.50*** | -.70*** | 1 | -.04 | .32* | -.15 | -.09 | -.18 |
| 7. | .001 | -.05 | .02 | .04 | .07 | -.08 | 1 | -.26*** | .05 | .02 | .16* |
| 8. | -.03 | -.05 | .05 | .01 | .01 | .14 | -.18** | 1 | -.32*** | -.17** | -.09 |
| 9. | -.06 | -.02 | .05 | .03 | .01 | -.05 | .22*** | -.52*** | 1 | .01 | .17** |
| 10. | .12* | .14* | -.02 | -.01 | -.02 | -.02 | .01 | -.24*** | .16** | 1 | .02 |
| 11. | -.07 | -.07 | -.09 | -.08 | -.04 | -.12 | .24*** | -.17** | .22*** | .07 | 1 |

*Note*. 1 = Sibling Victimisation age 11. 2 = Sibling Perpetration age 11. 3 = TILS. 4 = Loneliness Item. 5 = GHQ 12. 6 = SWEMWBS. 7 = Number of Siblings (Dummy Coded as 0 = Only One Sibling, 1 = Two or More Siblings). 8 = Equivalised Monthly Household Income divided by 100. 9 = Poverty Status (Dummy Coded as 0 = Not In Poverty, 1 = In Poverty). 10 = Lone Parents (Dummy Coded as 0 = Not Lone Parent, 1 = Lone Parent). 11 = Ethnicity (Dummy Coded as 0 = White, 1 = Ethnic Minority). Males above the diagonal line, Females below the diagonal line. Higher Scores = Higher Victimisation/Perpetration/ Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS) Respectively. *$p < .05$, **$p < .01$, ***$p < .001$, ^$p < .10$.

Table 10 outlines the correlations separately for males and females and shows the only significant correlation between the independent and dependent variables for males was a positive relationship between sibling victimisation and the GHQ-12 ($r$ = .15). However, for females, there were positive correlations between sibling victimisation and the lonely item ($r$ = .16) and the GHQ-12 ($r$ = .14). Similarly, sibling perpetration was positively correlated with the TILS ($r$ = .15), lonely item ($r$ = .24) and GHQ-12 scores ($r$ = .19) for females. Being from a lone parent household was the only other variable correlated with sibling perpetration for males ($r$ = .18), and it was also positively associated with sibling victimisation ($r$ = .12) and perpetration ($r$ = .14) for females. The only covariates correlated with the dependent variables were a positive relationship between being from an ethnic minority and GHQ-12 scores ($r$ = .18), and a positive association between household income and the SWEMWBS ($r$ = .32) for males. The correlations demonstrated are slightly stronger than in the 18-year-old sample, but still relatively small. Strong positive correlations between sibling victimisation and perpetration were found for the total sample ($r$ = .76), for males ($r$ = .69) and for females ($r$ = .82), and again this relationship was stronger for females.

***Hierarchical Multiple Regression Analyses age 11 and 20 Sample***

BCa bootstrapped simple linear regressions revealed a significant interaction between sibling perpetration and gender for the TILS, and significant interactions between sibling victimisation and gender, and sibling perpetration and gender, for the lonely item and GHQ-12. Therefore, separate regression analyses for males and females were run. The lone parent household dummy was entered into the regression models as covariates for males and females, and ethnicity was also entered into the GHQ-12 regression model for males. There was a significant sibling perpetration and gender interaction for the SWEMWBS, however due to the small sample size the decision was made to run the regression model for the whole sample with the interaction term entered in the final model alongside the covariates; lone

parent households, household income, and gender. Continuous variables were mean centred for the SWEMWBS regression analysis to account for the interaction term.

Post-hoc power analyses were conducted. For the TILS and lonely item for males, the sample size of 189 was sufficient to detect medium and large effects with three predictors with over 99% power, however, was only sufficient to detect a small effect with 49% power in model one, 39% power in model two, and 33% power in model three. For the TILS and lonely item for females, the sample sizes of 265 and 266 respectively were sufficient to detect medium and large effects with three predictors with over 99% power, however, was only sufficient to detect a small effect with 63% power in model one, 52% power in model two, and 45% power in model three. For the GHQ-12 in males, the sample size of 214 was sufficient to detect medium and large effects with four predictor variables with over 99% power, although was only sufficient to detect a small effect at 54% power in model one, 44% power in model two, and 33% power in model three. For the GHQ-12 for females, the sample size of 302 was sufficient to detect medium and large effects with three predictor variables with over 99% power, although was only sufficient to detect a small effect at 69% power in model one, 58% power in model two, and 52% power in model three. For the SWEMWBS, the sample size of 167 was sufficient to detect medium and large effects with six predictors with over 98% power, however, was only sufficient to detect a small effect with 44% power in model one, 35% power in model two, and 22% in model three.

The highest VIF value for predictors across all the regression models was 3.168 and the lowest tolerance value was .316, which were within acceptable limits. Table 11 summarises the results of the hierarchical regression analyses, including the unstandardised beta coefficients, bootstrapped standard errors and significance levels, and BCa 95% CIs for each dependent variable.

**Table 11**

*Hierarchical Linear Regression Results with BCa Bootstrapping based on 1000 samples for the TILS, Lonely Item, GHQ-12, and SWEMWBS for Age 11 and 20 Sample*

| | Model one *b* (*SE*) | Model two *b* (*SE*) | Model three *b* (*SE*) | Model three BCa 95% CI |
|---|---|---|---|---|
| *TILS Males*[a] | | | | |
| Sibling Victimisation | 0.001 (0.04) | -0.01 (0.06) | -0.01 (0.06) | [-0.12, 0.11] |
| Sibling Perpetration | - | 0.02 (0.07) | 0.02 (0.07) | [-0.12, 0.16] |
| Lone Parent | - | - | -0.09 (0.31) | [-0.68, 0.53] |
| $R^2$ | < .001 | < .001 | .001 | |
| *F* | 0.001 | 0.04 | 0.05 | |
| *TILS Females*[b] | | | | |
| Sibling Victimisation | 0.07^ (0.04) | -0.004 (0.06) | -0.002 (0.06) | [-0.12, 0.12] |
| Sibling Perpetration | - | 0.11 (0.08) | 0.11 (0.08) | [-0.04, 0.27] |
| Lone Parent | - | - | -0.18 (0.29) | [-0.73, 0.40] |
| $R^2$ | .01 | .02 | .02 | |
| *F* | 3.68^ | 2.87^ | 2.04 | |
| *Lonely Item Males*[a] | | | | |
| Sibling Victimisation | 0.02 (0.02) | 0.02 (0.02) | 0.01 (0.02) | [-0.03, 0.06] |
| Sibling Perpetration | - | 0.003 (0.03) | 0.01 (0.03) | [-0.05, 0.07] |
| Lone Parent | - | - | -0.12 (0.13) | [-0.36, 0.12] |
| $R^2$ | .01 | .01 | .01 | |
| *F* | 1.05 | 0.53 | 0.60 | |
| *Lonely Item Females*[c] | | | | |
| Sibling Victimisation | 0.04* (0.01) | -0.03 (0.02) | -0.03 (0.02) | [-0.07, 0.02] |
| Sibling Perpetration | - | 0.09*** (0.03) | 0.09*** (0.03) | [0.04, 0.15] |
| Lone Parent | - | - | -0.07 (0.11) | [-0.28, 0.16] |
| $R^2$ | .02 | .06 | .06 | |
| *F* | 6.56* | 8.52*** | 5.80*** | |

| | Model one *b* (*SE*) | Model two *b* (*SE*) | Model three *b* (*SE*) | Model three BCa 95% CI |
|---|---|---|---|---|
| *GHQ-12 Males*[d] | | | | |
| Sibling Victimisation | 0.29* (0.14) | 0.33 (0.22) | 0.35 (0.22) | [-0.10, 0.78] |
| Sibling Perpetration | - | -0.08 (0.24) | -0.14 (0.24) | [-0.62, 0.33] |
| Ethnicity | - | - | 2.57* (1.19) | [0.28, 5.36] |
| Lone Parent | - | - | 0.46 (0.89) | [-1.19, 2.14] |
| $R^2$ | .02 | .02 | .05 | |
| *F* | 4.77* | 2.44^ | 2.95* | |
| *GHQ-12 Females*[e] | | | | |
| Sibling Victimisation | 0.32* (0.13) | -0.08 (0.21) | -.0.08 (0.21) | [-0.50, 0.40] |
| Sibling Perpetration | - | 0.56* (0.25) | 0.57* (0.26) | [0.05, 1.05] |
| Lone Parent | - | - | -0.78 (1.01) | [-2.48, 1.24] |
| $R^2$ | .02 | .04 | .04 | |
| *F* | 6.26* | 5.55** | 3.92** | |
| *SWEMWBS*[f] | | | | |
| Sibling Victimisation | -0.14 (0.12) | -0.06 (0.22) | -0.06 (0.22) | [-0.47, 0.29] |
| Sibling Perpetration | - | -0.13 (0.24) | 0.13 (0.26) | [-0.35, 0.69] |
| Perp*Gender | - | - | -0.49^ (0.27) | [-1.04, 0.12] |
| Gender | - | - | -1.02 (0.76) | [-2.48, 0.41] |
| Lone Parent | - | - | 0.48 (0.99) | [-1.28, 2.48] |
| Household Income | - | - | 0.13** (0.04) | [0.04, 0.21] |
| $R^2$ | .01 | .01 | .08 | |
| *F* | 1.25 | 0.79 | 2.15^ | |

*Note.* [a]N = 189. [b]N = 265. [c]N = 266. [d]N = 214. [e]N = 302. [f]N = 167. Higher Scores = Higher Victimisation/Perpetration/Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS)/Equivalised Household Income Respectively. Lone Parent Household (Dummy Coded as 0 = Not Lone Parent Household, 1 = Lone Parent Household). Ethnicity (Dummy Coded as 0 = White, 1 = Ethnic Minority). Gender (Dummy Coded as 0 = Male, 1 = Female). All Estimations Include Constant Terms. ^p < .10 *p < .05, **p < .01 ***p < .001.

**TILS for Males.** There were no significant predictors in the model. The final regression model was not significant and predicted less than 1% of the variance in indirect loneliness scores in males aged 20.

**TILS for Females.** There were no significant predictors. The final model was not significant and accounted for 2% of the variance in indirect loneliness in females aged 20.

**Lonely Item for Males.** There were no significant predictors in the model. The final regression model was not significant and only predicted 1% of the variance in direct loneliness scores in males aged 20.

**Lonely Item for Females.** More sibling victimisation at age 11 was a significant predictor of direct loneliness at age 20 for females in model one ($b = 0.04$, $\beta = .16$, $p = .011$) with a small effect, however it was no longer significant in model two with the inclusion of sibling perpetration at age 11. Interestingly, the coefficient became negative, suggesting this relationship was reversed when considering perpetration as well. More sibling perpetration was a significant predictor of higher loneliness scores in models two and three ($b = 0.09$, $\beta = .33$, $p < .001$). The β indicates a medium effect and suggests that when sibling perpetration increases by one standard deviation, direct loneliness scores increase by 0.33 standard deviations when sibling victimisation and lone parent households are held constant. All three models were significant ($F(1, 264) = 6.56$, $p = .011$, $F(2, 263) = 8.52$, $p < .001$, $F(3, 262) = 5.80$, $p < .001$), however the inclusion of the lone parent household dummy did not improve the model. The final model accounted for 6% of the variance in direct loneliness scores.

**GHQ-12 for Males.** Experiencing more sibling victimisation at age 11 was a significant predictor of psychological distress in males at age 20 in model one ($b = 0.29$, $\beta = .15$, $p = .03$) with a small effect, however it was no longer significant in model two with the inclusion of sibling perpetration at age 11. Sibling perpetration was not a significant predictor

of psychological distress. Being from an ethnic minority ($b$ = 2.57, β = .17, $p$ = .035) was positively associated with psychological distress compared to being from a White ethnicity in the final model. Model one and the final regression models were significant ($F$(1, 212) = 4.77, $p$ = .03, $F$(4, 209) = 2.95, $p$ = .021) and the final model accounted for 5% of the variance in psychological distress.

**GHQ-12 for Females.** Sibling victimisation at age 11 was significantly positively associated with psychological distress for females at age 20 in model one ($b$ = 0.32, β = .14, $p$ = .014) with a small effect. However, it was no longer significant in model two with the inclusion of sibling perpetration at age 11, and again the coefficient became negative. Sibling perpetration was a significant positive predictor of psychological distress in models two ($b$ = 0.56, β = .22, $p$ = .027) and three ($b$ = 0.57, β = .22, $p$ = .024). This indicates a medium effect and suggests that when sibling perpetration increases by one standard deviation, psychological distress scores increase by 0.22 standard deviations when other variables are held constant. All three models were significant ($F$(1, 300) = 6.26, $p$ = .013, $F$(2, 299) = 5.55, $p$ = .004, $F$(3, 298) = 3.92, $p$ = .009), however the inclusion of the lone parent household dummy did not improve the model. The final model accounted for 4% of the variance in psychological distress in females aged 20.

**SWEMWBS.** The final regression model was not significant, but did account for 8% of the variance in mental wellbeing at age 20. Sibling victimisation, perpetration, and the sibling perpetration by gender interaction did not significantly contribute to the model. Higher household income was the only significant predictor of higher mental wellbeing ($b$ = 0.13, β = .21, $p$ = .005).

**Research Questions 3 - Does Repeated Sibling Victimisation and/or Perpetration Have A Dose-Response Relationship with Loneliness and Psychological Wellbeing Outcomes?**

Like research questions 1 and 2, a frequency scale of summed raw scores for victimisation items at ages 11 and 13, and for perpetration items at ages 11 and 13, were utilised for research question 3 to explore the possible dose-response relationship. This approach was utilised in recent sibling victimisation research (Sellars et al., 2024), and similar approaches have been used in sibling perpetration research (e.g. Dantchev et al., 2018).

***Descriptives Age 11, 13 and 18 Subsample***

Correlations between the independent, dependent, and covariate variables for the total sample show positive correlations between summed sibling victimisation at ages 11 and 13 and the lonely item ($r$ = .11) and the GHQ-12 ($r$ = .10) (see Appendix J). Female gender was associated with higher clinical scores for all the dependent variables, and being from a lone parent household was correlated with summed sibling victimisation ($r$ = .14) and summed sibling perpetration ($r$ = .12). Correlations were also completed separately for males and females.

**Table 12**

*Correlations For All Independent, Dependent, and Covariate Variables For Males and Females in the Age 11, 13 and 18 Subsample*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 1 | .74*** | .03 | .03 | .10 | -.14 | .05 | <.001 | -.02 | .10^ | -.05 |
| 2. | .85*** | 1 | -.04 | -.06 | .03 | -.06 | .06 | .04 | .01 | .08 | .01 |
| 3. | .14* | .16* | 1 | .83*** | .54*** | -.46*** | -.03 | .11 | -.03 | .05 | -.10 |
| 4. | .16* | .17* | .84*** | 1 | .52*** | -.47*** | -.06 | .08 | -.06 | .04 | -.17* |
| 5. | .11* | .07 | .51*** | .57*** | 1 | -.54*** | -.12^ | .10^ | -.15* | -.01 | -.05 |
| 6. | -.07 | -.07 | -.57*** | -.57*** | -.78*** | 1 | .08 | .03 | .20^ | .10 | .02 |
| 7. | -.03 | -.04 | -.08 | -.07 | -.01 | -.05 | 1 | -.26*** | .14* | .01 | .23*** |
| 8. | .01 | .01 | -.03 | .02 | .07 | -.06 | -.15** | 1 | -.36*** | -.17** | -.13* |
| 9. | -.06 | -.08 | -.01 | -.03 | -.02 | -.08 | .17** | -.52*** | 1 | .06 | .31*** |
| 10. | .17** | .16** | .05 | .10 | .06 | -.14 | -.07 | -.19*** | .08 | 1 | .01 |
| 11. | -.03 | .01 | -.05 | -.002 | -.05 | .06 | .19*** | -.11* | .16** | .03 | 1 |

*Note*. 1 = Sum Sibling Victimisation ages 11 and 13. 2 = Sum Sibling Perpetration ages 11 and 13. 3 = TILS. 4 = Loneliness Item. 5 = GHQ 12. 6 = SWEMWBS. 7 = Number of Siblings (Dummy Coded as 0 = Only One Sibling, 1 = Two or More Siblings). 8 = Equivalised Monthly Household Income divided by 100. 9 = Poverty Status (Dummy Coded as 0 = Not In Poverty, 1 = In Poverty). 10 = Lone Parent Household (Dummy Coded as 0 = Not Lone Parent Household, 1 = Lone Parent Household). 11 = Ethnicity (Dummy Coded as 0 = White, 1 = Ethnic Minority). Males above the diagonal line, Females below the diagonal line. Higher Scores = Higher Summed Victimisation/Summed Perpetration/Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS)/Equivalised Household Income Respectively. *$p < .05$, **$p < .01$, ***$p < .001$, ^$p < .10$.

Table 12 shows, for males, there were no significant correlations between sibling victimisation or perpetration and the dependent variables or covariates. Being from an ethnic minority was negatively associated with the lonely item ($r$ = -.17) and being in poverty was negatively associated with GHQ-12 scores ($r$ = -.15). For females, summed sibling victimisation was positively associated with the TILS ($r$ = .14), lonely item ($r$ = .16), and GHQ-12 ($r$ = .11). Higher summed sibling perpetration was also correlated with the TILS ($r$ = .16) and lonely item ($r$ = .17). Being from a lone parent household was associated with higher summed sibling victimisation ($r$ = .16) and summed sibling perpetration ($r$ = .17) scores. Again, it is important to acknowledge that, whilst significant, these correlations were weak. Summed sibling victimisation and perpetration were highly positively correlated with each other in the total sample ($r$ = .80), and for males ($r$ = .74) and females ($r$ = .85), and the relationship was stronger in females.

***Hierarchical Multiple Regression Analyses Age 11, 13 and 18 Subsample***

BCa bootstrapped simple linear regressions revealed a significant interaction between summed sibling victimisation and gender for the GHQ-12, and between summed sibling victimisation and gender and summed sibling perpetration and gender for the TILS and lonely item. Therefore, separate regression analyses were run for males and females. The lone parent household dummy was entered into regression models as a covariate for females. For males, ethnicity was entered into the final model for the lonely item, and poverty status was entered into the final GHQ-12 model. There were no significant summed sibling victimisation/perpetration and gender interactions for the SWEMWBS. Thus, regression was run for the total sample with lone parent households entered into the final model as a covariate.

Post-hoc power analyses were conducted. For the TILS in males, the sample size of 181 was sufficient to detect medium and large effects with two predictors with over 99%

power, however, was only sufficient to detect a small effect with 47% power in model one, and 37% power in model two. For the lonely item in males, the sample size of 181 was sufficient to detect medium and large effects with three predictors with over 99% power, however, was only sufficient to detect a small effect with 47% power in model one, 37% power in model two, and 32% power in model three. For the TILS and lonely item in females, the sample size of 221 was sufficient to detect medium and large effects with three predictors with over 99% power, however, was only sufficient to detect a small effect with 55% power in model one, 45% power in model two, and 39% power in model three. For the GHQ-12 in males, the sample size of 264 was sufficient to detect medium and large effects with three predictor variables with over 99% power, although was only sufficient to detect a small effect at 63% power in model one, 52% power in model two, and 46% power in model three. For the GHQ-12 in females, the sample size of 339 was sufficient to detect medium and large effects with three predictor variables with over 99% power, although was only sufficient to detect a small effect at 74% power in model one, 64% power in model two, and 57% power in model three. For the SWEMWBS, the sample size of 203 was sufficient to detect medium and large effects with three predictors with over 99% power, however, was only sufficient to detect a small effect with 52% power in model one, 42% power in model two, and 36% power in model three.

The highest VIF value for predictors across all the regression models was 3.494 and the lowest tolerance value was .286, which were within acceptable limits. Table 13 summarises the results of the hierarchical regression analyses, including the unstandardised beta coefficients, bootstrapped standard error and significance levels, and BCa bootstrapped 95% CIs for each dependent variable. The standardised beta coefficients were also outlined when describing the results and effect sizes.

**Table 13**

*Hierarchical Linear Regression Results with BCa Bootstrapping based on 1000 samples for the TILS, Lonely Item, GHQ-12, and SWEMWBS for the Age 11, 13 and 18 Subsample*

| | Model one *b* (*SE*) | Model two *b* (*SE*) | Model three *b* (*SE*) | Final Model BCa 95% CI |
|---|---|---|---|---|
| *TILS Males*[a] | | | | |
| Sibling Victimisation | 0.01 (0.03) | 0.04 (0.04) | - | [-0.05, 0.07] |
| Sibling Perpetration | - | -0.05 (0.05) | - | [-0.14, 0.05] |
| $R^2$ | .001 | .01 | - | |
| *F* | 0.16 | 0.67 | - | |
| *TILS Females*[b] | | | | |
| Sibling Victimisation | 0.05* (0.02) | 0.01 (0.04) | 0.01 (0.04) | [-0.07, 0.08] |
| Sibling Perpetration | - | 0.06 (0.05) | 0.06 (0.05) | [-0.04, 0.16] |
| Lone Parent | - | - | 0.14 (0.44) | [-0.76, 1.03] |
| $R^2$ | .02 | .02 | .03 | |
| *F* | 4.18* | 2.73^ | 1.86 | |
| *Lonely Item Males*[a] | | | | |
| Sibling Victimisation | 0.01 (0.01) | 0.02 (0.01) | 0.02 (0.01) | [-0.01, 0.04] |
| Sibling Perpetration | - | -0.03^ (0.02) | -0.02 (0.02) | [-0.06, 0.01] |
| Ethnicity | - | - | -0.26* (0.11) | [-0.47, -0.01] |
| $R^2$ | .001 | .01 | .04 | |
| *F* | 0.21 | 1.30 | 2.46^ | |
| *Lonely Item Females*[b] | | | | |
| Sibling Victimisation | 0.02** (0.01) | 0.01 (0.02) | 0.01 (0.02) | [-0.02, 0.04] |
| Sibling Perpetration | - | 0.02 (0.02) | 0.02 (0.02) | [-0.03, 0.06] |
| Lone Parent | - | - | 0.16 (0.17) | [-0.20, 0.50] |
| $R^2$ | .03 | .03 | .03 | |
| *F* | 5.81* | 3.29* | 2.53^ | |

| | Model one *b* (*SE*) | Model two *b* (*SE*) | Model three *b* (*SE*) | Final Model BCa 95% CI |
|---|---|---|---|---|
| *GHQ-12 Males*[c] | | | | |
| Sibling Victimisation | 0.11 (0.10) | 0.18^ (0.11) | 0.18 (0.11) | [-0.03, 0.40] |
| Sibling Perpetration | - | -0.12 (0.12) | -0.11 (0.12) | [-0.34, 0.13] |
| Poverty Status | - | - | -2.27** (0.71) | [-3.75, -0.66] |
| $R^2$ | .01 | .01 | .04 | |
| *F* | 2.61 | 1.86 | 3.30* | |
| *GHQ-12 Females*[d] | | | | |
| Sibling Victimisation | 0.14* (0.07) | 0.23^ (0.12) | 0.23^ (0.13) | [-0.02, 0.48] |
| Sibling Perpetration | - | -0.13 (0.15) | -0.13 (0.15) | [-0.45, 0.19] |
| Lone Parent | - | - | -0.83 (1.11) | [-1.30, 3.09] |
| $R^2$ | .01 | .01 | .02 | |
| *F* | 4.27* | 2.46^ | 1.86 | |
| *SWEMWBS*[e] | | | | |
| Sibling Victimisation | -.09 (0.06) | -0.14 (0.10) | -0.14 (0.10) | [-0.33, 0.05] |
| Sibling Perpetration | - | 0.08 (0.11) | .08 (0.11) | [-0.13, 0.29] |
| Lone Parent | - | - | -0.26 (1.01) | [-2.25, 1.58] |
| $R^2$ | .01 | .01 | .01 | |
| *F* | 1.61 | 1.01 | 0.69 | |

*Note.* [a]N = 181. [b]N = 221. [c]N = 264. [d]N = 339. [e]N = 203. Higher Scores = Higher Summed Victimisation/Summed Perpetration/ Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS) Respectively. Poverty Status (Dummy Coded as 0 = Not In Poverty, 1 = In Poverty). Lone Parents (Dummy Coded as 0 = Not Lone Parent Household, 1 = Lone Parent Household). Ethnicity (Dummy Coded as 0 = White, 1 = Ethnic Minority). All Estimations Include Constant Terms. ^p < .10 *p < .05, **p < .001.

**TILS for Males.** There were no significant predictors in the model. The final model was not significant and predicted 1% of the variance in indirect loneliness scores in males aged 18.

**TILS for Females.** The only significant predictor of higher indirect loneliness scores in females at age 18 was higher summed sibling victimisation at ages 11 and 13 in model one

with a small effect ($b$ = 0.05, β = .14, $p$ = .033). However, it was no longer significant following the inclusion of summed sibling perpetration at ages 11 and 13. Model one was significant $F(1, 219) = 4.18$, $p$ = .042), and accounted for 2% of the variance in indirect loneliness scores. However, models two and three lost significance after the inclusion of summed sibling perpetration.

**Lonely Item for Males.** The final regression model was not significant and predicted 4% of the variance in direct loneliness scores in males aged 18. The only significant predictor of loneliness was ethnicity ($b$ = -0.26, β = -.16, $p$ = .016), where being from an ethnic minority predicted lower loneliness scores compared to being from a White ethnicity.

**Lonely Item for Females.** Similarly to indirect loneliness, the only significant predictor of direct loneliness in females at age 18 was summed sibling victimisation at ages 11 and 13 in model one ($b$ = 0.02, β = .16, $p$ = .002), which showed a positive relationship with a small effect. However, it was no longer significant in model two with the inclusion of summed sibling perpetration at ages 11 and 13. Models one and two were significant ($F(1, 219) = 5.81$, $p$ = .017, $F(2, 218) = 3.29$, $p$ = .039) and accounted for 3% of the variance in direct loneliness scores, although the inclusion of lone parent households led the final model to not be significant.

**GHQ-12 for Males.** Summed sibling victimisation and perpetration at ages 11 and 13 did not contribute significantly to the model. Being in poverty was negatively associated with psychological distress when compared to not being in poverty ($b$ = -2.27, β = -.15, $p$ = .005), and was the only significant predictor for males aged 18. Only the final regression model was significant ($F(3, 260) = 3.30$, $p$ = .021), accounting for 4% of the variance in psychological distress.

**GHQ-12 for Females.** Summed sibling victimisation at ages 11 and 13 was a significant predictor of psychological distress in model one ($b = 0.14$, $\beta = .11$, $p = .032$) with a positive association and small effect. However, it was no longer significant in models two or three with the inclusion of summed sibling perpetration at age 11 and 13. Model one was significant ($F(1, 337) = 4.27$, $p = .04$), however the inclusion of sibling perpetration did not improve the model and models two and three were not significant. The final model accounted for 2% of the variance in psychological distress.

**SWEMWBS.** The final regression model was not significant and only accounted for 1% of the variance in mental wellbeing at age 18. There were no significant predictors in the model.

***Descriptives Age 11, 13 and 20 Subsample***

Correlations between the independent, dependent, and covariate variables for the total sample are shown in Appendix J. Higher summed sibling victimisation at ages 11 and 13 was correlated with higher scores on the TILS ($r = .18$), lonely item ($r = .20$), and GHQ-12 ($r = .17$). Summed sibling perpetration at age 11 and 13 was also positively correlated with the lonely item ($r = .14$) and GHQ-12 ($r = .12$). Being from a lone parent household was the only covariate correlated with higher sibling victimisation ($r = .17$) and perpetration ($r = .15$). Female gender was positively correlated with scores on the GHQ-12 ($r = .15$). Household income was also positively correlated with scores on the SWEMWBS ($r = .22$). Table 14 shows correlations completed separately for males and females.

**Table 14**

*Correlations For All Independent, Dependent, and Covariate Variables For Males and Females in the Age 11, 13 and 20 Subsample*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 1 | .77*** | .12 | .15^ | .15^ | -.01 | .18* | -.02 | -.02 | .07 | .04 |
| 2. | .87*** | 1 | -.03 | -.003 | .07 | .05 | .17* | .06 | -.01 | .08 | .08 |
| 3. | .22** | .20** | 1 | .69*** | .57*** | -.10 | -.01 | .06 | -.03 | .02 | .09 |
| 4. | .24*** | .25*** | .79*** | 1 | .49*** | -.40** | -.09 | .04 | -.03 | -.04 | .07 |
| 5. | .19** | .17* | .52*** | .59*** | 1 | -.62*** | -.07 | -.06 | .02 | -.01 | .16* |
| 6. | -.11 | -.08 | -.46*** | -.47*** | -.66*** | 1 | -.09 | .32* | -.07 | .04 | -.20 |
| 7. | -.04 | -.07 | -.03 | .03 | .07 | -.02 | 1 | -.29*** | .03 | .02 | .19* |
| 8. | -.04 | -.05 | .06 | -.01 | -.02 | .17 | -.15* | 1 | -.31*** | -.18* | -.05 |
| 9. | .01 | -.01 | -.004 | -.01 | -.02 | -.10 | .18** | -.46*** | 1 | .06 | .22** |
| 10. | .24*** | .20** | -.03 | .03 | -.02 | .002 | -.03 | -.21** | .11^ | 1 | -.03 |
| 11. | -.06 | -.02 | -.10 | -.11 | -.11 | -.14 | .22** | -.16* | .14* | .06 | 1 |

*Note*. 1 = Sum Sibling Victimisation ages 11 and 13. 2 = Sum Sibling Perpetration ages 11 and 13. 3 = TILS. 4 = Loneliness Item. 5 = GHQ 12. 6 = SWEMWBS. 7 = Number of Siblings (Dummy Coded as 0 = Only One Sibling, 1 = Two or More Siblings). 8 = Equivalised Monthly Household Income divided by 100. 9 = Poverty Status (Dummy Coded as 0 = Not In Poverty, 1 = In Poverty). 10 = Lone Parents (Dummy Coded as 0 = Not Lone Parent Household, 1 = Lone Parent Household). 11 = Ethnicity (Dummy Coded as 0 = White, 1 = Ethnic Minority). Males above the diagonal line, Females below the diagonal line. Higher Scores = Higher Summed Victimisation/Summed Perpetration/ Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS)/ Equivalised Household Income Respectively. *$p < .05$, **$p < .01$, ***$p < .001$, ^$p < .10$.

There were no significant correlations between summed sibling victimisation or perpetration and loneliness, psychological distress, and mental wellbeing variables for males. Having more than one sibling was positively associated with summed sibling victimisation ($r$ = .18) and perpetration ($r$ = .17). Being from an ethnic minority was positively associated with higher GHQ-12 scores ($r$ = .16), and household income was positively associated with the SWEMWBS ($r$ = .32). However, for females, higher summed sibling victimisation was associated with higher scores on the TILS ($r$ = .22), lonely item ($r$ = .24), and GHQ-12 ($r$ = .19). Similarly, summed sibling perpetration was positively correlated with scores on the TILS ($r$ = .20), lonely item ($r$ = .25), and GHQ-12 ($r$ = .17). The only covariate correlated with the independent and dependant variables was being from a lone parent household, which was positively associated with sibling victimisation ($r$ = .24) and perpetration ($r$ = .20). Similarly to earlier findings, whilst the correlations were slightly larger in the 20-year-old subsample, they would still be interpreted as small. Summed sibling victimisation and perpetration were highly positively correlated with each other in the total sample ($r$ = .82), and for males ($r$ = .77) and females ($r$ = .87), and was stronger in females.

### *Hierarchical Multiple Regression Analyses Age 11,13 and 20 Subsample*

Bootstrapped simple linear regressions revealed significant interactions between summed sibling victimisation and gender and summed sibling perpetration and gender for the TILS, lonely item, and GHQ-12. Therefore, separate regression analyses were run for males and females. The lone parent household dummy was entered into regression models as a covariate for females. For males, the number of siblings dummy was entered into the regression models and the ethnicity dummy was entered into the model for the GHQ-12. There were no significant summed sibling victimisation/perpetration and gender interaction for the SWEMWBS. Therefore, regression analysis was run for the total sample, with lone parent households and household income entered into the final model as covariates.

Post-hoc power analyses revealed for the TILS and lonely item in males, the sample size of 139 was sufficient to detect medium and large effects with three predictors with over 97% power, however it was only sufficient to detect a small effect with 38% power in model one, 29% power in model two, and 25% power in model three. For the TILS and lonely item in females, the sample size of 187 and 188 respectively was sufficient to detect medium and large effects with three predictors with over 99% power, however it was only sufficient to detect a small effect with 49% power in model one, 39% power in model two, and 33% power in model three. For the GHQ-12 in males, the sample size of 159 was sufficient to detect medium and large effects with four predictor variables with over 98% power, although the sample size was only sufficient to detect a small effect at 43% power in model one, 33% power in model two, and 25% power in model three. For the GHQ-12 in females, the sample size of 217 was sufficient to detect medium and large effects with three predictor variables with over 99% power, although the sample size was only sufficient to detect a small effect at 55% power in model one, 44% power in model two, and 38% power in model three. For the SWEMWBS, the sample size of 119 was sufficient to detect medium and large effects with four predictors with over 93% power, however it was only sufficient to detect a small effect with 33% power in model one, 26% power in model two, and 19% in model three.

The highest VIF value for predictors across all the regression models was 4.210 and the lowest tolerance value was .238, which were within acceptable limits. The results of the hierarchical regression analyses, including the unstandardised beta coefficients, bootstrapped standard error and significance levels, and BCa 95% CIs for each dependent variable are reported in Table 15. Effect sizes for individual predictor contributions based on standardised beta coefficients are also discussed forthwith.

**Table 15**

*Hierarchical Linear Regression Results with BCa Bootstrapping based on 1000 samples for the TILS, Lonely Item, GHQ-12, and SWEMWBS for the Age 11, 13 and 20 Subsample*

| | Model one *b* (*SE*) | Model two *b* (*SE*) | Model three *b* (*SE*) | Model three BCa 95% CI |
|---|---|---|---|---|
| *TILS Males*[a] | | | | |
| Sibling Victimisation | 0.04 (0.03) | 0.12* (0.05) | 0.12* (0.05) | [0.04, 0.22] |
| Sibling Perpetration | - | -0.12* (0.05) | -0.12* (0.06) | [-0.24, -0.01] |
| Number of Siblings | - | - | -0.05 (0.29) | [-0.60, 0.46] |
| $R^2$ | .02 | .06 | .06 | |
| *F* | 2.13 | 4.08* | 2.71* | |
| *TILS Females*[b] | | | | |
| Sibling Victimisation | 0.08** (0.02) | 0.06 (0.04) | 0.07 (0.04) | [-0.02, 0.15] |
| Sibling Perpetration | - | 0.02 (0.05) | 0.02 (0.05) | [-0.09, 0.14] |
| Lone Parent | - | - | -0.39 (0.32) | [-0.96, 0.22] |
| $R^2$ | .05 | .05 | .05 | |
| *F* | 9.30** | 4.68* | 3.51* | |
| *Lonely Item Males*[a] | | | | |
| Sibling Victimisation | 0.02^ (0.01) | 0.05*** (0.02) | 0.05*** (0.02) | [0.02, 0.08] |
| Sibling Perpetration | - | -0.05** (0.02) | -0.04** (0.02) | [-0.08, -0.01] |
| Number of Siblings | - | - | -0.14 (0.12) | [-0.36, 0.10] |
| $R^2$ | .02 | .06 | .07 | |
| *F* | 3.02^ | 4.09* | 3.20* | |
| *Lonely Item Females*[c] | | | | |
| Sibling Victimisation | 0.03*** (0.01) | 0.01 (0.02) | 0.01 (0.02) | [-0.02, 0.05] |
| Sibling Perpetration | - | 0.03 (0.02) | 0.03 (0.02) | [-0.01, 0.07] |
| Lone Parent | - | - | -0.05 (0.14) | [-0.29, 0.20] |
| $R^2$ | .06 | .07 | .07 | |
| *F* | 11.40*** | 6.55** | 4.40** | |

| | Model one *b* (*SE*) | Model two *b* (*SE*) | Model three *b* (*SE*) | Model three BCa 95% CI |
|---|---|---|---|---|
| *GHQ-12 Males*[d] | | | | |
| Sibling Victimisation | 0.18* (0.09) | 0.27* (0.13) | 0.30* (0.13) | [0.08, 0.53] |
| Sibling Perpetration | - | -0.14 (0.14) | -0.16 (0.14) | [-0.47, 0.11] |
| Number of Siblings | - | - | -1.57 (0.94) | [-3.34, 0.34] |
| Ethnicity | - | - | 2.74* (1.37) | [0.18, 5.39] |
| $R^2$ | .02 | .03 | .07 | |
| *F* | 3.62^ | 2.15 | 2.84* | |
| *GHQ-12 Females*[e] | | | | |
| Sibling Victimisation | 0.23** (0.08) | 0.19 (0.16) | 0.22 (0.16) | [-0.07, 0.57] |
| Sibling Perpetration | - | 0.05 (0.20) | 0.05 (0.20) | [-0.34, 0.41] |
| Lone Parent | - | - | -1.22 (1.17) | [-3.47, 0.95] |
| $R^2$ | .04 | .04 | .04 | |
| *F* | 7.75** | 3.89* | 2.96* | |
| *SWEMWBS*[f] | | | | |
| Sibling Victimisation | -0.06 (0.09) | -0.15 (0.17) | -0.18 (0.16) | [-0.47, 0.22] |
| Sibling Perpetration | - | 0.12 (0.18) | 0.17 (0.17) | [-0.19, 0.45] |
| Lone Parent | - | - | 0.58 (1.09) | [-1.35, 2.48] |
| Household Income | - | - | 0.14*** (0.04) | [0.05, 0.22] |
| $R^2$ | .004 | .01 | .06 | |
| *F* | 0.49 | 0.47 | 1.86 | |

*Note.* [a]N = 139. [b]N = 187. [c]N = 188. [d]N = 159. [e]N = 217. [f]N = 119. Higher Scores = Higher Summed Victimisation/Summed Perpetration/ Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS)/ Equivalised Household Income Respectively. Number of Siblings (Dummy Coded as 0 = Only One Sibling, 1 = Two or More Siblings). Lone Parents (Dummy Coded as 0 = Not Lone Parent Household, 1 = Lone Parent Household). Ethnicity (Dummy Coded as 0 = White, 1 = Ethnic Minority). All Estimations Include Constant Terms. ^p < .10 *p < .05, **p < .01 ***p < .001.

**TILS for Males.** Summed sibling victimisation at ages 11 and 13 was not significant in model one, but became a significant positive predictor of indirect loneliness in males age 20 in models two and three ($b = 0.12$, $\beta = .38$, $p = .010$) with the inclusion of summed sibling

perpetration at ages 11 and 13. The β was medium in size and suggests that when summed sibling victimisation increases by one standard deviation, indirect loneliness scores increase by 0.38 standard deviations when sibling perpetration and number of siblings are held constant. Summed sibling perpetration was also a significant negative predictor of loneliness in models two ($b$ = -0.12, β = -.33, $p$ = .023) and three ($b$ = -0.12, β = -.32, $p$ = .029). The β was medium in size in the final model and suggests that when sibling perpetration increases by one standard deviation, indirect loneliness scores decrease by 0.32 standard deviations when sibling victimisation and number of siblings are held constant. Thus, higher summed sibling victimisation at ages 11 and 13 predicted higher indirect loneliness scores, and higher summed sibling perpetration at ages 11 and 13 predicted lower indirect loneliness scores in males aged 20. Model one was not significant, but the second and final regression models were significant ($F$(2, 136) = 4.08, $p$ = .019, $F$(3, 135) = 2.71, $p$ = .048) and predicted 6% of the variance in indirect loneliness scores, although number of siblings did not improve the model.

**TILS for Females.** The only significant predictor of indirect loneliness at age 20 for females was summed sibling victimisation at ages 11 and 13 in model one ($b$ = 0.08, β = .22, $p$ = .002), with a positive association and medium effect. However, it was no longer significant following the inclusion of summed sibling bullying perpetration at ages 11 and 13 in models two and three. Model one was significant $F$(1, 185) = 9.30, $p$ = .003), and accounted for 5% of the variance in indirect loneliness scores. Models two and three remained significant ($F$(2, 184) = 4.68, $p$ = .01, $F$(3, 183) = 3.51, $p$ = .017), but were not improved by the inclusion of sibling perpetration and lone parent households.

**Lonely Item for Males.** Similarly to the TILS, summed sibling victimisation at ages 11 and 13 was not a significant predictor of direct loneliness in males aged 20 in model one, but became significant with a positive association in models two ($b$ = 0.05, β = .38, $p$ < .001)

and three ($b$ = 0.05, β = .39, $p$ < .001) with the inclusion the of summed sibling perpetration at ages 11 and 13. The β was medium in size in the final model and suggests that when summed sibling victimisation increases by one standard deviation, direct loneliness scores increase by 0.39 standard deviations when sibling perpetration and number of siblings are held constant. Summed sibling perpetration was also a significant predictor of direct loneliness with a negative association in models two ($b$ = -0.05, β = -.30, $p$ = .005) and three ($b$ = -0.04, β = -.29, $p$ = .008). The β once more was medium in size in the final model and suggests that when sibling perpetration increases by one standard deviation, direct loneliness scores decrease by 0.29 standard deviations when sibling victimisation and number of siblings are held constant. Therefore, higher summed sibling victimisation at ages 11 and 13 predicted higher direct loneliness scores, and higher summed sibling perpetration at ages 11 and 13 predicted lower direct loneliness scores in males aged 20. Model one was not significant, but the second and final regression models were significant ($F$(2, 136) = 4.09, $p$ = .019, $F$(3, 135) = 3.20, $p$ = .025). The final model predicted 7% of the variance in direct loneliness scores, although the addition of number of siblings did not improve the model.

**Lonely Item for Females.** Similarly to the TILS, the only significant positive predictor of direct loneliness for females aged 20 was summed sibling victimisation at ages 11 and 13 in model one ($b$ = 0.03, β = .24, $p$ < .001), with a medium effect. However, it was no longer significant following the inclusion of summed sibling perpetration at ages 11 and 13 in models two and three. Model one was significant $F$(1, 186) = 11.40, $p$ < .001), and accounted for 6% of the variance in direct loneliness scores. Models two and three remained significant ($F$(2, 185) = 6.55, $p$ = .002, $F$(3, 184) = 4.40, $p$ = .005), but were not improved by the inclusion of summed sibling perpetration and lone parent households.

**GHQ-12 for Males.** Higher summed sibling victimisation at ages 11 and 13 was a significant predictor of psychological distress in males aged 20 in model one ($b$ = 0.18, β =

.15, $p = .044$). Summed sibling victimisation remained significant in models two ($b = 0.27$, $\beta = .23$, $p = .043$) and three ($b = 0.30$, $\beta = .26$, $p = .017$). This evidences that the relationship strengthened with the addition of summed sibling perpetration, changing from a small to a medium effect size. The final model suggests that when summed sibling victimisation increases by one standard deviation, psychological distress scores increase by 0.26 standard deviations when summed sibling perpetration, number of siblings, and ethnicity are held constant. Summed sibling perpetration and number of siblings did not contribute significantly to the model. Being from an ethnic minority did positively predict psychological distress in model three ($b = 2.74$, $\beta = .19$, $p = .048$). Only the final regression model was significant ($F(4, 154) = 2.84$, $p = .025$) and accounted for 7% of the variance in psychological distress aged 20 for males.

**GHQ-12 for Females.** The only significant predictor of psychological distress in females aged 20 was higher summed sibling victimisation at ages 11 and 13 in model one ($b = 0.23$, $\beta = .19$, $p = .002$) with a small effect. However, it was no longer significant following the inclusion of summed sibling perpetration at ages 11 and 13 in models two and three. Model one was significant $F(1, 215) = 7.75$, $p = .006$), and accounted for 4% of the variance in psychological distress in females aged 20. Model two and three remained significant ($F(2, 214) = 3.89$, $p = .022$, $F(3, 213) = 2.96$, $p = .033$), but were not improved by the inclusion of summed sibling perpetration and lone parent households.

**SWEMWBS.** The final regression model was not significant, but did account for 6% of the variance in mental wellbeing at age 20. The only significant predictor was household income, with higher monthly household income at age 11 predicting higher mental wellbeing at age 20 ($b = 0.14$, $\beta = .24$, $p < .001$).

# Chapter 5: Discussion

## Chapter Summary

This chapter discusses and reflects on the research conducted in this thesis. Firstly, the findings are summarised and discussed within the context of previous research and the theoretical underpinnings of this research as discussed in chapters 1, 2, and 3. Then, the strengths and limitations of this research are considered. This chapter then outlines potential implications of the findings, as well as recommendations for future research. This chapter ends with reflections on the researcher's positioning and learning within the context of this research, leading into final conclusions.

## Summary and Interpretation of Findings

A summary of the descriptive results is provided below, followed by a discussion of the findings in relation to each of the three research questions. As discussed earlier, due to the vast heterogeneity in the operationalisation and measurement of sibling bullying, as well as in the literature's focus in terms of psychological health indicators, the capacity for direct comparisons to previous research is limited. However, where direct comparisons are not possible, similar themes in previous research will be discussed in the context of these limitations.

### *Prevalence of Sibling Bullying*

This study found involvement in sibling victimisation was common, with nearly half of the sample reporting involvement quite a lot or a lot for at least one victimisation item. Involvement in sibling perpetration was somewhat lower, although still notably prevalent with around a third of the sample reporting involvement quite a lot or a lot for at least one perpetration item. In terms of bullying subgroups, uninvolved was the most common group, with around half the sample fitting into this category. Between a quarter and a third of the

sample were categorised as bully-victims. The victim-only group had a prevalence of around 17-18%, and the bully-only group was remarkably small with 2-3% prevalence.

As noted earlier, there is large variance in the reported prevalence of sibling bullying within the literature (e.g. Brett et al., 2023), likely due to a lack of consensus concerning the measurement and operationalisation of sibling bullying. However, the prevalence rates reported within this study are fairly consistent with some previous research for victimisation and perpetration involvement frequency (e.g. Tippett & Wolke, 2015) and bully subgroup frequencies (e.g. Toseeb et al., 2020; Wolke & Skew, 2011). Likewise, there are limited comparisons for the mean victimisation and perpetration scale scores in previous research, but the findings are consistent with previous Understanding Society research (e.g. Yucel & Yuan, 2016).

The higher prevalence of the uninvolved and bully-victim groups are in line with social learning theory (Bandura, 1977), which stresses the importance of social interactions, such as those with siblings, as sources of social learning and modelling. This highlights how those who have not experienced sibling victimisation are less likely to be involved with perpetration and vice versa, and those who have been involved in a sibling bullying role are more likely to then take on the other role. Therefore, adolescents who were victimised by their siblings may then learn to reciprocate this bullying behaviour. The strong correlation between sibling victimisation and perpetration throughout the main analyses also supports and strengthens this assertion, particularly for females. Interestingly, this stronger relationship for females also aligns somewhat with findings that males are less likely to be bully-victims (Dantchev & Wolke, 2019b).

For prevalence rates of repeated victimisation, this study found a fairly even prevalence distribution for the uninvolved at ages 11 and 13, involved at ages 11 or 13, and

involved at ages 11 and 13 groups. This categorisation was conceptualised based on the research by Sellars et al. (2024), who found similar prevalence rates for involvement at one timepoint (35%), but found higher uninvolved prevalence (52%) and lower prevalence for involvement at both timepoints (13%). However, Understanding Society does differ in its measurement and comparably more liberal threshold for involvement categorisation for sibling bullying compared to the Millennium Cohort Study (MCS) utilised by Sellars et al. (2024), which may in part explain the discrepancy. For prevalence rates of repeated perpetration, this study found just over half of the sample were uninvolved at ages 11 and 13, just under a third of participants were involved at ages 11 or 13, and about a sixth were involved at ages 11 and 13. To the authors knowledge, this is the first study to categorise repeated sibling perpetration in this way, meaning there is no literature to compare this to.

### *Outcome Measure Descriptive Findings*

For the TILS a score of 6+ indicates clinical loneliness (CtEL, n.d.b; Wolska & Creaven, 2023), suggesting the mean scores across the different samples for this study were in the non-clinical range. For the lonely item, mean scores in this study were also below a score of 3, which is considered to be in the non-clinical range (ONS, 2024). Mean scores for the GHQ-12 in this study were just above 12, and whilst there is considerable variance in agreed thresholds for the GHQ-12, Goldberg et al. (1997) recommends that scores of 12 are above the cut off to be in the clinical range. Finally, mean scores for the SWEMWBS were in the normal range, as the SWEMWBS established cut-offs are above 27.5 for high wellbeing and below 19.5 for low wellbeing (Ng Fat et al., 2017; Warwick Medical School, 2023). Notably, the mean scores were also somewhat below the mean score of 26 found in the most recent health survey in England (NHS Digital, 2023a). Therefore, apart from the GHQ-12, all mean scores were below clinical thresholds, which is to be expected considering the nature of clinical outcomes meaning only a minority of the population would be expected to be in the

clinical range. It is interesting that the GHQ-12 mean scores were slightly above the clinical threshold, which perhaps represents a comparatively low clinical cut-off compared to the other measures of interest and the focus of this research on emerging adults, which is an established risk factor for mental health difficulties. Additionally, the means were similar to previous Understanding Society research that found a mean score of 11.40 for adults aged 16-102 (Wolska and Creaven, 2023), which would still fall within Goldberg et al.'s (1997) recommended clinical threshold.

### *Research Question 1 - Does Adolescent Sibling Bullying Predict Emerging Adult Loneliness?*

**Loneliness.** This study highlights gender differences in the relationship between sibling bullying and loneliness, finding no relationship between sibling bullying in any role at age 11 and indirect or direct loneliness for males. However, an association was found for females, with notable nuances depending on the type of loneliness measured and age. For females aged 18, more sibling perpetration age 11 significantly predicted higher indirect loneliness scores, albeit with a small effect. However, it was no longer a significant predictor for females aged 20. This suggests the positive association between sibling perpetration and indirect loneliness appears to weaken with age.

For females aged 18, sibling victimisation was a significant predictor of direct loneliness, although it was no longer significant when sibling perpetration was added to the model. More sibling perpetration was a significant predictor of higher direct loneliness scores in the final model with a small effect. However, unlike indirect loneliness, this positive association remained and was larger at age 20 with a medium effect. Interestingly, these findings suggest the relationship between sibling perpetration and direct loneliness strengthens with age for females. The findings also demonstrate that the relationship between sibling victimisation and direct loneliness may be partly explained by the contributions of

sibling perpetration, whereas sibling perpetration's positive association remains significant when controlling for sibling victimisation. Hence, these findings highlight the connection between sibling victimisation and perpetration in understanding their relationship with direct loneliness for females.

Social learning and attachment theories of loneliness (Merz & Jak, 2013; Solomon, 2000) support our understanding of this relationship, whereby the learnt aggressive social behaviours and development of insecure attachment within the adolescent sibling relationship can influence how we understand and react within our social relationships in emerging adulthood, giving rise to feelings of disconnection and loneliness. It is noteworthy that this only appears to be evident in females, and the interconnectedness of victimisation and perpetration may point to the importance of sibling dynamics as sources of social learning for how to engage with and respond to more aggressive social interactions, which may have different implications for men and women.

For example, it is arguably more socially acceptable for men to display aggressive and bully-coded behaviours that are intertwined with masculine identity (e.g. Rosen & Nofziger, 2019), and indeed men are more likely to find themselves in positions of power where these behaviours are commonplace within their roles (e.g. Salin & Hoel, 2013). Thus, these learnt behaviours may be advantageous for emerging adult men and have less impact on their social capital and perception of their social relationships. Meanwhile, for women, bullying behaviours are not afforded the same social acceptance, meaning these learnt behaviours may prevent them from developing nourishing and secure social relationships and conforming to the social ideals that may support their integration and progression within society. For instance, evidence highlights negative social responses in the workplace to females displaying more masculine and domineering behaviours associated with authority and power (e.g. Phelan & Rudman, 2010; Williams & Tiedens, 2016), so learning to respond in kind

may be detrimental for women and their social relationships. Alternatively, data from wave 10 of Understanding Society onwards was collected during and after the Covid-19 pandemic, which has been associated with increased loneliness, particularly for women (e.g. Li & Wang, 2020). Thus, findings related to increased loneliness for emerging adult women may in part be explained by the societal contextual.

The findings for females are somewhat in line with the only study identified during this research to directly measure the relationship between sibling bullying and loneliness. Whilst Duncan (1999) did not separate analyses for males and females or analyse victimisation and perpetration separately, Duncan found that adolescents involved in sibling bullying irrespective of role had significantly higher loneliness scores than those uninvolved in sibling bullying. Findings from peer bullying literature may also be useful to consider given the interconnections between peer and sibling bullying (e.g. Brett et al., 2023), however there are also nuanced differences, meaning that comparisons should be considered with caution. Notably, the findings of this study are somewhat in contrast to recent research that found a positive relationship between peer bullying victimisation and loneliness at age 18 (Matthews et al., 2019, 2023), although this research did not adjust for peer bullying perpetration.

### *Research Question 2 – Does Adolescent Sibling Bullying Predict Emerging Adult Psychological Distress and Mental Wellbeing?*

**Psychological Distress.** This study found sibling bullying was not a significant predictor of psychological distress at age 18. However, at age 20, for males, sibling victimisation was a significant positive predictor of psychological distress, although it was no longer significant when sibling perpetration was added to the model. Sibling perpetration did not significantly predict psychological distress. Similarly, for females aged 20, sibling victimisation was a significant positive predictor of psychological distress, although it was no

longer significant when adjusted for sibling perpetration. Unlike males, sibling perpetration was a significant predictor of psychological distress for females with a positive association and medium effect. This suggests that the relationship between sibling victimisation and psychological distress for males and females may be partly explained by sibling perpetration. For females, as with direct loneliness, sibling perpetration still significantly contributed to the model when controlling for sibling victimisation. Conversely, for males, when considered together neither sibling victimisation nor sibling perpetration offer a significant individual contribution in understanding the variance in psychological distress. Hence, this again emphasises the relationship between sibling victimisation and perpetration, and so also the importance of considering both to fully understand their relationship with psychological distress.

Contrasting with the findings in relation to loneliness, the findings suggest that sibling perpetration does not appear to be related to psychological distress in females until they are more established into emerging adulthood. Considering the theoretical understanding and findings in relation to loneliness already discussed, perhaps difficulties in forming positive social relationships and increased feelings of loneliness experienced at ages 18 and 20 may give rise to increased psychological distress for women at age 20. This links with attachment theory (Bowlby, 1969, 1973, 1980) and how insecure attachment styles, influenced by early attachment relationships, can lead to more negative perceptions of social relationships and thus more distress (e.g. Collins, 1996). This also aligns with recent findings that loneliness predicts psychological distress (e.g. Wolska & Creaven, 2023). Additionally, emerging adulthood is a life stage where people often go to university and start to form social bonds and a social identity outside the family home, and evidence suggests loneliness is a substantial predictor of psychological distress in this population (e.g. McIntyre et al., 2018). Thus, this theoretical understanding may shed some light on the gender differences in the

relationship between sibling perpetration and psychological distress. On the other hand, the volatile political climate and financial instability of the UK during the data collection period has been noted, and some of the data included in this study was collected during and after the Covid-19 pandemic, which are related to poorer mental health outcomes (e.g. Milicev et al., 2023; Stuckler et al., 2017). Therefore, these factors may confound the findings related to psychological distress and are important to hold in mind to contextualise the results.

Although analyses were not separated by gender and focused on bullying subgroups, findings from previous research bear some tentative resemblances to the findings of this study. Toseeb and Wolke (2022) found bully-only, victim-only, and bully-victim groups experienced more psychological distress at age 17 compared to the uninvolved group. As the GHQ-12 is commonly used to screen for psychiatric disorders, such as depression and anxiety (Goldberg et al., 1997), and internalising symptoms are a common measure of emotional difficulties in adolescent research (R. Goodman, 1997; R. Goodman et al., 1998), comparisons with these results were also considered. Dantchev et al. (2019) found bully-victims were at increased odds of being diagnosed with depression and anxiety at age 18, and this relationship remained for depression at age 24. Toseeb, McChesney, Oldfield, et al. (2020) also found bully-only, bully-victim, and victim-only groups were associated with more internalising symptoms compared to uninvolved adolescents. Interestingly, the findings do differ somewhat from those of Bowes et al. (2014), who found no gender interactions and found victimisation was a significant predictor of depression and anxiety at age 18 in their fully adjusted model, although they did not account for perpetration in their analyses, without which victimisation was a significant predictor for males and females at age 20 in this study.

**Mental Wellbeing.** This study found sibling victimisation and perpetration were not significant predictors of mental wellbeing in 18 or 20-year-olds. Remarkably, this does differ from the findings of previous research. For example, Toseeb and Wolke (2022) found victim-

only and bully-victim groups were associated with lower mental wellbeing at age 17 compared to uninvolved. Equally, Plamondon et al. (2021) found emerging adults retrospective accounts of adolescent sibling victimization predicted multiple indicators of mental wellbeing. Alternatively, whilst also retrospective accounts, Morrill-Richards and Leierer (2010) found most forms of sibling victimisation and perpetration, with the exception of sexual perpetration which was not measured in this study, did not predict college student wellbeing. Thus, the fact this study did not find any such relationship may in part be due to different methodologies and conceptualisations of the variables of interest, meaning they are tapping into nuanced differences in this relationship or lack thereof. Alternatively, the lack of a relationship may be related to the relatively small sample size available within this study for the wellbeing analyses leading to a type II error, evident in its lack of power to detect a small effect, for which previous studies using the SWEMWBS to measure wellbeing have found (e.g. Toseeb & Wolke, 2022).

### *Research Question 3 - Does Repeated Sibling Victimisation and/or Perpetration have a Dose-Response Relationship with Loneliness and Psychological Wellbeing Outcomes?*

The findings in relation to the dose-response associations for sibling victimisation and perpetration, as measured by the summed frequency scale scores at ages 11 and 13, with loneliness, psychological distress and mental wellbeing are discussed below.

**Loneliness and Psychological Distress.** Summed sibling victimisation and perpetration did not demonstrate a dose-response relationship with indirect or direct loneliness at age 18 for males. However, remarkably, for males at age 20 both summed sibling victimisation and perpetration were significant predictors of indirect and direct loneliness, and summed sibling victimisation became a significant predictor only after the inclusion of summed sibling perpetration. This underscores the importance of accounting for sibling perpetration to better understand how sibling victimisation relates to loneliness in

males. Summed sibling victimisation had a positive dose-response relationship with loneliness, whereas summed sibling perpetration displayed a negative dose-response relationship with loneliness, with medium effect sizes. This highlights the unique contributions of both sibling victimisation and perpetration over a prolonged period and perhaps emphasises how males with high victimisation and low perpetration, who would likely be categorised as victim-only, may be most at risk of experiencing loneliness.

Alternatively, for females at ages 18 and 20, summed sibling victimisation was a significant positive predictor of indirect and direct loneliness, however it was no longer a significant predictor when summed sibling perpetration was added into the model, which was also not a significant predictor of loneliness. This proposes that summed sibling perpetration may account for some of the variance attributed to the positive relationship between summed sibling victimisation and loneliness, and neither evidences an independent dose-response relationship for females when accounting for the other's contributions. The dose-response associations for sibling victimisation and/or perpetration with loneliness have not been researched before to the author's knowledge, so whilst it is not possible to relate the findings to previous research, these findings offer useful initial insights.

Summed sibling victimisation and perpetration were not significant predictors of psychological distress in males at age 18. However, for males aged 20, summed sibling victimisation was a significant predictor of psychological distress, becoming a stronger positive association when summed sibling perpetration was added into the model with a medium effect. However, summed sibling perpetration was not a significant predictor of psychological distress for males aged 20. This indicates that sibling victimisation shows a positive dose-response relationship with psychological distress for older emerging adult males, and that this relationship is more evident when sibling perpetration is controlled for. Similarly to the loneliness findings, for females aged 18 and 20, summed sibling

victimisation was a significant positive predictor of psychological distress, although it was no longer significant when summed sibling perpetration was accounted for. Summed sibling perpetration was also not a significant predictor of psychological distress in females, suggesting it does not independently contribute to the model when accounting for sibling victimisation. Hence, once more a dose-response relationship with psychological distress was not established for females when sibling victimisation and perpetration were both considered.

The findings in relation to psychological distress are somewhat in line with previous research. Research has found that children and adolescents who experienced repeated victimisation across two timepoints experienced more distress than those who were uninvolved or only experienced victimisation at one timepoint (Toseeb & Wolke, 2022; Tucker et al., 2024). Equally, Sharpe et al. (2022) found adolescents who were categorised as victims across two timepoints experienced more depression than those uninvolved at both timepoints for males and females. In addition, Sellars et al. (2024), whose operationalisation of the dose-response relationship for victimisation informed that of this research, found summed victimisation was positively associated with internalising symptoms for adolescents at age 17, although no gender interactions were found.

Notably, previous research has found a dose-response relationship between sibling victimisation and distress in mid-late adolescence, whereas this research found this relationship was not present in males at age 18 and was not significant when adjusted for perpetration in females at age 18. However, this is the first study to the author's knowledge to investigate this dose-response relationship past the age of 17. It is also important to acknowledge the previous research outlined in relation to distress did not account for sibling perpetration, which weakens the comparability of the findings. On the other hand, the dose-response relationship for sibling perpetration is under-researched compared to victimisation and has not investigated distress, although a dose-response relationship has been established

for increased likelihood of psychotic disorder (Dantchev et al., 2018) and criminal behaviour and substance use (Dantchev & Wolke, 2019a) in emerging adulthood. Once more this makes it challenging to compare the findings to earlier research, but on the other hand highlights the unique and valuable early inferences of this study.

This study highlights that, for males, the dose-response associations for sibling bullying strengthen with age, although the ways in which sibling bullying roles are correlated with loneliness and psychological distress differ, whereas these relationships were not established for females. As significant associations were not present for males when analysing sibling victimisation and perpetration at age 11 only, this perhaps also speaks to the importance of consistently low perpetration and high victimisation across adolescent life stages when exploring this relationship. As previously discussed, social learning theory may help us understand these gender differences and the longer-term outcomes of learnt bullying behaviours on social and psychological health. Indeed, finding that summed sibling perpetration was negatively correlated with loneliness for males and not females is interesting and in line with the earlier argument that gender roles and masculine expectations mean learning bullying behaviours and reciprocating those behaviours in social interactions are valuable in building social relationships for men. Hence, males who did not learn to behave in this way or conform to these masculine ideals may struggle to form meaningful relationships and gain social status, giving rise to feelings of loneliness. Equally, men who experience severe sibling victimisation may have a fragmented sense of self, which may then lead to anxiety in social relationships and damaging social behaviours in an attempt to reclaim their masculinity in adulthood (e.g. Miehls, 2017). Thus, these differences may be explained by the inherent societal norms that mean perpetrating bullying behaviours are advantageous for men, whereas experiencing repeated victimisation may harm their masculine identity, psychological health, and social wellbeing.

The dose-response relationships between sibling bullying and loneliness and psychological distress can also be understood in terms of attachment theory. Early life attachment ruptures, such as those with our siblings, can have an enduring impact on our relationships (e.g. Shaver & Mikulincer, 2006) and psychological health (e.g. Shepherd et al., 2021). Equally, the negative social and psychological consequences of attachment injuries resulting from repeated interpersonal traumas, such as bullying, are well evidenced (e.g. Bistricky et al., 2017; D'Andrea et al., 2012). Considering this, it makes sense that those who have experienced more frequent and repeated sibling victimisation may experience more loneliness and psychological distress. Remarkably, it may also help us understand the cumulative impact sibling victimisation at ages 11 and 13 had for men, which was not evident at age 11 alone. Alternatively, our attachments are arguably interconnected (e.g. Whiteman et al., 2011), and evidence suggests parental-child interactions are associated with sibling victimisation and perpetration (e.g. Bouchard et al., 2019; Bouchard & Sonier, 2023), and the quality of the sibling relationship (e.g. Ponti & Smorti, 2019). Therefore, it is possible other factors may be important to consider, such as the security of the parent-child relationship alongside the sibling relationship, to understand why some sibling bullying experiences may lead to worse outcomes.

**Mental Wellbeing.** A dose-response association for sibling victimisation or perpetration was not established for mental wellbeing in 18 or 20-year-olds. This concept allows for the most reliable comparison as Sellars et al. (2024) used a similar measurement of the dose-response relationship for sibling victimisation and utilised the SWEMWBS to measure mental wellbeing. They found more victimisation was significantly associated with lower mental wellbeing at age 17 with a small effect. However, as discussed earlier, the sample size available for analysis of mental wellbeing in this study was substantially smaller than other variables in this study and the sample size utilised by Sellars et al. (2024). In

addition, post-hoc power analyses revealed the sample size available for the SWEMWBS in this research was underpowered to find a small effect as indicated in previous research. Therefore, it is possible that summed sibling victimisation does not continue to exert an influence on mental wellbeing in emerging adulthood, but it is also possible the results of this thesis are due to a false negative as the sample size was insufficient to detect a true effect.

**Strengths and Limitations**

One strength of this research is its use of Understanding Society as a secondary data source, allowing for large scale longitudinal research with both individual and household level variables that otherwise would not have been possible given the financial and time constraints of completing a doctoral thesis. Longitudinal research is considered higher quality evidence for observational research compared to other designs such as cross-sectional studies, and provides scope to explore the relationships between risk factors (i.e. sibling bullying) and outcomes (i.e. loneliness, psychological distress and mental wellbeing) over time (Caruana et al., 2015; McNair & Lewis, 2012). Following participants across developmental life stages from early to mid-adolescence and into emerging adulthood is resource intensive, and would otherwise be most easily achieved by retrospective accounts of adolescent experiences that would be vulnerable to recall bias (e,g, Hardt & Rutter, 2004). Understanding Society offered a unique opportunity to achieve this prospectively in its focus on following all individuals in a household over a long period of time. Therefore, the use of Understanding Society allowed the researcher to demonstrate more academic rigour within the research then would have likely been achievable if a new study was designed to answer the research questions.

Another strength of this research is its novel and exploratory focus, meaning it can provide unique insights to inform future research. To the researcher's knowledge, this is the first study to longitudinally explore the relationship between sibling bullying and psychological distress and mental wellbeing, as well as the dose-response relationships for

sibling victimisation and perpetration, in emerging adulthood. This is surprising considering the recognition of emerging adulthood as a pivotal life stage in the development of mental health difficulties (NHS Digital, 2023b; Tanner, 2016). In addition, this study is one of only a few studies within the literature to consider the relationship between sibling bullying and loneliness, and the first to explore loneliness longitudinally and in emerging adulthood. Again, this is a notable gap considering loneliness's link to adverse familial relationships and emerging adulthood being identified as a risk factor for loneliness (CtEL, 2023, n.d.b; DCMS, 2023a). Thus, this study brings many original insights into the sibling bullying evidence base that can inform future research.

The psychometric utility of the measures for loneliness, psychological distress and mental wellbeing are also a strength of this research. The TILS, designed and validated to measure indirect loneliness (Hughes et al., 2004), alongside one item designed to measure direct loneliness, are recommended measures for loneliness research in the UK (Government Statistical Service, 2020; ONS, 2018). Equally, the psychometric properties of the GHQ-12 have also been demonstrated, and the GHQ-12 is a commonly used measure of mental health difficulties in the general population (e.g. Goldberg et al., 1997; Pevalin, 2000). In addition, the SWEMWBS has been highlighted as a reliable and valid measure of mental wellbeing (e.g. Ng Fat et al., 2017; Stewart-Brown et al., 2009), and is also commonly used to measure wellbeing within the NHS (e.g. NHS Digital, 2023a). Thus, the use of established, utilised and well validated measures mean there is greater scope for comparisons with previous and future research and implications for policy within the UK, as well as providing confidence in the validity and reliability of the measures in this research.

Whilst there are many strengths of using Understanding Society as a secondary data source, there are also several limitations associated with this. One area, which is a recognised limitation of the use of secondary data sources, is the lack of control and choice over the data

collection methods (Andersen et al., 2011). As discussed, the measures for the dependent variables are a strength of this research, but there were some concerns over the measure of sibling bullying. Although borne from the well validated Sibling Bullying Questionnaire [SBQ] (Wolke & Samara, 2004) and validated in previous Understanding Society research (e.g. Yucel & Yuan, 2016), there were inconsistencies in both the response schedule and operationalisation of categorising whether victimisation or perpetration was present when compared to previous research. Considering this, comparisons with previous research are complex. Additionally, Understanding Society have not created longitudinal weights for the youth questionnaire, as are recommended to use when working with complex surveys (Andersen et al., 2011), which meant there were no suitable weights for the analyses limiting the representativeness of the findings to the general population. Ideally, if the researcher had designed the data collection methods, a version of the SBQ more akin to measures used in previous research would have been chosen, as well as a design that would have allowed for the inclusion of pertinent covariate measures. Equally, in a more resourced research project, custom weights could have been design for this study, however this was outside the scope of the doctoral thesis.

Another limitation was that, although a number of covariates were included in the analyses, due to a lack of control over the data collection methods several potentially important demographic and individual covariates established in previous research could not be included in this study, such as mental health prior to sibling bullying, parental education, and disability status. Additionally, several social, economic, and political factors within the UK context may confound the findings in this study, such as parent-child relationships, peer relationships, a precarious political and financial climate, and the Covid-19 pandemic, which is it was also not possible to control for. Therefore, there were many potentially confounding

variables that may have exerted an influence on the variables of interest and relationships explore in this research, that may in part explain the results.

There were also sample based limitations related to the use of Understanding Society. Firstly, as Understanding Society is a household panel survey rather than a cohort study in design, the available sample of adolescents was small in comparison to the ALSPAC or MCS. The size of the different subsamples were also impacted by attrition and non-response in certain waves, which again is a common limitation of longitudinal secondary data analyses (Andersen et al., 2011). Equally, difficulties with participant retention for the youth questionnaire and youth joining the main adult survey has been a recent topic of conversation within Understanding Society (ISER, 2024a). In addition, there were inconsistencies in when certain variables were measured, most notably for items related to sibling bullying and mental wellbeing, which also affected the sample sizes available for this study.

Due to these challenges, it was not possible to utilise bullying subgroups for the main analyses. This may have allowed for a more layered exploration of the relationships between sibling bullying and the dependant variables, without the additional complexities of disentangling the relationship between sibling victimisation and perpetration. As mentioned earlier, the SWEMWBS analyses were also underpowered, potentially resulting in a Type II error. Finally, this research required a lengthy follow-up period, and due to constraints on the number of waves of data currently collected, it was not feasible to follow participants past the age of 20. It would have been preferable for the second emerging adult timepoint to have fallen later into emerging adulthood to better understand the potential impact of sibling bullying across this life stage.A final limitation of this study is its reliance on self-report measures, and particularly the ways in which gender can interact with this. Throughout the results one notable finding was the apparent gender differences in the relationship between sibling victimisation and perpetration, and sibling bullying and loneliness and psychological

distress. Whilst the discussion above aimed to help understand some of these differences in terms of theoretical underpinnings and past research, it is also important to consider this within the context of gender disparities in self-reporting. Research has found that males are less likely than females to disclose information about themselves that may be perceived as negative (e.g. Carbone et al., 2024), such as indicators of social and psychological dysfunction. Equally, evidence suggests there is more social stigma for males in admitting feelings of loneliness (Borys & Perlman, 1985), and a recent study found men who experienced more depression and loneliness were less likely to disclose any form of mental distress (Wagner & Reifegerste, 2024). Understanding Society research has also highlighted reporting bias for both males and females on different items of the GHQ-12, although for most items it was less common in females (Brown et al., 2022). Thus, although these insights are useful, it is important to hold hypotheses drawn from the interpretation of the results in terms of gender lightly, considering the potential nuances of underreporting in males.

**Implications and Future Research**

Despite the recent initiatives to tackle peer and cyber-bullying in the UK (e.g. Department for Education, 2017; Gaffney et al., 2021), , little attention has been paid to the impact of sibling bullying or initiatives to tackle sibling bullying. Equally, although the measurement, conceptualisation and mechanisms identified in understanding these relationships are diverse and complex, it is clear from the literature review and the current study that adolescent sibling bullying is modestly related to social, emotional, and psychological wellbeing. Therefore, this points to the potential benefits of considering bullying within the family as well as the school context, and the hope from this research is that it will invite policy makers and bullying organisations to bring sibling bullying into the bullying prevention and intervention conversation.

The findings of this thesis highlight boys who perpetrate less and are victimised more, and girls who perpetrate more, are more likely to experience negative psychological and social consequences of sibling bullying. Loneliness and mental health difficulties are significant public health concerns (DCMS, 2023a; NHS, 2019), and given the limited resources available, it may be beneficial to target any preventative or interventive measures towards these groups. The findings may also have important implications for parents and professionals often involved in the lives of children and adolescents, such as teachers and social care, in terms of raising awareness of these relationships to support children most at risk. Equally, this research, along with the studies covered in the literature review, highlight the greater cumulative impact of sibling victimisation over several years for males, emphasising the potential benefits of early intervention to prevent repeated sibling victimisation for boys. To the author's knowledge, there are no interventions currently developed to tackle sibling bullying. However, there are a handful of studies focused on family based interventions in early childhood aimed at reducing sibling conflict and promoting prosocial skills (e.g. Linares et al., 2015; Tucker & Finkelhor, 2017), which may offer useful directions for family based preventive measures.

The finding that the relationship between sibling bullying and loneliness and psychological distress becomes stronger as people progress through emerging adulthood also supports assertions about the relationship between adolescent familial relationships and adjustment to this developmental life stage (Wood et al., 2018). Therefore, it also evidences the mental health need for emerging adults and the importance of continuing to work towards recent initiatives within the UK to extend support offered by children's and young people's services and to develop specialist services designed to meet the needs of this age group (NCCMH, 2022; NHS, 2019). The findings may also benefit those involved in key transitional hallmarks often associated with emerging adulthood, such as university staff and

workplace employers, to support individuals who may have difficulties adjusting to these contexts, perhaps due to the social behaviours learnt during their early relationships. This may be particularly pertinent considering recent evidence outlining the rising mental health problems for emerging adults, which are potentially related to negative educational and work consequences in the UK (McCurdy & Murphy, 2024).

It may also be useful to develop therapeutic interventions to reduce the psychological harm that may result from experiences of sibling bullying. For example, individual therapy approaches like Cognitive Behaviour Therapy have been championed to address the interpersonal trauma of bullying victimisation (Ferraz De Camargo et al., 2023), although it would be prudent to consider how this could be adapted to fit within the context of sibling bullying. Equally, considering the familial context of sibling bullying, perhaps systemic family therapy would be useful to explore for emerging adults who feel experiences of sibling bullying relate to their difficulties. Equally, a key finding was the apparent gender differences in how sibling bullying relates to loneliness and psychological distress. This emphasises the importance of considering gender and societal norms when developing anti-bullying interventions and therapeutic interventions as there appears to be differing needs for males and females.

This study was exploratory in nature and bore some interesting early insights into the relationships and dose-response relationships between sibling victimisation and perpetration, and loneliness and psychological distress in emerging adulthood. Although the same relationships were not found for mental wellbeing, the potential impact of sample size for these analyses has been acknowledged. Therefore, future research would benefit from replicating this study, and where possible rectifying some of the limitations of this study alluded to earlier, particularly in terms of sample size and representativeness of the sample, to investigate the reliability of the findings. For example, the latest sweep of the MCS where

participants are 23 years old is due to be released in 2026, which offers an alternative data source with a larger sample that also follows participants further into emerging adulthood. Alternatively, it may be useful to repeat this study using Understanding Society in future after more waves of data have been collected.

The findings of this research highlight the prevalence of experiencing both sibling victimisation and perpetration, as well as the importance of considering victimisation and perpetration together when exploring their relationships with psychological and social outcomes. The findings highlight a complex interplay between sibling victimisation and perpetration, which suggests research focusing on one aspect in isolation may be missing important pieces of the bigger picture. Thus, future research would benefit from including measures of both victimisation and perpetration when exploring the relationship between sibling bullying and loneliness and psychological wellbeing, or, where sample sizes are sufficient, an exploration of the sibling bullying subgroups to allow for a more nuanced interpretation.

This research also highlights the probable importance of gender in the relationship between sibling bullying and social and psychological wellbeing, which has been less evident or examined in previous research. It is possible other factors, such as gender differences in reporting of adverse experiences and mental health difficulties, may play a role. Nevertheless, it seems prudent to continue to explore these potential gender differences in future research to see whether this is replicated and to better understand factors that may be contributing to this.

It is also important to acknowledge that the majority of sibling bullying research, including this study, has been conducted in Western, Educated, Industrialized, Rich, and Democratic (WEIRD) countries, and the literature review revealed almost all the long-term longitudinal studies have been completed in the UK. Therefore, future research would benefit

from utilising samples, and developing large scale surveys that include measures of sibling bullying and social and psychological health, in non-WEIRD countries to investigate possible cultural differences in the prevalence and consequences of sibling bullying. It could also be useful for future research to examine other factors that may help us better understand the relationship between sibling bullying and loneliness and psychological wellbeing outcomes, or that may mediate this relationship, such as the parent-child relationship.

**Self-Reflexivity**

This section is written in the first person to allow me to express my reflections and positioning personally, professionally and academically on the completion of my thesis.

When the option of using Understanding Society for our theses was introduced at the beginning of my training, I was worried I would feel lost in the multitude of possibilities in how this data could be used. However, to my surprise, when I saw there were items related to sibling bullying and sibling relationships, I was quickly hooked. I think my enthusiasm and passion for this topic area and the implications difficult sibling dynamics could have for social and psychological wellbeing later in life were borne from my own experiences of a complex, and now estranged, sibling relationship and the impact this has had on my own mental health and perception of my ability to form meaningful social relationships. Whilst this personal resonance was highly motivating and inspirational, it has also been challenging and confronting at times in ways I did not fully appreciate when starting the research. It has been painful to face some of my difficulties head on as part of the research, and I have worked hard to find ways to look after myself and to allow myself to have some breathing space when needed. However, overall, I am glad I chose to pursue this research despite the personal challenges, as in many ways I have also found it cathartic and validating to feel I am not alone in my experiences. I hope my research will also offer this to others as well as make a meaningful difference in how we can intervene to support people with similar experiences.

During the early research process, I was particularly struck by how little sibling relationships are considered when discussing social and emotional development. Much of the focus is on parent-child and peer relationships, which of course I see as important, but for me it really feels like we are missing an important part of the puzzle if we discount or ignore how harmful a negative sibling relationship can be. This is something I have noticed and reflected on in my clinical practice as well. During my training I have been fortunate enough to work in family therapy clinics, and even there it felt like the focus was on couples, or parents and one of their children, and the siblings were very much absent from the therapy room. I was similarly shocked by how little research there was related to how negative sibling relationships and sibling bullying can predict loneliness. Again, from my anecdotal experience, it felt obvious that negative sibling interactions may influence the ways in which we interact with others and the world, and this felt like another massive research gap. Whilst I acknowledged that my personal experience may bias my subjective view on this relationship, I felt confident I could approach this research in a way that would allow me to have space to reflect on and take a step back from my personal opinions. An important aspect of this was reminding myself that this is a population-based study, and my experience is only one unique and perhaps more extreme example. My hope was this would allow me to approach this research in an objective way to see whether the relationships I hypothesised held up under academic and statistical scrutiny, and, whilst testing, I believe I was able to achieve this.

One of my draws to a quantitative research design was my hope that a focus on statistics would support me to take a more objective stance to my research. Another reason why I was drawn to a quantitative design was that I hoped I would feel safer and more secure as my previous research experience had been predominately quantitative in nature. I actually felt quite confident when starting the research in my ability to complete quantitative analyses, and I thought doing something I was somewhat familiar with would benefit me in managing a

very demanding course alongside some challenges in my personal life. However, I had never conducted research using a secondary data source before, and there are many inherent challenges with working in this way that I was not prepared for. I did not anticipate how tough I would find it to get to grips with the data files and preparing the data before even approaching the analyses, and the aspect of the research that I felt most sure of myself in completing became the most time-consuming and challenging aspect of this thesis. It led to a massive crisis of confidence and worsened my feelings of imposter syndrome, whereby I began to doubt my abilities, something which I have struggled with and am working on in many areas of my personal and professional identity.

Because of this, I also struggled to finalise my analysis plan and results section as I was constantly striving to make it better and worthy of a doctoral thesis. However, with personal reflection and support from my supervisors I was able to see that striving for perfection was an impossible and demoralising endeavour. I am very happy and proud of my achievements in completing my thesis and I have learnt so much academically in terms of critically appraising literature, research methodology, and data analysis and interpretation. Yet, I am also taking away so much more than that. Something I feel my thesis and my training in general has taught me in all areas of my life is the knowledge and solace that being 'good enough' is enough; a good enough researcher, academic, therapist, colleague, student, supervisee, friend, partner, person.

**Conclusions**

The sibling bullying literature has a lot of heterogeneity, adding complexity to the interpretation and comparison of the literature. Nonetheless, this thesis adds some novel and compelling contributions to the current understanding of sibling bullying. This thesis shows initial evidence for positive associations between sibling perpetration and loneliness and psychological distress in emerging adulthood for females, even when controlling for sibling

victimisation. This thesis also provides promising evidence of a dose-response relationship between sibling victimisation and sibling perpetration and loneliness and psychological distress in males. The findings suggest it may be females who display high perpetration and males who are characterised by high victimisation and low perpetration who are most at risk of experiencing more loneliness and psychological distress. These relationships also appear to strengthen as people progress through emerging adulthood. A relationship was not found between sibling bullying and mental wellbeing, however this may in part be due to sample size limitations meaning there was not enough statistics power to find a small effect if a true effect was present. Although the small-medium effect sizes bring into question the practical relevance of the findings, they are broadly in line with effect sizes in previous research and still offer useful inferences.

Whilst this study was not without its limitations, the longitudinal design using secondary data from a large-scale survey of UK households means it provides high quality evidence to inform future research. The findings may also raise awareness of risk factors and help support the development of anti-bullying prevention and therapeutic intervention that encapsulates the contributions of the sibling bullying evidence base for those most at risk, as well as stressing the importance of understanding emerging adulthood as a unique life stage.

## References

Ainsworth, M. D. S. (1989). Attachments beyond infancy. *American Psychologist*, *44*, 709–716. https://doi.org/10.1037/0003-066X.44.4.709

Andersen, J. P., Prause, J., & Silver, R. C. (2011). A step-by-step guide to using secondary data for psychological research. *Social and Personality Psychology Compass*, *5*(1), 56–75. https://doi.org/10.1111/j.1751-9004.2010.00329.x

Ansbacher, H. L., & Ansbacher, R. R. (Eds.). (1956). *The individual psychology of Alfred Adler*. Basic Books, Inc.

Armijo-Olivo, S., Stiles, C. R., Hagen, N. A., Biondo, P. D., & Cummings, G. G. (2012). Assessment of study quality for systematic reviews: A comparison of the Cochrane Collaboration Risk of Bias Tool and the Effective Public Health Practice Project Quality Assessment Tool: methodological research. *Journal of Evaluation in Clinical Practice*, *18*(1), 12–18. https://doi.org/10.1111/j.1365-2753.2010.01516.x

Arnett, J. J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, *55*(5), 469–480. https://doi.org/10.1037/0003-066X.55.5.469

Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for? *Child Development Perspectives*, *1*(2), 68–73. https://doi.org/10.1111/j.1750-8606.2007.00016.x

Arnett, J. J. (2024). *Emerging adulthood: The winding road from the late teens through the twenties* (3rd ed). Oxford University Press. https://doi.org/10.1093/oso/9780197695937.001.0001

Arnett, J. J., Žukauskienė, R., & Sugimura, K. (2014). The new life stage of emerging adulthood at ages 18-29 years: Implications for mental health. *The Lancet. Psychiatry*, *1*(7), 569–576. https://doi.org/10.1016/S2215-0366(14)00080-7

Arrieta, T. (2022). Austerity in the United Kingdom and its legacy: Lessons from the COVID-19 pandemic. *The Economic and Labour Relations Review*, *33*(2), 238–255. https://doi.org/10.1177/10353046221083051

Bachem, R., Levin, Y., & Solomon, Z. (2019). Trajectories of attachment in older age: Interpersonal trauma and its consequences. *Attachment & Human Development*, *21*(4), 352–371. https://doi.org/10.1080/14616734.2018.1479871

Baggio, S., Studer, J., Iglesias, K., Daeppen, J.-B., & Gmel, G. (2017). Emerging adulthood: A time of changes in psychosocial well-being. *Evaluation & the Health Professions*, *40*(4), 383–400. https://doi.org/10.1177/0163278716663602

Bandura, A. (1965). Influence of models' reinforcement contingencies on the acquisition of imitative responses. *Journal of Personality and Social Psychology*, *1*(6), 589–595. https://doi.org/10.1037/h0022070

Bandura, A. (1977). *Social learning theory*. Prentice Hall.

Bandura, A. (1980). The social learning theory of aggression. In R. Falk & S. S. Kim (Eds.), *The War System*. Routledge.

Bandura, A., Ross, D., & Ross, S. A. (1961). Transmission of aggression through imitation of aggressive models. *Journal of Abnormal and Social Psychology*, *63*, 575–582. https://doi.org/10.1037/h0045925

Barker, C., Pistrang, N., & Elliott, R. (2016). *Research methods in clinical psychology: An introduction for students and practitioners* (3rd ed.). John Wiley & Sons.

Bartram, D. J., Sinclair, J. M., & Baldwin, D. S. (2013). Further validation of the Warwick-Edinburgh Mental Well-being Scale (WEMWBS) in the UK veterinary profession: Rasch analysis. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation*, *22*(2), 379–391. https://doi.org/10.1007/s11136-012-0144-4

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,* 72. https://doi.org/10.3389/fpsyt.2018.00072

Barreto, M., Victor, C., Hammond, C., Eccles, A., Richins, M. T., & Qualter, P. (2021). Loneliness around the world: Age, gender, and cultural differences in loneliness.

*Personality and Individual Differences*, *169*, 110066. https://doi.org/10.1016/j.paid.2020.110066

Berman, Y., & Hovland, T. (2024, June 19). The cost of austerity: How UK public spending cuts led to 190,000 excess deaths. *LSE Inequalities - Expert Views, Opinions and Policy Debate*. https://blogs.lse.ac.uk/inequalities/2024/06/19/the-cost-of-austerity-how-spending-cuts-led-to-190000-excess-deaths/

Berthoud, R., Fumagalli, L., Lynn, P., & Platt, L. (2009). *Design of the Understanding Society ethnic minority boost sample* (Nos. 2009–02; Understanding Society Working Paper Series). University of Essex. https://www.understandingsociety.ac.uk/wp-content/uploads/working-papers/2009-02.pdf

Bhat, F., & Amin, J. (2022). Impact of bullying on adolescent mental health: A review of the literature. *International Journal of Recent Scientific Research*, *13*(12), 2770–2774. https://doi.org/10.24327/IJRSR

Bignall, T., Jeraj, S., Helsby, E., & Butt, J. (2019). *Racial disparities in mental health: Literature and evidence review*. Race Equality Foundation. https://raceequalityfoundation.org.uk/wp-content/uploads/2022/10/mental-health-report-v5-2.pdf

Bistricky, S. L., Gallagher, M. W., Roberts, C. M., Ferris, L., Gonzalez, A. J., & Wetterneck, C. T. (2017). Frequency of interpersonal trauma types, avoidant attachment, self-compassion, and interpersonal competence: A model of persisting posttraumatic symptoms. *Journal of Aggression, Maltreatment & Trauma*, *26*(6), 608–625. https://doi.org/10.1080/10926771.2017.1322657

Boreham, R. (2012). *Understanding Society W2: Technical report* [Technical Report]. National Centre for Social Research.

https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/mainstage/technical-reports/Wave_2_Technical_Report.pdf

Boreham, R., Boldysevaite, D., & Killpack, C. (2012). *UKHLS: Wave 1 technical report* [Technical Report]. National Centre for Social Research. https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/mainstage/technical-reports/Wave_1_Technical_Report.pdf

Borys, S., & Perlman, D. (1985). Gender differences in loneliness. *Personality and Social Psychology Bulletin*, *11*(1), 63–74. https://doi.org/10.1177/0146167285111006

Bouchard, G., Plamondon, A., & Lachance-Grzela, M. (2019). Parental intervention style and adult sibling conflicts: The mediating role of involvement in sibling bullying. *Journal of Social and Personal Relationships*, *36*(8), 2585–2602. https://doi.org/10.1177/0265407518793227

Bouchard, G., & Sonier, N. A. (2023). Relationship between sibling bullying, family functioning, and problem solving: A structural equation modeling. *Current Psychology*, *42*, 11565–11574. https://doi.org/10.1007/s12144-021-02475-z

Boudrias, V., Trépanier, S.-G., & Salin, D. (2021). A systematic review of research on the longitudinal consequences of workplace bullying and the mechanisms involved. *Aggression and Violent Behavior*, *56*, 101508. https://doi.org/10.1016/j.avb.2020.101508

Bowes, L., Wolke, D., Joinson, C., Lereya, S. T., & Lewis, G. (2014). Sibling bullying and risk of depression, anxiety, and self-harm: A prospective cohort study. *Pediatrics*, *134*(4), e1032-1039. https://doi.org/10.1542/peds.2014-0832

Bowlby, J. (1969). *Attachment and Loss: Volume 1. Attachment*. Basic Books.

Bowlby, J. (1973). *Attachment and Loss: Volume 2. Seperation*. Basic Books.

Bowlby, J. (1980). *Attachment and Loss: Volume 3. Loss*. Basic Books.

Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. Basic Books.

Brett, H., Jones Bartoli, A., & Smith, P. K. (2023). Sibling bullying during childhood: A scoping review. *Aggression and Violent Behavior*, *72*, 101862. https://doi.org/10.1016/j.avb.2023.101862

Brown, S., Harris, M. N., Srivastava, P., & Taylor, K. (2022). Mental health, reporting bias and economic transitions. *Oxford Economic Papers*, *74*(2), 541–564. https://doi.org/10.1093/oep/gpab005

Buist, K. L., Dekovic, M., & Prinzie, P. (2013). Sibling relationship quality and psychopathology of children and adolescents: A meta-analysis. *Clinical Psychology Review*, *33*(1), 97–106. https://doi.org/10.1016/j.cpr.2012.10.007

Campaign to End Loneliness. (2023). *The State of loneliness 2023: ONS data on loneliness in Britain*. Campaign to End Loneliness. https://www.campaigntoendloneliness.org/wp-content/uploads/The-State-of-Loneliness-2023-ONS-data-on-loneliness-in-Britain.pdf

Campaign to End Loneliness. (n.d.a). *Facts and statistics about loneliness*. Campaign to End Loneliness. https://www.campaigntoendloneliness.org/facts-and-statistics/

Campaign to End Loneliness. (n.d.b). *Measuring your impact on loneliness in later life*. Campaign to End Loneliness. https://www.campaigntoendloneliness.org/wp-content/uploads/Loneliness-Measurement-Guidance1.pdf

Campaign to End Loneliness. (n.d.c). *Risk factors for loneliness*. Campaign to End Loneliness. https://www.campaigntoendloneliness.org/risk-factors-for-loneliness/

Carbone, E., Loewenstein, G., Scopelliti, I., & Vosgerau, J. (2024). He said, she said: Gender differences in the disclosure of positive and negative information. *Journal of Experimental Social Psychology*, *110*, 104525. https://doi.org/10.1016/j.jesp.2023.104525

Carpenter, H. (2016). *UK Household Longitudinal Study: Wave 6 technical report* [Technical Report]. TNS. https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/mainstage/technical-reports/6614_wave6_technical_report.pdf

Carpenter, H. (2017). *UK Household Longitudinal Study: Wave 7 technical report* (Technical Report No. JN 260125325). Kantar Public. https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/mainstage/technical-reports/6614_wave7_technical_report.pdf

Carpenter, H. (2018). *UK Household Longitudinal Study: Wave 8 technical report* (Technical Report No. JN 260131869). Kantar Public. https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/mainstage/technical-reports/wave-8-technical-report.pdf

Carpenter, H. (2019). *UK Household Longitudinal Study: Wave 9 technical report* (Technical Report No. JN 260139140). Kantar Public. https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/mainstage/technical-reports/wave-9-technical-report.pdf

Carpenter, H. (2020). *UK Household Longitudinal Study: Wave 10 technical report* (Technical Report No. JN 40413158-260C). Kantar Public. https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/mainstage/technical-reports/wave-10-technical-report.pdf

Carpenter, H. (2021). *UK Household Longitudinal Study: Wave 11 technical report* (Technical Report No. JN 40303970). Kantar Public. https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/mainstage/technical-reports/wave-11-technical-report.pdf

Carpenter, H. (2022). *UK Household Longitudinal Study: Wave 12 technical report* (Technical Report No. JN 40311018). Kantar Public. https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/mainstage/technical-reports/wave-12-technical-report.pdf

Caruana, E. J., Roman, M., Hernández-Sánchez, J., & Solli, P. (2015). Longitudinal studies. *Journal of Thoracic Disease*, *7*(11), E537–E540. https://doi.org/10.3978/j.issn.2072-1439.2015.10.63

Chavda, K., & Nisarga, V. (2023). Single parenting: Impact on child's development. *Journal of Indian Association for Child and Adolescent Mental Health*, *19*(1), 14–20. https://doi.org/10.1177/09731342231179017

Children's Commissioner. (2022a). *Family and its protective effect: Part 1 of the independent family review*. Children's Commissioner. https://www.childrenscommissioner.gov.uk/resource/family-and-its-protective-effect-part-1-of-the-independent-family-review/

Children's Commissioner. (2022b, September 1). Children's commissioner for England launches preliminary findings of the family review at policy exchange. *Children's Commissioner*. https://www.childrenscommissioner.gov.uk/news/childrens-commissioner-for-england-launches-preliminary-findings-of-the-family-review-at-policy-exchange/

Cohen, J. (1992). A power primer. *Psychological Bulletin*, *112*(1), 155–159. https://doi.org/10.1037//0033-2909.112.1.155

Collins, N. L. (1996). Working models of attachment: Implications for explanation, emotion, and behavior. *Journal of Personality and Social Psychology*, *71*(4), 810–832. https://doi.org/10.1037/0022-3514.71.4.810

Coolican, H. (2024). *Research methods and statistics in psychology* (8th ed.). Routledge.

Cour, S. D. L., Bonde, B., & Rosenbaum, B. (2022). Bullying as a traumatizing process: An investigation of the phenomenology of the bullying experiences and their dynamic effects. *British Journal of Psychotherapy*, *38*(3), 572–588. https://doi.org/10.1111/bjp.12746

Cox, M. J., & Paley, B. (1997). Families as systems. *Annual Review of Psychology*, *48*, 243–267. https://doi.org/10.1146/annurev.psych.48.1.243

Coyle, S., Demaray, M. K., Malecki, C. K., Tennant, J. E., & Klossing, J. (2017). The associations among sibling and peer-bullying, social support and internalizing behaviors. *Child & Youth Care Forum*, *46*(6), 895–922. https://doi.org/10.1007/s10566-017-9412-3

D'Andrea, W., Ford, J., Stolbach, B., Spinazzola, J., & van der Kolk, B. A. (2012). Understanding interpersonal trauma in children: Why we need a developmentally appropriate trauma diagnosis. *The American Journal of Orthopsychiatry*, *82*(2), 187–200. https://doi.org/10.1111/j.1939-0025.2012.01154.x

Dallos, R., & Draper, R. (2015). *An introduction to family therapy: Systemic theory and practice* (4th ed.). Open University Press.

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. https://doi.org/10.3389/fpsyt.2019.00651

Dantchev, S., & Wolke, D. (2019a). Sibling bullying at 12 years and high-risk behavior in early adulthood: A prospective cohort study. *Aggressive Behavior*, *45*(1), 18–32. https://doi.org/10.1002/ab.21793

Dantchev, S., & Wolke, D. (2019b). Trouble in the nest: Antecedents of sibling bullying victimization and perpetration. *Developmental Psychology*, *55*, 1059–1071. https://doi.org/10.1037/dev0000700

Dantchev, S., Zammit, S., & Wolke, D. (2018). Sibling bullying in middle childhood and psychotic disorder at 18 years: A prospective cohort study. *Psychological Medicine*, *48*(14), 2321–2328. https://doi.org/10.1017/S0033291717003841

Dayan, M., Fahy, N., Hervey, T., McCarey, M., Jarman, H., & Greer, S. (2020). *Understanding the impact of Brexit on health in the UK* [Research Report]. Nuffield Trust. https://www.nuffieldtrust.org.uk/sites/default/files/2020-12/1608656718_impact-of-brexit-on-health-web-nuffield-trust.pdf

Degges-White, S. (2017). Erikson's theory of psychosocial development. In W. K. Killam & S. Degges-White (Eds.), *College student development* (pp. 35-48). Springer Publishing Company. https://doi.org/10.1891/9780826118165.0004

Deniz, E., & Toseeb, U. (2023). A longitudinal study of sibling bullying and mental health in autistic adolescents: The role of self-esteem. *Autism Research*, *16*(8), 1533–1549. psyh. https://doi.org/10.1002/aur.2987

Department for Culture, Media and Sport. (2023a). *Tackling loneliness evidence review: Main report*. https://www.gov.uk/government/publications/tackling-loneliness-evidence-review/tackling-loneliness-evidence-review-full-report

Department for Culture, Media and Sport. (2023b). *Community Life Survey 2021/22: Wellbeing and loneliness*. https://www.gov.uk/government/statistics/community-life-survey-202122/community-life-survey-202122-wellbeing-and-loneliness

Department for Education. (2017). *Preventing and tackling bullying: Advice for headteachers, staff and governing bodies*.

https://assets.publishing.service.gov.uk/media/625ee64cd3bf7f6004339db8/Preventing_and_tackling_bullying_advice.pdf

Dugal, C., Bigras, N., Godbout, N., & Bélanger, C. (2016). Childhood interpersonal trauma and its repercussions in adulthood: An analysis of psychological and interpersonal sequelae. In G. El-Baalbaki & C. Fortin (Eds.), *A multidimensional approach to post-traumatic stress disorder: From theory to practice* (pp. 71–108). InTech.

Duncan, R. D. (1999). Peer and sibling aggression: An investigation of intra- and extra-familial bullying. *Journal of Interpersonal Violence*, *14*(8), 871–886. https://doi.org/10.1177/088626099014008005

Dunn, J. (1983). Sibling relationships in early childhood. *Child Development*, *54*(4), 787–811. https://doi.org/10.2307/1129886

Dunn, J. (1988). Sibling influences on childhood development. *Journal of Child Psychology and Psychiatry*, *29*(2), 119–127. https://doi.org/10.1111/j.1469-7610.1988.tb00697.x

Dunn, J. (2014). Sibling relationships across the life-span. In D. Hindle & S. Sherwin-White (Eds.), *Sibling matters* (pp. 69–81). Routledge.

Dykas, M. J., & Cassidy, J. (2011). Attachment and the processing of social information across the life span: Theory and evidence. *Psychological Bulletin*, *137*(1), 19–46. https://doi.org/10.1037/a0021367

Edels, R., Naoufal, M., & Montreuil, T. C. (2024). The influence of sibling relationship quality on the social, emotional, and behavioral functioning of children and adolescents: A scoping review. *Journal of Family Social Work*, *27*(1–2), 1–29. https://doi.org/10.1080/10522158.2024.2414789

Effingham, N. (2013). *An introduction to ontology*. John Wiley & Sons.

Endsley, P., Weobong, B., & Nadkarni, A. (2017). The psychometric properties of GHQ for detecting common mental disorder among community dwelling men in Goa, India. *Asian Journal of Psychiatry*, *28*, 106–110. https://doi.org/10.1016/j.ajp.2017.03.023

Eriksen, S., & Jensen, V. (2006). All in the family? Family environment factors in sibling violence. *Journal of Family Violence*, *21*(8), 497–507. https://doi.org/10.1007/s10896-006-9048-9

Eriksen, S., & Jensen, V. (2009). A push or a punch: Distinguishing the severity of sibling violence. *Journal of Interpersonal Violence*, *24*(1), 183–208. https://doi.org/10.1177/0886260508316298

Erikson, E. H. (1950). *Childhood and society*. W. W. Norton.

Erikson, E. H. (1968). *Identity youth and crisis*. W. W. Norton.

Eslea, M., & Rees, J. (2001). At what age are children most likely to be bullied at school? *Aggressive Behavior*, *27*(6), 419–429. https://doi.org/10.1002/ab.1027

Evans, C. B. R., Smokowski, P. R., & Cotter, K. L. (2014). Cumulative bullying victimization: An investigation of the dose–response relationship between victimization and the associated mental health outcomes, social supports, and school experiences of rural adolescents. *Children and Youth Services Review*, *44*, 256–264. https://doi.org/10.1016/j.childyouth.2014.06.021

Fearon, R. M. P., & Roisman, G. I. (2017). Attachment theory: Progress and future directions. *Current Opinion in Psychology*, *15*, 131–136. https://doi.org/10.1016/j.copsyc.2017.03.002

Feast, L., & Melles, G. (2010). *Epistemological positions in design research: A brief review of the literature*. Connected 2010 – 2nd international conference on design education, University of New South Wales, Sydney, Australia.

https://www.researchgate.net/publication/236619107_Epistemological_Positions_in_Design_Research_A_Brief_Review_of_the_Literature

Feinberg, M. E., Solmeyer, A. R., & McHale, S. M. (2012). The third rail of family systems: Sibling relationships, mental and behavioral health, and preventive intervention in childhood and adolescence. *Clinical Child and Family Psychology Review*, *15*(1), 43–57. https://doi.org/10.1007/s10567-011-0104-5

Feng, Y., Whiteman, S. D., Xu, S., Li, L., Jin, S., & French, D. C. (2019). Chinese adolescents' relationships with mothers, fathers, and siblings: Associations with youth's internalising and externalising problems. *Journal of Relationships Research*, *10*, e15. https://doi.org/10.1017/jrr.2019.11

Ferraz De Camargo, L., Rice, K., & Thorsteinsson, E. B. (2023). Bullying victimization CBT: A proposed psychological intervention for adolescent bullying victims. *Frontiers in Psychology*, *14*, 1122843. https://doi.org/10.3389/fpsyg.2023.1122843

Fey, C. F., Hu, T., & Delios, A. (2023). The measurement and communication of effect sizes in management research. *Management and Organization Review*, *19*(1), 176–197. https://doi.org/10.1017/mor.2022.2

Field, A. (2024). *Discovering statistics using IBM SPSS Statistics* (6th ed.). Sage Publications.

Fisher, P., Fumagalli, L., Buck, N., & Avram, S. (2019). *Understanding Society and its income data* (No. No 2019-08; Understanding Society Working Paper Series). University of Essex. https://www.understandingsociety.ac.uk/wp-content/uploads/working-papers/2019-08.pdf

Foody, M., Samara, M., & O'Higgins Norman, J. (2020). Bullying by siblings and peers: Poly-setting victimization and the association with problem behaviours and

depression. *British Journal of Educational Psychology*, *90*(Suppl 1), 138–157. https://doi.org/10.1111/bjep.12311

Fransson, M., Granqvist, P., Marciszko, C., Hagekull, B., & Bohlin, G. (2016). Is middle childhood attachment related to social functioning in young adulthood? *Scandinavian Journal of Psychology*, *57*(2), 108–116. https://doi.org/10.1111/sjop.12276

Gaffney, H., Farrington, D. P., & White, H. (2021). *Anti-bullying programmes: Toolkit technical report*. Youth Endowment Fund. https://youthendowmentfund.org.uk/wp-content/uploads/2021/06/Anti-bullying-programmes-Technical-Report.pdf

Georgas, J., Christakopoulou, S., Poortinga, Y. H., Angleitner, A., Goodwin, R., & Charalambous, N. (1997). The relationship of family bonds to family structure and function across cultures. *Journal of Cross-Cultural Psychology*, *28*(3), 303–320. https://doi.org/10.1177/0022022197283006

Goldberg, D. P., Gater, R., Sartorius, N., Ustun, T. B., Piccinelli, M., Gureje, O., & Rutter, C. (1997). The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychological Medicine*, *27*(1), 191–197. https://doi.org/10.1017/S0033291796004242

Goldberg, D. P., & Williams, P. (1988). *A users' guide to the general health questionnaire.* NFER-Nelson.

Goodman, A., Lamping, D. L., & Ploubidis, G. B. (2010). When to use broader internalising and externalising subscales instead of the hypothesised five subscales on the Strengths and Difficulties Questionnaire (SDQ): Data from British parents, teachers and children. *Journal of Abnormal Child Psychology*, *38*, 1179–1191. https://doi.org/10.1007/s10802-010-9434-x

Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, *38*(5), 581–586. https://doi.org/10.1111/j.1469-7610.1997.tb01545.x

Goodman, R. (2001). Psychometric properties of the strengths and difficulties questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry*, *40*(11), 1337–1345. https://doi.org/10.1097/00004583-200111000-00015

Goodman, R., Meltzer, H., & Bailey, V. (1998). The strengths and difficulties questionnaire: A pilot study on the validity of the self-report version. *European Child & Adolescent Psychiatry*, *7*(3), 125–130. https://doi.org/10.1007/s007870050057

Government Statistical Service. (2020, May). *Loneliness harmonised standard*. Government Statistical Service. https://analysisfunction.civilservice.gov.uk/policy-store/loneliness-indicators/

Graham-Bermann, S., Cutler, S., Litzenberger, B., & Schwartz, W. (1994). Perceived conflict and violence in childhood sibling relationships and later emotional adjustment. *Journal of Family Psychology*, *8*, 85–97. https://doi.org/10.1037/0893-3200.8.1.85

Gustavson, K., von Soest, T., Karevold, E., & Røysamb, E. (2012). Attrition and generalizability in longitudinal studies: Findings from a 15-year population-based study and a Monte Carlo simulation study. *BMC Public Health*, *12*(1), 918. https://doi.org/10.1186/1471-2458-12-918

Halliday, S., Gregory, T., Taylor, A., Digenis, C., & Turnbull, D. (2021). The impact of bullying victimization in early adolescence on subsequent psychosocial and academic outcomes across the adolescent period: A systematic review. *Journal of School Violence*, *20*(3), 351–373. https://doi.org/10.1080/15388220.2021.1913598

Haney, J. L. (2016). Autism, females, and the DSM-5: Gender bias in autism diagnosis. *Social Work in Mental Health*, *14*(4), 396–407. https://doi.org/10.1080/15332985.2015.1031858

Hankins, M. (2008). The reliability of the twelve-item general health questionnaire (GHQ-12) under realistic assumptions. *BMC Public Health*, *8*(1), 355. https://doi.org/10.1186/1471-2458-8-355

Hardt, J., & Rutter, M. (2004). Validity of adult retrospective reports of adverse childhood experiences: Review of the evidence. *Journal of Child Psychology and Psychiatry*, *45*(2), 260–273. https://doi.org/10.1111/j.1469-7610.2004.00218.x

Hardy, G. E., Shapiro, D. A., Haynes, C. E., & Rick, J. E. (1999). Validation of the general health questionnaire-12: Using a sample of employees from England's health care services. *Psychological Assessment*, *11*, 159–165. https://doi.org/10.1037/1040-3590.11.2.159

Hayton, R. (2024). Instability, crisis, and statecraft in Conservative Britain, 2010–24. *Parliamentary Affairs*, *77*(4), 816–836. https://doi.org/10.1093/pa/gsae018

Health and Care Professions Council. (2016). *Standards of conduct, performance and ethics*. https://www.hcpc-uk.org/globalassets/resources/standards/standards-of-conduct-performance-and-ethics.pdf

Health and Care Professions Council. (2023). *Standards of proficiency—Practitioner psychologists*. https://www.hcpc-uk.org/globalassets/resources/standards/standards-of-proficiency---practitioner-psychologists.pdf

Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. SAGE.

Howard, A. L., Galambos, N. L., & Krahn, H. J. (2010). Paths to success in young adulthood from mental health and life transitions in emerging adulthood. *International Journal*

*of Behavioral Development*, *34*(6), 538–546. https://doi.org/10.1177/0165025410365803

Howitt, D. (2019). *Introduction to qualitative research methods in psychology* (4th ed.). Pearson UK.

Hughes, M. E., Waite, L. J., Hawkley, L. C., & Cacioppo, J. T. (2004). A short scale for measuring loneliness in large surveys. *Research on Aging*, *26*(6), 655–672. https://doi.org/10.1177/0164027504268574

Humphrey, A., & Bliuc, A.-M. (2022). Western individualism and the psychological wellbeing of young people: A systematic review of their associations. *Youth*, *2*(1), 1-11. https://doi.org/10.3390/youth2010001

Hystad, S. W., & Johnsen, B. H. (2020). The dimensionality of the 12-item general health questionnaire (GHQ-12): Comparisons of factor structures and invariance across samples and time. *Frontiers in Psychology*, *11*, 1300. https://www.frontiersin.org/articles/10.3389/fpsyg.2020.01300

Igarashi, T. (2019). Development of the Japanese version of the three-item loneliness scale. *BMC Psychology*, *7*(1), 20. https://doi.org/10.1186/s40359-019-0285-0

Institute for Social and Economic Research. (2024a). *Improving response among adolescents and young adults in Understanding Society: Report from a workshop* (Nos. 2024–07; Understanding Society Working Paper Series). University of Essex. https://www.understandingsociety.ac.uk/wp-content/uploads/working-papers/2024-07.pdf

Institute for Social and Economic Research. (2024b). *Understanding Society: Waves 1-14, 2009-2023 and Harmonised BHPS: Waves 1-18, 1991-2009, user guide, 30 October 2024*. University of Essex.

https://www.understandingsociety.ac.uk/documentation/mainstage/user-guides/main-survey-user-guide

Jaspal, R., & Breakwell, G. M. (2022). Socio-economic inequalities in social network, loneliness and mental health during the COVID-19 pandemic. *International Journal of Social Psychiatry*, *68*(1), 155–165. https://doi.org/10.1177/0020764020976694

Jensen, A. C., Killoren, S. E., Campione-Barr, N., Padilla, J., & Chen, B.-B. (2022). Sibling relationships in adolescence and young adulthood in multiple contexts: A critical review. *Journal of Social and Personal Relationships*, *40*(2), 384-419. https://doi.org/10.1177/02654075221104188

Jessop, C. (2015). *UK Household Longitudinal Study: Wave 5 technical report* [Technical Report]. National Centre for Social Research. https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/mainstage/technical-reports/W5_Technical_report_Final.pdf

Jessop, C., & Oskala, A. (2014). *UK Household Longitudinal Study: Wave 4 technical report* [Technical Report]. National Centre for Social Research.

Kantar Public. (2023). *UK Household Longitudinal Study: Wave 13 technical report* (Technical Report Nos. JN262318310-40C). Kantar Public. https://www.understandingsociety.ac.uk/wp-content/uploads/documentation/main-survey/technical-reports/6614-main-survey-technical-report-w13.pdf

Kennedy, T. D., & Edmonds, W. A. (2017). *An applied guide to research designs: Quantitative, qualitative, and mixed methods* (2nd ed.). Sage Publications.

Khadka, C. (2024). Social learning theory and the development of aggression. *Medha: A Multidisciplinary Journal*, *7*(1), 79-92. https://doi.org/10.3126/medha.v7i1.73897

Kirwan, E. M., Burns, A., O'Súilleabháin, P. S., Summerville, S., McGeehan, M., McMahon, J., Gowda, A., & Creaven, A.-M. (2025). Loneliness in emerging adulthood: A

scoping review. *Adolescent Research Review, 10*, 47-67. https://doi.org/10.1007/s40894-024-00240-4

Klomek, A. B., Sourander, A., & Gould, M. (2010). The association of suicide and bullying in childhood to young adulthood: A review of cross-sectional and longitudinal research findings. *The Canadian Journal of Psychiatry*, *55*(5), 282–288. https://doi.org/10.1177/070674371005500503

Kung, C. S. J., Pudney, S. E., & Shields, M. A. (2022). Economic gradients in loneliness, social isolation and social support: Evidence from the UK Biobank. *Social Science & Medicine*, *306*, 115122. https://doi.org/10.1016/j.socscimed.2022.115122

Lauzier-Jobin, F., Brunson, L., & Olson, B. (2025). Introduction to the special issue on critical realism. *Journal of Community Psychology*, *53*(1), e22981. https://doi.org/10.1002/jcop.22981

Lê-Scherban, F., Brenner, A. B., & Schoeni, R. F. (2016). Childhood family wealth and mental health in a national cohort of young adults. *SSM - Population Health*, *2*, 798–806. https://doi.org/10.1016/j.ssmph.2016.10.008

Lewis, G., Pelosi, A. J., Araya, R., & Dunn, G. (1992). Measuring psychiatric disorder in the community: A standardized assessment for use by lay interviewers. *Psychological Medicine*, *22*(2), 465–486. https://doi.org/10.1017/s0033291700030415

Li, L. Z., & Wang, S. (2020). Prevalence and predictors of general psychiatric disorders and loneliness during COVID-19 in the United Kingdom. *Psychiatry Research*, *291*, 113267. https://doi.org/10.1016/j.psychres.2020.113267

Linares, L. O., Jimenez, J., Nesci, C., Pearson, E., Beller, S., Edwards, N., & Levin-Rector, A. (2015). Reducing sibling conflict in maltreated children placed in foster homes. *Prevention Science*, *16*(2), 211–221. https://doi.org/10.1007/s11121-014-0476-0

Liu, C., Zhang, M., Ma, C., Fu, M., Guo, J., Zhen, C., & Zhang, B. (2023). Childhood abuse as a mediator of the relationship between early family socio-economic status and geriatric depression: A population-based study in China. *Heliyon*, *9*(11), e22021. https://doi.org/10.1016/j.heliyon.2023.e22021

Liu, X., Peng, C., Yu, Y., Yang, M., Qing, Z., Qiu, X., & Yang, X. (2020). Association between sub-types of sibling bullying and mental health distress among Chinese children and adolescents. *Frontiers in Psychiatry*, *11*, 368. https://doi.org/10.3389/fpsyt.2020.00368

Liu, X., Wolloh, M. G. I., Lin, X., Qiu, X., Qing, Z., Wang, W., Liu, F., Wu, W., Yang, X., Otake, Y., Luo, X., Wang, Z., & Lu, D. (2021). The association between sibling bullying and psychotic-like experiences among children age 11–16 years in China. *Journal of Affective Disorders*, *284*, 31–37. https://doi.org/10.1016/j.jad.2021.01.073

Lockwood, R. L., Kitzmann, K. M., & Cohen, R. (2001). The impact of sibling warmth and conflict on children's social competence with peers. *Child Study Journal*, *31*(1), 47–69.

Long, E., Zucca, C., & Sweeting, H. (2021). School climate, peer relationships, and adolescent mental health: A social ecological perspective. *Youth & Society*, *53*(8), 1400–1415. https://doi.org/10.1177/0044118X20970232

Lynn, P. (2009). *Sample design for Understanding Society* (Nos. 2009–01; Understanding Society Working Paper Series). University of Essex. https://www.understandingsociety.ac.uk/research/publications/514007

Lynn, P., Nandi, A., Parutis, V., & Platt, L. (2018). Design and implementation of a high-quality probability sample of immigrants and ethnic minorities: Lessons learnt. *Demographic Research*, *38*, 513–548. https://doi.org/10.4054/DemRes.2018.38.21

Malonda-Vidal, E., Samper-García, P., Llorca-Mestre, A., Muñoz-Navarro, R., & Mestre-Escrivá, V. (2021). Traditional masculinity and aggression in adolescence: Its relationship with emotional processes. *International Journal of Environmental Research and Public Health*, *18*(18), 9802. https://doi.org/10.3390/ijerph18189802

Marks, D. F., & Yardley, L. (Eds.). (2004). *Research methods for clinical and health psychology*. SAGE.

Matthews, T., Caspi, A., Danese, A., Fisher, H. L., Moffitt, T. E., & Arseneault, L. (2022). A longitudinal twin study of victimization and loneliness from childhood to young adulthood. *Development and Psychopathology*, *34*(1), 367–377. https://doi.org/10.1017/S0954579420001005

Matthews, T., Danese, A., Caspi, A., Fisher, H. L., Goldman-Mellor, S., Kepa, A., Moffitt, T. E., Odgers, C. L., & Arseneault, L. (2019). Lonely young adults in modern Britain: Findings from an epidemiological cohort study. *Psychological Medicine*, *49*(2), 268–277. https://doi.org/10.1017/S0033291718000788

Matthews, T., Qualter, P., Bryan, B. T., Caspi, A., Danese, A., Moffitt, T. E., Odgers, C. L., Strange, L., & Arseneault, L. (2023). The developmental course of loneliness in adolescence: Implications for mental health, educational attainment, and psychosocial functioning. *Development and Psychopathology*, *35*(2), 537–546. https://doi.org/10.1017/S0954579421001632

McCurdy, C., & Murphy, L. (2024). *We've only just begun: Action to improve young people's mental health, education and employment*. Resolution Foundation. https://www.resolutionfoundation.org/app/uploads/2024/02/Weve-only-just-begun.pdf

McHale, S. M., Updegraff, K. A., & Whiteman, S. D. (2012). Sibling relationships and influences in childhood and adolescence. *Journal of Marriage and Family*, *74*(5), 913–930. https://doi.org/10.1111/j.1741-3737.2012.01011.x

McIntyre, J. C., Worsley, J., Corcoran, R., Harrison Woods, P., & Bentall, R. P. (2018). Academic and non-academic predictors of student psychological distress: The role of social identity and loneliness. *Journal of Mental Health*, *27*(3), 230–239. https://doi.org/10.1080/09638237.2018.1437608

McManus, S., Bebbington, P. E., Jenkins, R., & Brugha, T. (2016). *Mental health and wellbeing in England: The adult psychiatric morbidity survey 2014*. NHS Digital. https://files.digital.nhs.uk/pdf/q/3/mental_health_and_wellbeing_in_england_full_report.pdf

McMaster University. (n.d.). *Effective Public Health Practice Project (EPHPP)*. McMaster Evidence Review & Synthesis Team. https://merst.healthsci.mcmaster.ca/ephpp/

McNair, P., & Lewis, G. (2012). Levels of evidence in medicine. *International Journal of Sports Physical Therapy*, *7*(5), 474–481.

Mehler, D. M. A., Edelsbrunner, P. A., & Matić, K. (2019). Appreciating the significance of non-significant findings in psychology. *Journal of European Psychology Students*, *10*(4), 1-7. https://doi.org/10.5334/e2019a

Merz, E.-M., & Jak, S. (2013). The long reach of childhood. Childhood experiences influence close relationships and loneliness across life. *Advances in Life Course Research*, *18*(3), 212–222. https://doi.org/10.1016/j.alcr.2013.05.002

Miehls, D. (2017). Hegemonic views of masculinity and bullying: Clinical work with men who were bullied as children. *Clinical Social Work Journal*, *45*(1), 56–64. https://doi.org/10.1007/s10615-016-0581-6

Milicev, J., Qualter, P., Goodfellow, C., Inchley, J., Simpson, S. A., Leyland, A. H., Kharicha, K., & Long, E. (2023). The prospective relationship between loneliness, life satisfaction and psychological distress before and during the COVID-19 pandemic in

the UK. *Journal of Public Health*, *31*(9), 1417–1431. https://doi.org/10.1007/s10389-022-01719-x

Minuchin, P. (1985). Families and individual development: Provocations from the field of family therapy. *Child Development*, *56*(2), 289–302.

Minuchin, S. (1974). *Families and family therapy*. Harvard University Press.

Morrill-Richards, M., & Leierer, S. J. (2010). The relationship between sibling maltreatment and college students' sense of well-being. *Journal of College Counseling*, *13*(1), 17–30. APA PsycInfo. https://doi.org/10.1002/j.2161-1882.2010.tb00045.x

Muro, M., & Jeffrey, P. (2008). A critical review of the theory and application of social learning in participatory natural resource management processes. *Journal of Environmental Planning and Management*, *51*(3), 325–344. https://doi.org/10.1080/09640560801977190

National Collaborating Centre for Mental Health. (2022). *Meeting the needs of young adults within models of mental health care*. https://www.rcpsych.ac.uk/docs/default-source/improving-care/nccmh/nccmh-meeting-the-needs-of-young-adults-within-models-of-mental-health-care.pdf?sfvrsn=f05f18df_17

Ng Fat, L., Scholes, S., Boniface, S., Mindell, J., & Stewart-Brown, S. (2017). Evaluating and establishing national norms for mental wellbeing using the short Warwick-Edinburgh Mental Well-being Scale (SWEMWBS): Findings from the health survey for England. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation*, *26*(5), 1129–1144. https://doi.org/10.1007/s11136-016-1454-8

NHS. (2019). *The NHS long term plan*. NHS England. https://www.longtermplan.nhs.uk/wp-content/uploads/2019/08/nhs-long-term-plan-version-1.2.pdf

NHS Digital. (2017). *Health survey for England, 2016*. NHS England. https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/health-survey-for-england-2016

NHS Digital. (2023a). *Health survey for England, 2021 part 2*. NHS England. https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2021-part-2

NHS Digital. (2023b). *Mental health of children and young people in England, 2023—Wave 4 follow up to the 2017 survey*. NHS England. https://digital.nhs.uk/data-and-information/publications/statistical/mental-health-of-children-and-young-people-in-england/2023-wave-4-follow-up

Nielsen, M. B., Tangen, T., Idsoe, T., Matthiesen, S. B., & Magerøy, N. (2015). Post-traumatic stress disorder as a consequence of bullying at work and at school. A literature review and meta-analysis. *Aggression and Violent Behavior*, *21*, 17–24. https://doi.org/10.1016/j.avb.2015.01.001

Office for National Statistics. (2022). *Ethnic group, England and Wales: Census 2021*. https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/ethnicity/bulletins/ethnicgroupenglandandwales/census2021

Office for National Statistics. (2023, March 31). *Male and female populations*. GOV.UK - Ethnicity Facts and Figures. https://www.ethnicity-facts-figures.service.gov.uk/uk-population-by-ethnicity/demographics/male-and-female-populations/latest/#main-facts-and-figures

Office for National Statistics. (2024). *Public opinions and social trends, Great Britain: 13 December 2023 to 1 January 2024* [Statistical Bulletin]. https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/publicopinionsandsocialtrendsgreatbritain/13december2023to1january2024

Office for National Statistics, (ONS). (2018). *Measuring loneliness: Guidance for use of the national indicators on surveys*. https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/methodologies/measuringlonelinessguidanceforuseofthenationalindicatorsonsurveys

Oldfield, J., Humphrey, N., & Hebron, J. (2016). The role of parental and peer attachment relationships and school connectedness in predicting adolescent mental health outcomes. *Child and Adolescent Mental Health*, *21*(1), 21–29. https://doi.org/10.1111/camh.12108

Olweus, D. (1993). *Bullying at school: What we know and what we can do*. Blackwell Publishing.

Olweus, D. (2007). *Olweus bullying questionnaire.* Hazelden.

Olweus, D. (2013). School bullying: Development and some important challenges. *Annual Review of Clinical Psychology*, *9*, 751–780. https://doi.org/10.1146/annurev-clinpsy-050212-185516

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., … Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ*, *372,* n71. https://doi.org/10.1136/bmj.n71

Park, Y. S., Konge, L., & Artino, A. R. (2020). The positivism paradigm of research. *Academic Medicine*, *95*(5), 690–694. https://doi.org/10.1097/ACM.0000000000003093

Peplau, L. A., & Perlman, D. (Eds.). (1982). *Loneliness: A sourcebook of current theory, research, and therapy*. Wiley.

Perlman, D., & Peplau, L. A. (1998). Loneliness. In H. S. Friedman (Ed.), *Encyclopedia of mental health, Vol. 2* (pp. 571–581). Academic Press.

Pevalin, D. J. (2000). Multiple applications of the GHQ-12 in a general population sample: An investigation of long-term retest effects. *Social Psychiatry and Psychiatric Epidemiology*, *35*(11), 508–512. https://doi.org/10.1007/s001270050272

Phelan, J. E., & Rudman, L. A. (2010). Prejudice toward female leaders: Backlash effects and women's impression management dilemma. *Social and Personality Psychology Compass*, *4*(10), 807–820. https://doi.org/10.1111/j.1751-9004.2010.00306.x

Pierce, M., Hope, H., Ford, T., Hatch, S., Hotopf, M., John, A., Kontopantelis, E., Webb, R., Wessely, S., McManus, S., & Abel, K. M. (2020). Mental health before and during the COVID-19 pandemic: A longitudinal probability sample survey of the UK population. *The Lancet Psychiatry*, *7*(10), 883–892. https://doi.org/10.1016/S2215-0366(20)30308-4

Pilgrim, D. (2014). Some implications of critical realism for mental health research. *Social Theory & Health*, *12*(1), 1–21. https://doi.org/10.1057/sth.2013.17

Pinto, A. C. S., Luna, I. T., Sivla, A. de A., Pinheiro, P. N. da C., Braga, V. A. B., & Souza, Â. M. A. e. (2014). Risk factors associated with mental health issues in adolescents: A integrative review. *Revista Da Escola de Enfermagem Da USP*, *48*, 555–564. https://doi.org/10.1590/S0080-623420140000300022

Plamondon, A., Bouchard, G., & Lachance-Grzela, M. (2021). Family dynamics and young adults' well-being: The mediating role of sibling bullying. *Journal of Interpersonal Violence*, *36*(9–10), NP5362–NP5384. https://doi.org/10.1177/0886260518800313

Ponti, L., & Smorti, M. (2019). The roles of parental attachment and sibling relationships on life satisfaction in emerging adults. *Journal of Social and Personal Relationships*, *36*(6), 1747–1763. https://doi.org/10.1177/0265407518771741

Ponzetti, J. J. Jr., & James, C. M. (1997). Loneliness and sibling relationships. *Journal of Social Behavior & Personality*, *12*(1), 103–112.

Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., & Britten, N. (2006). *Guidance on the conduct of narrative synthesis in systematic reviews: A product from the ESRC methods programme.* Lancaster University. http://dx.doi.org/10.13140/2.1.1018.4643

Public Health England. (2019). *2. Mental health: Environmental factors*. https://www.gov.uk/government/publications/better-mental-health-jsna-toolkit/2-understanding-place

Ragelienė, T. (2016). Links of adolescents identity development and relationship with peers: A systematic literature review. *Journal of the Canadian Academy of Child and Adolescent Psychiatry*, *25*(2), 97.

Reio, T. G. (2016). Nonexperimental research: Strengths, weaknesses and issues of precision. *European Journal of Training and Development*, *40*(8/9), 676–690. https://doi.org/10.1108/EJTD-07-2015-0058

Romppel, M., Braehler, E., Roth, M., & Glaesmer, H. (2013). What is the general health questionnaire-12 assessing?: Dimensionality and psychometric properties of the general health questionnaire-12 in a large scale German population sample. *Comprehensive Psychiatry*, *54*(4), 406–413. https://doi.org/10.1016/j.comppsych.2012.10.010

Rosen, N. L., & Nofziger, S. (2019). Boys, bullying, and gender roles: How hegemonic masculinity shapes bullying behavior. *Gender Issues*, *36*(3), 295–318. https://doi.org/10.1007/s12147-018-9226-0

Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA loneliness scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology*, *39*(3), 472–480. https://doi.org/10.1037/0022-3514.39.3.472

Salin, D., & Hoel, H. (2013). Workplace bullying as a gendered phenomenon. *Journal of Managerial Psychology*, *28*(3), 235–251. https://doi.org/10.1108/02683941311321187

Santini, Z. I., Koyanagi, A., Tyrovolas, S., Mason, C., & Haro, J. M. (2015). The association between social relationships and depression: A systematic review. *Journal of Affective Disorders*, *175*, 53–65. https://doi.org/10.1016/j.jad.2014.12.049

Schwartz, S. J., Hardy, S. A., Zamboanga, B. L., Meca, A., Waterman, A. S., Picariello, S., Luyckx, K., Crocetti, E., Kim, S. Y., Brittian, A. S., Roberts, S. E., Whitbourne, S. K., Ritchie, R. A., Brown, E. J., & Forthun, L. F. (2015). Identity in young adulthood: Links with mental health and risky behavior. *Journal of Applied Developmental Psychology*, *36*, 39–52. https://doi.org/10.1016/j.appdev.2014.10.001

Scott, A., & Jessop, C. (2013). *UK Household Longitudinal Study (UKHLS) wave 3: Technical report* [Technical report]. National Centre for Social Research. https://www.understandingsociety.ac.uk/sites/default/files/downloads/documentation/mainstage/technical-reports/6614_W3__technical_report_-_FINAL_141013.pdf

Sellars, E., Oliver, B. R., & Bowes, L. (2024). Children's resilience to sibling victimization: The role of family, peer, school, and neighborhood factors. *Development and Psychopathology*, *36*(4), 1973–1987. https://doi.org/10.1017/S0954579423001323

Sharpe, H., Fink, E., Duffy, F., & Patalay, P. (2022). Changes in peer and sibling victimization in early adolescence: Longitudinal associations with multiple indices of mental health in a prospective birth cohort study. *European Child & Adolescent Psychiatry*, *31*(5), 737–746. https://doi.org/10.1007/s00787-020-01708-z

Shaver, P. R., & Mikulincer, M. (2006). Attachment theory, individual psychodynamics, and relationship functioning. In A. L. Vangelisti & D. Perlman (Eds.), *The Cambridge handbook of personal relationships* (pp. 251–271). Cambridge University Press.

Shepherd, D., Goedeke, S., Landon, J., Taylor, S., & Williams, J. (2021). The impact of sibling relationships on later-life psychological and subjective well-being. *Journal of Adult Development*, *28*(1), 76–86. https://doi.org/10.1007/s10804-020-09350-4

Siegler, R. S., Saffran, J., Eisenberg, N., & Gershoff, E. (2020). *How children develop* (6th ed.). Worth Publishers.

Silva, M., Loureiro, A., & Cardoso, G. (2016). Social determinants of mental health: A review of the evidence. *The European Journal of Psychiatry*, *30*(4), 259–292.

Smith, P. K., & Robinson, S. (2019). How does individualism-collectivism relate to bullying victimisation? *International Journal of Bullying Prevention*, 1(1), 3–13. https://doi.org/10.1007/s42380-018-0005-y

Solomon, S. (2000). Childhood loneliness: Implications and intervention considerations for family therapists. *The Family Journal*, *8*, 161–164. https://doi.org/10.1177/1066480700082008

Stewart-Brown, S., Tennant, A., Tennant, R., Platt, S., Parkinson, J., & Weich, S. (2009). Internal construct validity of the Warwick-Edinburgh mental well-being scale (WEMWBS): A Rasch analysis using data from the Scottish health education population survey. *Health and Quality of Life Outcomes*, *7*, 15. https://doi.org/10.1186/1477-7525-7-15

Stocker, C. M., Gilligan, M., Klopack, E. T., Conger, K. J., Lanthier, R. P., Neppl, T. K., O'Neal, C. W., & Wickrama, K. a. S. (2020). Sibling relationships in older adulthood: Links with loneliness and well-being. *Journal of Family Psychology*, *34*(2), 175–185. https://doi.org/10.1037/fam0000586

Stuckler, D., Reeves, A., Loopstra, R., Karanikolos, M., & McKee, M. (2017). Austerity and health: The impact in the UK and Europe. *European Journal of Public Health*, *27*(suppl_4), 18–21. https://doi.org/10.1093/eurpub/ckx167

Sun, Y., Luk, T. T., Wang, M. P., Shen, C., Ho, S. Y., Viswanath, K., Chan, S. S. C., & Lam, T. H. (2019). The reliability and validity of the Chinese short Warwick-Edinburgh mental well-being scale in the general population of Hong Kong. *Quality of Life Research*, *28*(10), 2813–2820. https://doi.org/10.1007/s11136-019-02218-5

Tanner, J. L. (2016). Mental health in emerging adulthood. In J. J. Arnett (Ed.), *The Oxford handbook of emerging adulthood* (pp. 499–520). Oxford University Press.

The British Psychological Society. (2021a, April). *BPS code of human research ethics*. https://explore.bps.org.uk/binary/bpsworks/06096a55b82ca73a/9787a5959b2bfdff7ed2a43ad5b3f333a5278925cfd667b1b2e64b5387c91b92/inf180_2021.pdf

The British Psychological Society. (2021b, December). *Code of Ethics and Conduct*. https://explore.bps.org.uk/binary/bpsworks/bf9d9fead1dfec7c/3acfadeebe810a324dde720ea7b34b6e87a80cad1de5471be0810935dac0415b/inf94_2021.pdf

The Data Protection Act 1998 (1998). https://www.legislation.gov.uk/ukpga/1998/29/contents

The Data Protection Act 2018 (2018). https://www.legislation.gov.uk/ukpga/2018/12/contents/enacted

The Lancet Public Health. (2022). The cost of living: An avoidable public health crisis. *The Lancet Public Health*, *7*(6), e485. https://doi.org/10.1016/s2468-2667(22)00120-7

Thomas, B. H., Ciliska, D., Dobbins, M., & Micucci, S. (2004). A process for systematically reviewing the literature: Providing the research evidence for public health nursing interventions. *Worldviews on Evidence-Based Nursing*, *1*(3), 176–184. https://doi.org/10.1111/j.1524-475X.2004.04006.x

Tippett, N., & Wolke, D. (2015). Aggression between siblings: Associations with the home environment and peer bullying. *Aggressive Behavior*, *41*(1), 14–24. https://doi.org/10.1002/ab.21557

Torgerson, C. J. (2006). Publication bias: The Achilles' heel of systematic reviews? *British Journal of Educational Studies*, *54*(1), 89–102. https://doi.org/10.1111/j.1467-8527.2006.00332.x

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. https://doi.org/10.1016/j.chiabu.2020.104633

Toseeb, U., McChesney, G., Oldfield, J., & Wolke, D. (2020). Sibling bullying in middle childhood is associated with psychosocial difficulties in early adolescence: The case of individuals with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *50*(5), 1457–1469. https://doi.org/10.1007/s10803-019-04116-8

Toseeb, U., & Wolke, D. (2022). Sibling bullying: A prospective longitudinal study of associations with positive and negative mental health during adolescence. *Journal of Youth and Adolescence*, *51*(5), 940–955. https://doi.org/10.1007/s10964-021-01495-z

Tucker, C. J., & Finkelhor,  david. (2017). The state of interventions for sibling conflict and aggression: A systematic review. *Trauma, Violence, & Abuse, 18*(4), 396–406. https://doi.org/10.1177/1524838015622438

Tucker, C. J., Finkelhor, D., Shattuck, A., & Turner, H. (2013). Prevalence and correlates of sibling victimization types. *Child Abuse & Neglect*, *37*(4), 213–223. https://doi.org/10.1016/j.chiabu.2013.01.006

Tucker, C. J., Finkelhor, D., & Turner, H. (2024). Patterns of sibling aggression and mental health in childhood and adolescence. *Journal of Family Trauma, Child Custody & Child Development*, *21*(1), 2–21. https://doi.org/10.1080/26904586.2023.2234369

Tucker, C. J., Finkelhor, D., Turner, H., & Shattuck, A. M. (2014). Family dynamics and young children's sibling victimization. *Journal of Family Psychology*, *28*(5), 625–633. https://doi.org/10.1037/fam0000016

Understanding Society. (n.d.a). *Cite the data*. Understanding Society. https://www.understandingsociety.ac.uk/documentation/citation

Understanding Society. (n.d.b). *Funders*. Understanding Society. https://www.understandingsociety.ac.uk/about/funders

Understanding Society. (n.d.c). *Main survey variable: Sclonely How often feels lonely*. Understanding Society. https://www.understandingsociety.ac.uk/documentation/mainstage/variables/sclonely/

Understanding Society. (n.d.d). *Participants*. Understanding Society. https://www.understandingsociety.ac.uk/participants

Understanding Society. (n.d.e). *Questionnaire development and fieldwork*. Understanding Society. https://www.understandingsociety.ac.uk/about/questionnaire-development-and-fieldwork/

Understanding Society. (n.d.f). *Questionnaires*. Understanding Society. https://www.understandingsociety.ac.uk/documentation/mainstage/questionnaires

Understanding Society. (n.d.g). *Understanding Society – The UK Household Longitudinal Study*. Understanding Society. https://www.understandingsociety.ac.uk/

Understanding Society. (n.d.h). *Understanding Society participant information*. Understanding Society. https://www.understandingsociety.ac.uk/participants/information-sheet

Understanding Society. (n.d.i). *What does Understanding Society do with my data? | Understanding Society*. Understanding Society. https://www.understandingsociety.ac.uk/participants/data-confidentiality

University Of Essex, Institute for Social and Economic Research. (2024). *Understanding Society: Waves 1-14, 2009-2023 and Harmonised BHPS: Waves 1-18, 1991-2009* (No. SN: 6614; 19th Edition) [Dataset]. UK Data Service. https://doi.org/10.5255/UKDA-SN-6614-20

Vaillancourt, K., Pawlby, S., & Fearon, R. M. P. (2017). History of childhood abuse and mother–infant interaction: A systematic review of observational studies. *Infant Mental Health Journal*, *38*(2), 226–248. https://doi.org/10.1002/imhj.21634

Van Assche, L., Van de Ven, L., Vandenbulcke, M., & Luyten, P. (2020). Ghosts from the past? The association between childhood interpersonal trauma, attachment and anxiety and depression in late life. *Aging & Mental Health*, *24*(6), 898–905. https://doi.org/10.1080/13607863.2019.1571017

Verian. (2024). *UK Household Longitudinal Study: Wave 14 technical report* [Technical Report]. Verian. https://www.understandingsociety.ac.uk/wp-content/uploads/documentation/main-survey/technical-reports/6614-main-survey-technical-report-w14.pdf

Victor, C. R., Burholt, V., & Martin, W. (2012). Loneliness and ethnic minority elders in Great Britain: An exploratory study. *Journal of Cross-Cultural Gerontology*, *27*(1), 65–78. https://doi.org/10.1007/s10823-012-9161-6

Wagner, A. J. M., & Reifegerste, D. (2024). Real men don't talk? Relationships among depressiveness, loneliness, conformity to masculine norms, and male non-disclosure of mental distress. *SSM - Mental Health*, *5*, 100296. https://doi.org/10.1016/j.ssmmh.2024.100296

Wang, Q. (2020). Association of childhood intrafamilial aggression and childhood peer bullying with adult depressive symptoms in China. *JAMA Network Open*, *3*(8), e2012557–e2012557. https://doi.org/10.1001/jamanetworkopen.2020.12557

Ward, K., Hoare, K. J., & Gott, M. (2015). Evolving from a positivist to constructionist epistemology while using grounded theory: Reflections of a novice researcher. *Journal of Research in Nursing*, *20*(6), 449–462. https://doi.org/10.1177/1744987115597731

Warwick Medical School. (2023, August). *Collect, score, analyse and interpret WEMWBS*. University of Warwick. https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs/using/howto/

Weinberg, J. (2022). Trust, governance, and the Covid-19 pandemic: An explainer using longitudinal data from the United Kingdom. *The Political Quarterly*, *93*(2), 316–325. https://doi.org/10.1111/1467-923X.13131

Wetzel, E., Böhnke, J. R., & Brown, A. (2016). Response biases. In F. T. L. Leong, D. Bartram, F. Cheung, K. F. Geisinger, & D. Iliescu (Eds), *The ITC international handbook of testing and assessment* (pp. 349–363). Oxford University Press. https://doi.org/10.1093/med:psych/9780199356942.003.0024

White, R. (2007). Epistemic subjectivism. *Episteme*, *4*(1), 115–129. https://doi.org/10.3366/epi.2007.4.1.115

Whiteman, S. D., McHale, S. M., & Soli, A. (2011). Theoretical perspectives on sibling relationships. *Journal of Family Theory & Review*, *3*(2), 124–139. https://doi.org/10.1111/j.1756-2589.2011.00087.x

Williams, M. J., & Tiedens, L. Z. (2016). The subtle suspension of backlash: A meta-analysis of penalties for women's implicit and explicit dominance behavior. *Psychological Bulletin*, *142*(2), 165–197. https://doi.org/10.1037/bul0000039

Wolke, D., & Samara, M. M. (2004). Bullied by siblings: Association with peer victimisation and behaviour problems in Israeli lower secondary school children. *Journal of Child*

*Psychology and Psychiatry*, *45*(5), 1015–1029. https://doi.org/10.1111/j.1469-7610.2004.t01-1-00293.x

Wolke, D., & Skew, A. (2011). Bullied at home and at school: Relationship to behaviour problems & unhappiness. In S. L. McFall & C. Garrington (Eds.), *Understanding Society: Early findings from the first wave of the UK's household longitudinal study.* (pp. 23–32). Institute for Social and Economic Research.

Wolke, D., & Skew, A. J. (2012). Bullying among siblings. *International Journal of Adolescent Medicine & Health*, *24*(1), 17–25. https://doi.org/10.1515/ijamh.2012.004

Wolke, D., Tippett, N., & Dantchev, S. (2015). Bullying in the family: Sibling bullying. *The Lancet Psychiatry*, *2*(10), 917–929. https://doi.org/10.1016/S2215-0366(15)00262-X

Wolska, K., & Creaven, A.-M. (2023). Associations between transient and chronic loneliness, and depression, in the understanding society study. *British Journal of Clinical Psychology*, *62*(1), 112–128. https://doi.org/10.1111/bjc.12397

Wood, D., Crapnell, T., Lau, L., Bennett, A., Lotstein, D., Ferris, M., & Kuo, A. (2018). Emerging adulthood as a critical stage in the life course. In N. Halfon, C. B. Forrest, R. M. Lerner, & E. M. Faustman (Eds.), *Handbook of life course health development* (pp. 123–143). Springer.

World Health Organisation. (2022, June 17). *Mental health*. World Health Organisation. https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response

Xiao, Z., Murat Baldwin, M., Wong, S. C., Obsuth, I., Meinck, F., & Murray, A. L. (2023). The impact of childhood psychological maltreatment on mental health outcomes in adulthood: A systematic review and meta-analysis. *Trauma, Violence, & Abuse*, *24*(5), 3049–3064. https://doi.org/10.1177/15248380221122816

Yeh, H.-C., & Lempers, J. D. (2004). Perceived sibling relationships and adolescent development. *Journal of Youth and Adolescence*, *33*(2), 133–147. https://doi.org/10.1023/B:JOYO.0000013425.86424.0f

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. https://doi.org/10.1007/s11482-015-9444-5

# Appendix A

*Search Terms and Database Hits for Each Database*

| Search | Search Terms | Results[a] | Results[b] | Results[c] | Results[d] | Results[e] | Total |
|---|---|---|---|---|---|---|---|
| S1 | AB "sibling bull*" OR "sibling abuse" OR "sibling violence" OR "sibling aggression" OR “sibling conflict” or "sibling victim*" OR "sibling perp*" | 370 | 41 | 122 | 195 | 459 | 1,187 |
| S2 | AB "mental health" OR "mental illness" OR "mental disorder" OR "psychiatric illness" OR "psychiatric disorder" OR adjustment OR resilience OR anxiety OR depression OR well-being OR wellbeing OR distress* OR "emotional difficult*" OR "psychological difficult*" OR "emotional problem*" OR "psychological problem*” OR internalising OR lonel* OR "social isolation" OR “social support” OR “social connect*” OR “social strain” | 681,922 | 40,474 | 324,146 | 951,489 | 1,602,558 | 3,600,589 |
| S3 | AB S1 AND S2 | 103 | 15 | 48 | 75 | 133 | 374 |

*Note.* Limiters: Scholarly (Peer Reviewed) Journals[abcd], Articles[e], Human Studies[abcd]. Expanders: Apply Equivalent Subjects[abcd]. AB – Abstract.

[a]APA PsycINFO. [b]APA PsycARTICLES. [c]CINAHL Ultimate. [d]MEDLINE Ultimate. [e]Web of Science Core Collection.

## Appendix B

*Quality Assessment for Each of the Six Components of the EPHPP Tool and the Global Assessment Rating*

| Study | Selection Bias | Study Design | Confounders | Blinding | Data Collection Methods | Withdrawals and Drop-outs | Global Rating |
|---|---|---|---|---|---|---|---|
| Bowes et al. (2014) | Moderate | Moderate | Strong | Strong | Strong | Weak | Moderate |
| Dantchev et al. (2018) | Moderate | Moderate | Strong | Strong | Strong | Weak | Moderate |
| Dantchev et al. (2019) | Moderate | Moderate | Moderate | Strong | Strong | Weak | Moderate |
| Deniz and Toseeb (2023) | Moderate | Moderate | Moderate | Strong | Strong | Weak | Moderate |
| Sellars et al. (2024) | Moderate | Moderate | Strong | Strong | Strong | Moderate | Strong |
| Sharpe et al. (2022) | Moderate | Moderate | Strong | Strong | Strong | Moderate | Strong |
| Toseeb, McChesney, Oldfield, et al. (2020) | Moderate | Moderate | Strong | Strong | Strong | Weak | Moderate |
| Toseeb and Wolke (2022) | Moderate | Moderate | Weak | Strong | Strong | Weak | Weak |
| Tucker et al. (2024) | Moderate | Moderate | Moderate | Strong | Strong | Weak | Moderate |

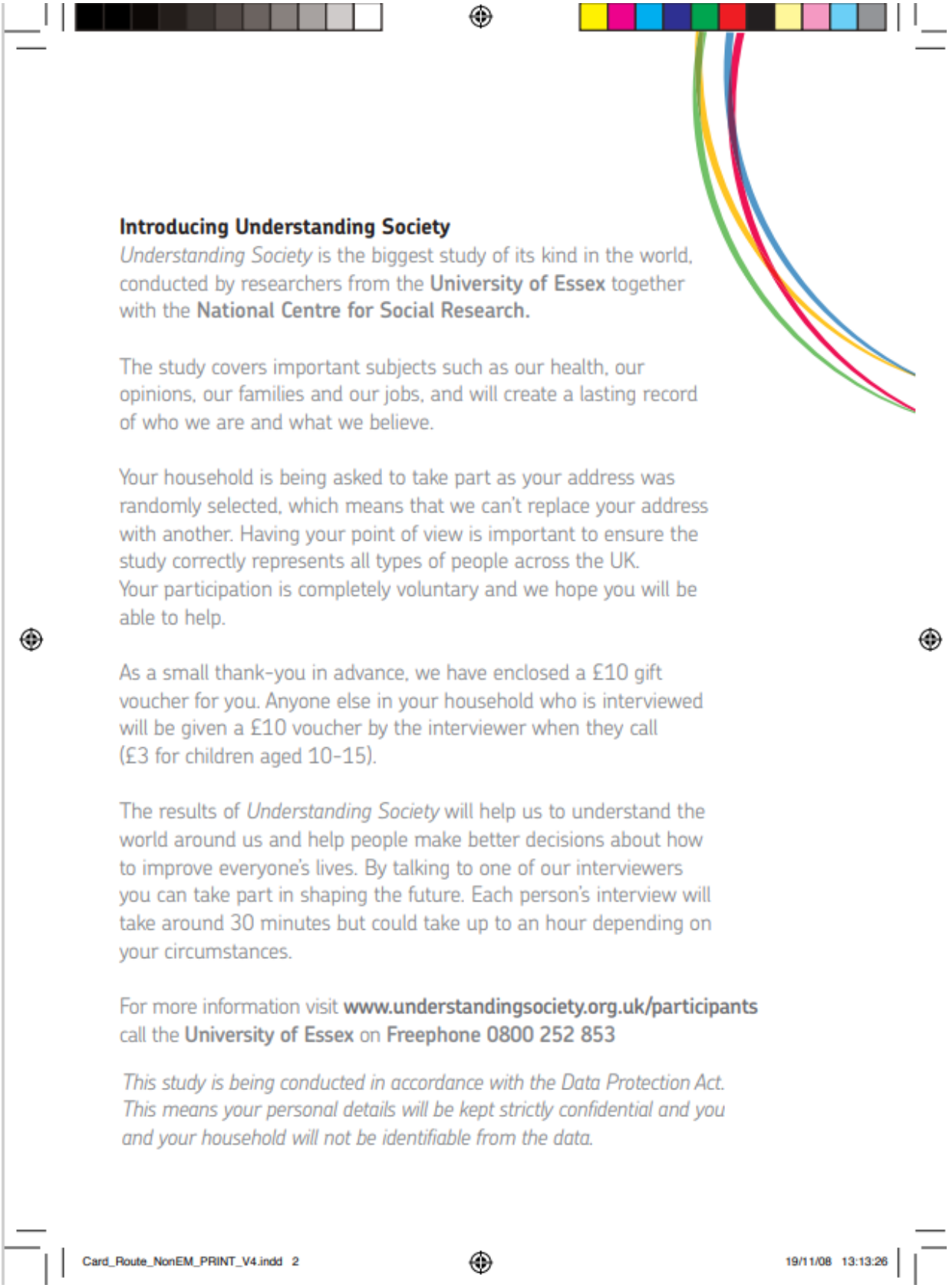
## Appendix C

Understanding Society Acknowledgement Statement

"Understanding Society is an initiative funded by the Economic and Social Research Council and various Government Departments, with scientific leadership by the Institute for Social and Economic Research, University of Essex, and survey delivery by NatCen Social Research and Kantar Public. The research data are distributed by the UK Data Service. The COVID-19 study (2020-2021) was funded by the Economic and Social Research Council and the Health Foundation. Serology testing was funded by the COVID-19 Longitudinal Health and Wealth – National Core Study. Fieldwork for the web survey was carried out by Ipsos MORI and for the telephone survey by Kantar." (Understanding Society, n.d.a)

# Appendix D

Understanding Society Wave 1 Advance Card General Population Sample



**Introducing Understanding Society**

*Understanding Society* is the biggest study of its kind in the world, conducted by researchers from the **University of Essex** together with the **National Centre for Social Research.**

The study covers important subjects such as our health, our opinions, our families and our jobs, and will create a lasting record of who we are and what we believe.

Your household is being asked to take part as your address was randomly selected, which means that we can't replace your address with another. Having your point of view is important to ensure the study correctly represents all types of people across the UK. Your participation is completely voluntary and we hope you will be able to help.

As a small thank-you in advance, we have enclosed a £10 gift voucher for you. Anyone else in your household who is interviewed will be given a £10 voucher by the interviewer when they call (£3 for children aged 10-15).

The results of *Understanding Society* will help us to understand the world around us and help people make better decisions about how to improve everyone's lives. By talking to one of our interviewers you can take part in shaping the future. Each person's interview will take around 30 minutes but could take up to an hour depending on your circumstances.

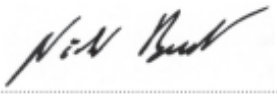
For more information visit **www.understandingsociety.org.uk/participants** call the **University of Essex** on **Freephone 0800 252 853**

*This study is being conducted in accordance with the Data Protection Act. This means your personal details will be kept strictly confidential and you and your household will not be identifiable from the data.*

*Understanding Society* is the biggest study of its kind in the world and will help us build up a detailed picture of life in the UK and how it's changing. We'd really like you and your household to take part and an interviewer will be calling at your home some time in the next few weeks to ask you for an interview.

Your participation is completely optional but we hope you will find the time to help with this important study and that you enjoy taking part.

Yours,

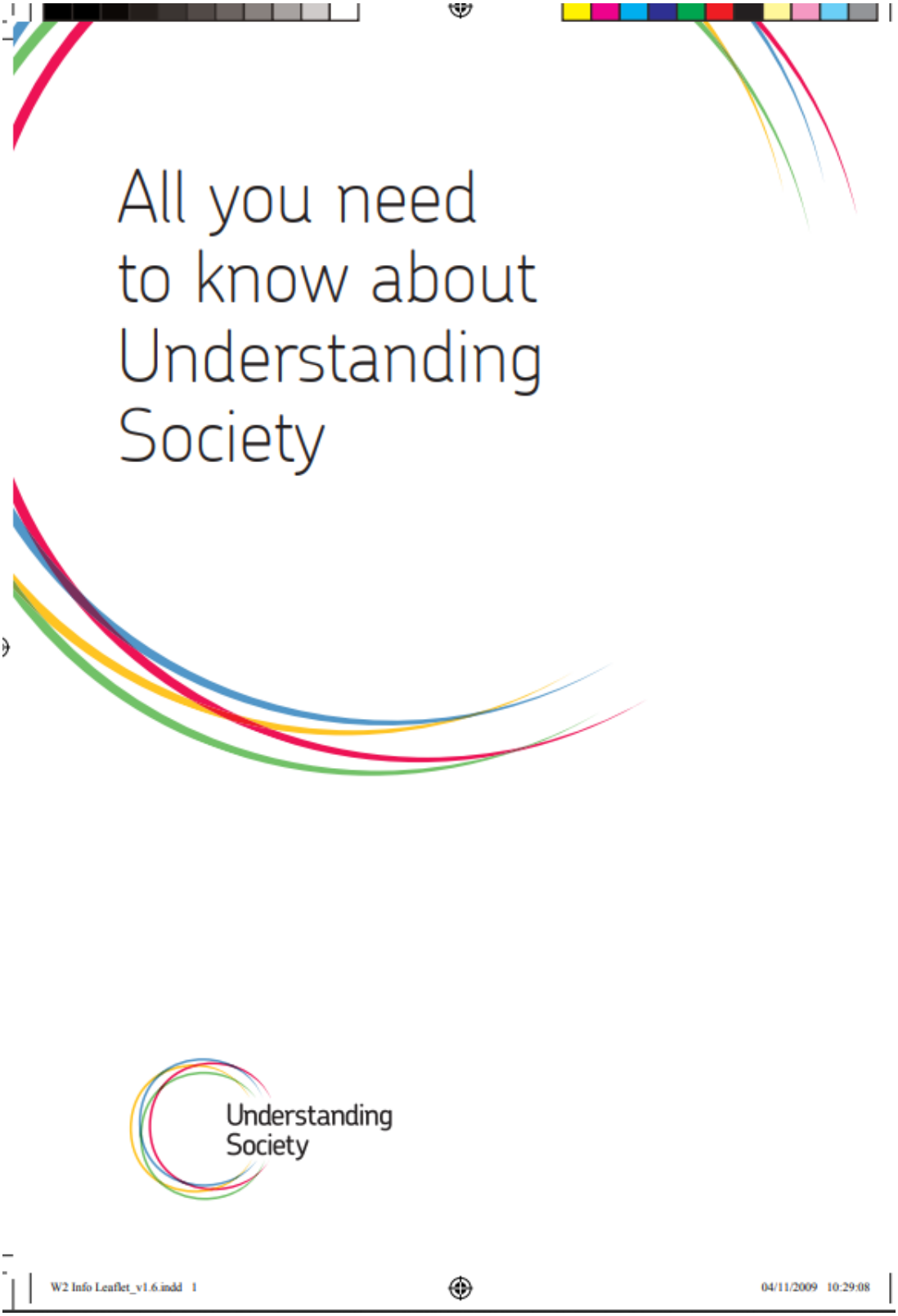


**Nick Buck**
Director,
Understanding Society

**Your interviewer**
Understanding Society

**Appendix E**

Understanding Society Information Leaflet Wave Two



# What is it?

*Understanding Society* is the biggest study of its kind in the world – and we'd very much like you and the people you live with to be involved. By spending just a short time answering questions about your experiences and opinions, you will help us paint a unique picture of life in the UK and how it's changing.

# What's it for?

The information from the survey will help us learn more about each other, and will help people who analyse and design policies to make better decisions about how to improve everyone's lives. In the past, studies like this have contributed to changes in the law, given insights into human psychology, and helped doctors treat illnesses more effectively.

# Why me?

Your household's help in the past was greatly appreciated and we would like to continue to find out how your household and family circumstances change over time. Getting involved is completely voluntary and we hope you will be able to help us make the study a success.

### What do I have to do?

To join in, all you have to do is answer some questions about your life and your opinions. The interview will take from 30 minutes to an hour, depending on your circumstances. It will cover some of the key areas of life such as health, employment and leisure.

### Who do you want to talk to?

We would like to talk to everyone aged 16 and over who lives in your home. With parents' consent, we would also like young people aged 10-15 to fill in a short questionnaire.

### Are you new to this household?

You are being asked to take part because you are now living in the household of someone who has previously taken part in the survey.

Without your input, we won't be able to gain a complete understanding of how household and family circumstances may be changing. We hope you agree to take part as your help will be greatly appreciated.

### How many people are being asked to take part?

This is the largest social research study of its kind in the world – we're asking 100,000 people in 40,000 households to take part.

### What do I get out of it?

Each person in the household who takes part will receive a gift voucher; including young people aged 10-15 who complete a self-completion questionnaire. As a member of *Understanding Society* you will also have access to study findings and research updates.

### What will you do with the information?

The results of the survey will be used for research purposes. The results will be kept strictly confidential and we operate under the rules of the Data Protection Act. You can ask to see your details at any time or to have them removed from our database. The data is anonymous – it will be impossible to identify individual people and households from it.

### Who is running it?

Researchers at the Institute for Social and Economic Research (ISER) at the University of Essex are running *Understanding Society* together with NatCen, with funding from the Economic and Social Research Council (ESRC).

## How do I find out more?

If you'd like some more information on the survey: visit **www.understandingsociety.org.uk/participants**, email **contact@understandingsociety.org.uk**, call the University of Essex on Freephone **0800 252 853** or write to **FREEPOST RRXX-KEKJ-JGKS, Understanding Society, University of Essex, Wivenhoe Park, Colchester, CO4 3SQ**. We'll be really pleased to hear from you.

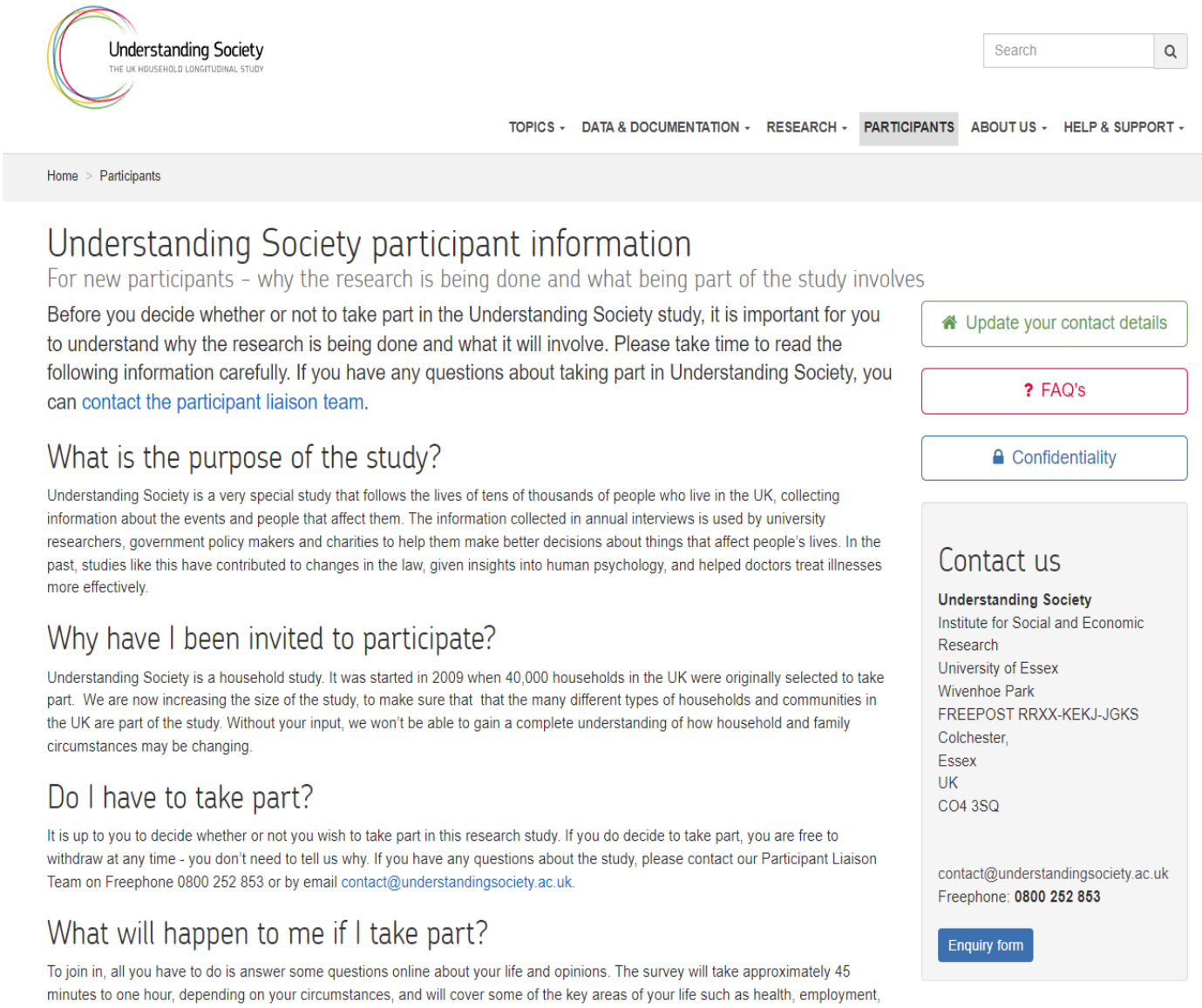
Printed on Forest Stewardship Council (FSC) accredited and 50:50 recycled paper

P2821 GB Information Leaflet

W2 Info Leaflet_v1.6.indd 4 04/11/2009 10:29:09

# Appendix F

Understanding Society Information Sheet for New Participants (Understanding Society, n.d.h)



Understanding Society
THE UK HOUSEHOLD LONGITUDINAL STUDY

Search

TOPICS · DATA & DOCUMENTATION · RESEARCH · PARTICIPANTS · ABOUT US · HELP & SUPPORT

Home > Participants

## Understanding Society participant information

For new participants - why the research is being done and what being part of the study involves

Before you decide whether or not to take part in the Understanding Society study, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully. If you have any questions about taking part in Understanding Society, you can contact the participant liaison team.

### What is the purpose of the study?

Understanding Society is a very special study that follows the lives of tens of thousands of people who live in the UK, collecting information about the events and people that affect them. The information collected in annual interviews is used by university researchers, government policy makers and charities to help them make better decisions about things that affect people's lives. In the past, studies like this have contributed to changes in the law, given insights into human psychology, and helped doctors treat illnesses more effectively.

### Why have I been invited to participate?

Understanding Society is a household study. It was started in 2009 when 40,000 households in the UK were originally selected to take part. We are now increasing the size of the study, to make sure that that the many different types of households and communities in the UK are part of the study. Without your input, we won't be able to gain a complete understanding of how household and family circumstances may be changing.

### Do I have to take part?

It is up to you to decide whether or not you wish to take part in this research study. If you do decide to take part, you are free to withdraw at any time - you don't need to tell us why. If you have any questions about the study, please contact our Participant Liaison Team on Freephone 0800 252 853 or by email contact@understandingsociety.ac.uk.

### What will happen to me if I take part?

To join in, all you have to do is answer some questions online about your life and opinions. The survey will take approximately 45 minutes to one hour, depending on your circumstances, and will cover some of the key areas of your life such as health, employment,

Update your contact details

? FAQ's

Confidentiality

### Contact us

**Understanding Society**
Institute for Social and Economic Research
University of Essex
Wivenhoe Park
FREEPOST RRXX-KEKJ-JGKS
Colchester,
Essex
UK
CO4 3SQ

contact@understandingsociety.ac.uk
Freephone: **0800 252 853**

Enquiry form

retirement, personal relationships, friends and family, childcare, and leisure activities. If you choose to take part and submit your responses online, we will assume that you consent to participating in the survey.

## What are the possible disadvantages and risks of taking part?

It will take around 45 minutes to an hour of your time, although it may take a little longer, depending in your circumstances. There may also be questions that you might find sensitive, but you do not have to answer any thing that you do not want to. You can also withdraw from the study at any time, by contacting our Participant Liaison Team.

## What are the possible benefits of taking part?

Each person in the household who takes part will receive a voucher that can be used at a range of retailers. As a member of Understanding Society you will also be kept informed about study findings and research updates.

By taking part, you are helping to create a record of how life in the UK is changing and what impact those changes have on you and the other people you live with, for example, how a new job or baby affects your health and wellbeing, your financial circumstances and personal relationships a year or two years later.

## What information will be collected?

The interview covers some of the key areas of your life such as health, employment, retirement, personal relationships, friends and family, childcare, and leisure activities. The results of the study will be used for research purposes only. You can ask to see your details at any time or to have them removed from our database. The data is and will remain anonymous – it will be impossible for anyone to identify you or your household from the study's results.

## Will my information be kept confidential?

Understanding Society is managed in accordance with the Data Projection Act and GDPR legislation. We are always extremely careful to protect the confidentiality of the information you give us. Your survey answers are always anonymised. Your personal details such as name, address and date of birth are removed, so that you cannot be identified. Your anonymised information is combined with the tens of thousands of survey answers from other Understanding Society participants and is securely deposited in the UK Data Archive, which is based at the University of Essex. Social researchers can register with the UK Data Archive to use Understanding Society data. Understanding Society data can only be used for genuine social research that can demonstrate public interest and not just be used for commercial gain. Your details are never made available to researchers or other companies who might use them for marketing purposes. However, if you tell us something that makes us worried about your safety or the safety of others in your household, we may have to discuss this with somebody else as we need to be sure you are safe.

If you have any questions about the security of your personal details, please email iserdpq@essex.ac.uk

## What is the legal basis for using the data and who is the Data Controller?

In addition to the Data Protection Act, the Institute for Social and Economic Research, which hosts Understanding Society, has ISO-27001 certification. This requires the study to have a wide set of rules and regulations about how we manage data.

As well as having our information security management procedures documented, we are also independently audited annually and have to undergo re-certification every three years to make sure that we are following the requirements of the standard. Our fieldwork partners – Kantar and NatCen Social Research – have also achieved ISO-27001 certification for Information Security Management Systems. These procedures ensure that all efforts are taken to maintain the security of your data.

The Institute for Social and Economic Research at the University of Essex is the data controller for the study. Please contact the University Information Assurance Manager (dpo@essex.ac.uk) if you have any questions. The fieldwork for the study is contracted to Kantar and NatCen Social Research, who act as the data processors.

Since the Understanding Society study is funded by the Economic and Social Research Council (ESRC) and both the ESRC and the University of Essex are Public Bodies, we use Public Task as the lawful basis for processing this data. Data are not transferred outside the European Economic Area (EEA), to ensure that they are protected by the strong EEA data protection laws. Our compliance with all the relevant legislation, and our externally certified accreditation to the international ISO27001 standard, provide you with assurance that your data is secured and protected in the strongest possible manner.

## What should I do if I want to take part?

You do not need to do anything if you would like to take part in the study. Our fieldwork partners, Kantar or NatCen Social Research, will be in touch with further information about how you can take part.

## What will happen to the results of the research study?

The answers you give us to the survey are securely transferred from Kantar to the Institute for Social and Economic Research, using an encrypted online portal. To preserve your anonymity, personal details (your name, date of birth, address) are removed from the survey data and held securely in an encrypted database to which only a small number of people have access. Your survey answers are put together with the answers from thousands of other participants and, in an anonymised format, are deposited with the UK Data Service. There is no information in the data which can identify you.

Any analysis is done on the whole sample, and results are often quoted in terms of specific percentages of people and are not reported as individual answers. The collected survey responses are made available, through the UK Data Service, to academic researchers who must register with the Data Service.

## Who is funding the research?

Understanding Society is funded by the Economic and Social Research Council (ESRC) and a consortium of government departments, Scientific leadership is provided by he Institute for Social and Economic Research (ISER) at the University of Essex. The ESRC is the UK's largest organisation for funding research on economic and social issues. It supports independent, high quality research which has an impact on business, the public sector and civil society.

## Who has reviewed the study?

The Understanding Society study has been approved by the University of Essex Ethics Committee. The committee reviews the questionnaire and all of the participant documents.

## Concerns and Complaints

If you have any concerns about any aspect of the study, or you have a complaint, in the first instance please contact our Participant Liaison Team on Freephone 0800 252 853 or by email contact@understandingsociety.ac.uk. They will pass the information onto the principal investigator of the project, Professor Michaela Benzeval.

If are still concerned, or if you think your complaint has not been addressed to your satisfaction, or you feel that you cannot approach the principal investigator, please contact the departmental Director of Research in the department responsible for this project, Professor Paul Clarke, pclarke@essex.ac.uk.
If you are still not satisfied, please contact the University's Research Governance and Planning Manager , Sarah Manning-Press (e-mail sarahm@essex.ac.uk). Please include the ERAMS reference: ETH2021-2104.

# Appendix G

Understanding Society Variable of Interest Measures

## Sibling Bullying (Victimisation and Perpetration)

**20** Do you have any brothers or sisters living with you at home?

Yes ☐ → 21

No ☐ → 23

**21** How often do any of your brothers or sisters do any of the following to you at home?

| | Never | Not much (1-3 times in last 6 months) | Quite a lot (more than 4 times in the last 6 months) | A lot (a few times every week) |
|---|---|---|---|---|
| Hit, kick or push you | ☐ | ☐ | ☐ | ☐ |
| Take your belongings | ☐ | ☐ | ☐ | ☐ |
| Call you nasty names | ☐ | ☐ | ☐ | ☐ |
| Make fun of you | ☐ | ☐ | ☐ | ☐ |

**22** How often do you do any of the following to your brothers or sisters at home?

| | Never | Not much (1-3 times in last 6 months) | Quite a lot (more than 4 times in the last 6 months) | A lot (a few times every week) |
|---|---|---|---|---|
| Hit, kick or push them | ☐ | ☐ | ☐ | ☐ |
| Take their belongings | ☐ | ☐ | ☐ | ☐ |
| Call them nasty names | ☐ | ☐ | ☐ | ☐ |
| Make fun of them | ☐ | ☐ | ☐ | ☐ |

## General Health Questionnaire (GHQ-12)

### Self-Completion GHQ Module

### Questions (12)

#### GHQ: concentration

**Type** choice

**Text** The next questions are about how you have been feeling over the last few weeks. Have you recently been able to concentrate on whatever you're doing?

| Option | Label |
|---|---|
| 1 | Better than usual |
| 2 | Same as usual |
| 3 | Less than usual |
| 4 | Much less than usual |

#### GHQ: loss of sleep

**Type** choice

**Text** Have you recently lost much sleep over worry?

| Option | Label |
|---|---|
| 1 | Not at all |
| 2 | No more than usual |
| 3 | Rather more than usual |
| 4 | Much more than usual |

#### GHQ: playing a useful role

**Type** choice

**Text** Have you recently felt that you were playing a useful part in things?

| Option | Label |
|---|---|
| 1 | More so than usual |
| 2 | Same as usual |
| 3 | Less so than usual |
| 4 | Much less than usual |

### GHQ: capable of making decisions

**Type** choice

**Text** Have you recently felt capable of making decisions about things?

| Option | Label |
|---|---|
| 1 | More so than usual |
| 2 | Same as usual |

### GHQ: constantly under strain

**Type** choice

**Text** Have you recently felt constantly under strain?

| Option | Label |
|---|---|
| 1 | Not at all |
| 2 | No more than usual |
| 3 | Rather more than usual |
| 4 | Much more than usual |

### GHQ: problem overcoming difficulties

**Type** choice

**Text** Have you recently felt you couldn't overcome your difficulties?

| Option | Label |
|---|---|
| 3 | Rather more than usual |
| 1 | Not at all |
| 2 | No more than usual |
| 4 | Much more than usual |

### GHQ: enjoy day-to-day activities

**Type** choice

**Text** Have you recently been able to enjoy your normal day-to-day activities?

| Option | Label |
|---|---|
| 1 | More so than usual |
| 2 | Same as usual |
| 3 | Less so than usual |
| 4 | Much less than usual |

### GHQ: ability to face problems

**Type** choice

**Text** Have you recently been able to face up to problems?

| Option | Label |
|---|---|
| 1 | More so than usual |
| 2 | Same as usual |
| 3 | Less able than usual |
| 4 | Much less able |

### GHQ: unhappy or depressed

**Type** choice

**Text** Have you recently been feeling unhappy or depressed?

| Option | Label |
|---|---|
| 1 | Not at all |
| 2 | No more than usual |
| 3 | Rather more than usual |
| 4 | Much more than usual |

### GHQ: losing confidence

**Type** choice

**Text** Have you recently been losing confidence in yourself?

| Option | Label |
|---|---|
| 1 | Not at all |
| 2 | No more than usual |
| 3 | Rather more than usual |
| 4 | Much more than usual |

GHQ: believe worthless

**Type** choice

**Text** Have you recently been thinking of yourself as a worthless person?

| Option | Label |
|---|---|
| 1 | Not at all |
| 2 | No more than usual |
| 3 | Rather more than usual |
| 4 | Much more than usual |

GHQ: general happiness

**Type** choice

**Text** Have you recently been feeling reasonably happy, all things considered?

| Option | Label |
|---|---|
| 1 | More so than usual |
| 2 | About the same as usual |
| 3 | Less so than usual |
| 4 | Much less than usual |

## Loneliness

Self-Completion Loneliness Module

Questions 4

How often feels left out

**Type** choice

**Text** How often do you feel left out?

| Option | Label |
|---|---|
| 1 | Hardly ever or never |
| 2 | Some of the time |
| 3 | Often |

How often feels lack of companionship

**Type** choice

**Text** How often do you feel you lack companionship?

| Option | Label |
|---|---|
| 1 | Hardly ever or never |
| 2 | Some of the time |
| 3 | Often |

How often feels isolated from others

**Type** choice

**Text** How often do you feel isolated from others?

| Option | Label |
|---|---|
| 1 | Hardly ever or never |
| 2 | Some of the time |
| 3 | Often |

How often feels lonely

**Type** choice

**Text** How often do you feel lonely?

| Option | Label |
|---|---|
| 1 | Hardly ever or never |
| 2 | Some of the time |
| 3 | Often |

**Short Version of the Warwick -Edinburgh Mental Wellbeing Scale (SWEMWBS)**

Self Completion Adult WEMWBS module

Questions 7

### Feeling optimistic about the future

**Type** choice

**Text** Here are some statements about feelings and thoughts. Please select the answer that best describes your experience of each over the last **2 weeks**. I've been feeling optimistic about the future.

| Option | Label |
|---|---|
| 1 | None of the time |
| 2 | Rarely |
| 3 | Some of the time |
| 4 | Often |
| 5 | All of the time |

### Feeling useful

**Type** choice

**Text** I've been feeling useful.

| Option | Label |
|---|---|
| 1 | None of the time |
| 2 | Rarely |
| 3 | Some of the time |
| 4 | Often |
| 5 | All of the time |

### Feeling relaxed

**Type** choice

**Text** I've been feeling relaxed.

| Option | Label |
|---|---|
| 1 | None of the time |
| 2 | Rarely |
| 3 | Some of the time |
| 4 | Often |
| 5 | All of the time |

### Dealing with problems well

**Type** choice

**Text** I've been dealing with problems well.

| Option | Label |
|---|---|
| 1 | None of the time |
| 2 | Rarely |
| 3 | Some of the time |
| 4 | Often |
| 5 | All of the time |

### Thinking clearly

**Type** choice

**Text** I've been thinking clearly.

| Option | Label |
|---|---|
| 1 | None of the time |
| 2 | Rarely |
| 3 | Some of the time |
| 4 | Often |
| 5 | All of the time |

### Feeling close to others

**Type** choice

**Text** I've been feeling close to other people.

| Option | Label |
|---|---|
| 1 | None of the time |
| 2 | Rarely |
| 3 | Some of the time |
| 4 | Often |
| 5 | All of the time |

### Able to make up own mind

**Type** choice

**Text** I've been able to make up my own mind about things.

| Option | Label |
|---|---|
| 1 | None of the time |
| 2 | Rarely |
| 3 | Some of the time |
| 4 | Often |
| 5 | All of the time |

## Appendix H

Understanding Society Ethical Approval Statement and Ethical Approval Information

"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. Requesting consent for health record linkage was approved at Wave 1 by the National Research Ethics Service (NRES) Oxfordshire REC A (08/H0604/124), at BHPS Wave 18 by the NRES Royal Free Hospital & Medical School (08/H0720/60) and at Wave 4 by NRES Southampton REC A (11/SC/0274). Approval for asking consent for health record linkage and for the collection of blood and subsequent serology testing in the March 2021 wave of the COVID-19 study was obtained from London – City & East Research Ethics Committee (21/HRA/0644). Approval for the collection of biosocial data by trained nurses in Waves 2 and 3 of the main survey was obtained from the National Research Ethics Service (Understanding Society – UK Household Longitudinal Study: A Biosocial Component, Oxfordshire A REC, Reference: 10/H0604/2). The biosocial data collection at IP12 'Understanding Society Health Innovation Panel: Biomeasure and health data collection from the Innovation Panel of the UK Household Longitudinal Study' was approved by East of England – Essex Research Ethics Committee, Ref 19/EE/0146."- (ISER, 2024b; Understanding Society, n.d.a)

**"Main survey: Ethics approval was received from the University of Essex Ethics Committee**

- By letter dated 6 July 2007 for Waves 1 and 2
- By letter dated 17 December 2010 for Waves 3 to 5
- By letter dated 20 August 2013 for Waves 6 to 8
- By letter dated 4 October 2016 for Waves 9-11
- Ethics Approval number ETH1920-0123 for Wave 12
- Ethics Approval number ETH2021-0015 for Wave 13
- Ethics Approval number ETH2122-0246 for Wave 14
- Ethics Approval number ETH2223-0264 for Wave 15
- Ethics approval number 22/EE/0260 was received from the NHS Research Ethics Committee for Wave 16" – (ISER, 2024b)

# Appendix I

Understanding Society Household and Individual Interview Introduction Wave Eight

## Inthhold. *Intro household interview*



| Don't Know | Refused | Inapplicable | Missing |
|---|---|---|---|
| -1 | -2 | -8 | -9 |

**Source**
UKHLS

**Text**
This interview is completely voluntary, if we should come to any question that you don't want to answer, just let me know and we'll go on to the next question.

**Options**

| | |
|---|---|
| 1 | Continue |

## Intro. *Individual interview intro*

| Don't Know | Refused | Inapplicable | Missing |
|---|---|---|---|
| -1 | -2 | -8 | -9 |

**Text**
This interview is completely voluntary, if we should come to any question that you don't want to answer, just let me know and we'll go onto the next question.

**Options**

| | |
|---|---|
| 1 | Continue |

**Mixed Mode Alternatives**
**Web Interview**

**Text**
This interview is completely voluntary, if there is any question that you don't want to answer, just press the next button (>>) to go onto the next question.

**Appendix J**

Total Sample Correlations For Each Dataset

*Correlations For All Independent, Dependent and Covariate Variables in the Age 11 and 18 Sample*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 1 | .73*** | .07^ | .09* | .05 | .04 | .03 | .02 | -.06 | .09* | -.05 | -.08* |
| 2. | | 1 | .09* | .09* | .02 | .01 | .002 | .03 | -.05 | .10** | -.02 | -.10** |
| 3. | | | 1 | .84*** | .54*** | -.58*** | -.05 | .07 | -.01 | .03 | -.06 | .08* |
| 4. | | | | 1 | .59*** | -.60*** | -.06 | .08^ | -.02 | .08^ | -.08^ | .15*** |
| 5. | | | | | 1 | -.72*** | -.04 | .07* | -.04 | .04 | -.02 | .21*** |
| 6. | | | | | | 1 | .01 | -.02 | .002 | -.08 | .04 | -.17** |
| 7. | | | | | | | 1 | -.20*** | .18*** | -.02 | .16*** | -.04 |
| 8. | | | | | | | | 1 | -.45*** | -.20*** | -.13** | -.04 |
| 9. | | | | | | | | | 1 | .10** | .23*** | .05 |
| 10. | | | | | | | | | | 1 | .04 | .02 |
| 11. | | | | | | | | | | | 1 | -.01 |
| 12. | | | | | | | | | | | | 1 |

*Note*. 1 = Sibling Victimisation age 11. 2 = Sibling Perpetration age 11. 3 = TILS. 4 = Loneliness Item. 5 = GHQ 12. 6 = SWEMWBS. 7 = Number of Siblings (Dummy Coded as 0 = Only One Sibling, 1 = Two or More Siblings). 8 = Equivalised Monthly Household Income divided by 100. 9 = Poverty Status (Dummy Coded as 0 = Not In Poverty, 1 = In Poverty). 10 = Lone Parents (Dummy Coded as 0 = Not Lone Parent, 1 = Lone Parent). 11 = Ethnicity (Dummy Coded as 0 = White, 1 = Ethnic Minority). 12 = Gender (Dummy Coded as 0 = Male, 1 = Female Higher Scores = Higher Victimisation/Perpetration/ Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS) Respectively. *$p < .05$, **$p < .01$, ***$p < .001$, ^$p < .10$.

*Correlations For All Independent, Dependent and Covariate Variables in the Age 11 and 20 Sample*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 1 | .76*** | .07 | .12* | .13** | -.09 | .03 | -.01 | -.06 | .11* | -.04 | -.06 |
| 2. | | 1 | .08^ | .15*** | .13** | -.09 | .01 | -.002 | -.04 | .15*** | -.02 | -.08^ |
| 3. | | | 1 | .75*** | .56*** | -.41*** | .02 | .03 | .05 | -.02 | -.05 | .11* |
| 4. | | | | 1 | .54*** | -.46*** | -.01 | .01 | .04 | -.03 | -.05 | .08^ |
| 5. | | | | | 1 | -.67*** | .04 | -.04 | .03 | .01 | .05 | .13** |
| 6. | | | | | | 1 | -.07 | .20* | -.09 | -.02 | .15^ | -.09 |
| 7. | | | | | | | 1 | -.21*** | .15*** | .01 | .21*** | -.06 |
| 8. | | | | | | | | 1 | -.41*** | -.20*** | -.13** | -.09* |
| 9. | | | | | | | | | 1 | .11* | .20*** | .08^ |
| 10. | | | | | | | | | | 1 | .05 | .04 |
| 11. | | | | | | | | | | | 1 | .02 |
| 12. | | | | | | | | | | | | 1 |

*Note*. 1 = Sibling Victimisation age 11. 2 = Sibling Perpetration age 11. 3 = TILS. 4 = Loneliness Item. 5 = GHQ 12. 6 = SWEMWBS. 7 = Number of Siblings (Dummy Coded as 0 = Only One Sibling, 1 = Two or More Siblings). 8 = Equivalised Monthly Household Income divided by 100. 9 = Poverty Status (Dummy Coded as 0 = Not In Poverty, 1 = In Poverty). 10 = Lone Parents (Dummy Coded as 0 = Not Lone Parent, 1 = Lone Parent). 11 = Ethnicity (Dummy Coded as 0 = White, 1 = Ethnic Minority). 12 = Gender (Dummy Coded as 0 = Male, 1 = Female). Higher Scores = Higher Victimisation/Perpetration/ Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS) Respectively. *$p < .05$, **$p < .01$, ***$p < .001$, ^$p < .10$.

*Correlations For All Independent, Dependent and Covariate Variables in the Age 11, 13 and 18 Subsample*

| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 1 | .80*** | .09^ | .11* | .10* | -.09 | .003 | .01 | -.04 | .14*** | -.04 | < .001 |
| 2. | | 1 | .07 | .07 | .04 | -.05 | .01 | .03 | -.04 | .12** | .01 | -.05 |
| 3. | | | 1 | .84*** | .53*** | -.53*** | -.07 | .05 | -.03 | .05 | -.08 | .12* |
| 4. | | | | 1 | .57*** | -.55*** | -.08^ | .06 | -.06 | .07 | -.08^ | .20*** |
| 5. | | | | | 1 | -.71*** | -.06 | .07^ | -.07 | .03 | -.05 | .25*** |
| 6. | | | | | | 1 | .02 | .01 | .03 | -.03 | .06 | -.21** |
| 7. | | | | | | | 1 | -.20*** | .16*** | -.04 | .21*** | -.04 |
| 8. | | | | | | | | 1 | -.43*** | -.18*** | -.12** | -.03 |
| 9. | | | | | | | | | 1 | .07 | .23*** | .002 |
| 10. | | | | | | | | | | 1 | .03 | -.003 |
| 11. | | | | | | | | | | | 1 | -.01 |
| 12. | | | | | | | | | | | | 1 |

*Note*. 1 = Sum Sibling Victimisation ages 11 and 13. 2 = Sum Sibling Perpetration ages 11 and 13. 3 = TILS. 4 = Loneliness Item. 5 = GHQ 12. 6 = SWEMWBS. 7 = Number of Siblings (Dummy Coded as 0 = Only One Sibling, 1 = Two or More Siblings). 8 = Equivalised Monthly Household Income divided by 100. 9 = Poverty Status (Dummy Coded as 0 = Not In Poverty, 1 = In Poverty). 10 = Lone Parents (Dummy Coded as 0 = Not Lone Parent, 1 = Lone Parent). 11 = Ethnicity (Dummy Coded as 0 = White, 1 = Ethnic Minority). 12 = Gender (Dummy Coded as 0 = Male, 1 = Female). Higher Scores = Higher Victimisation/Perpetration/ Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS) Respectively. *$p < .05$, **$p < .01$, ***$p < .001$. ^$p < .10$.

*Correlations For All Independent, Dependent and Covariate Variables in the Age 11, 13 and 20 Subsample*

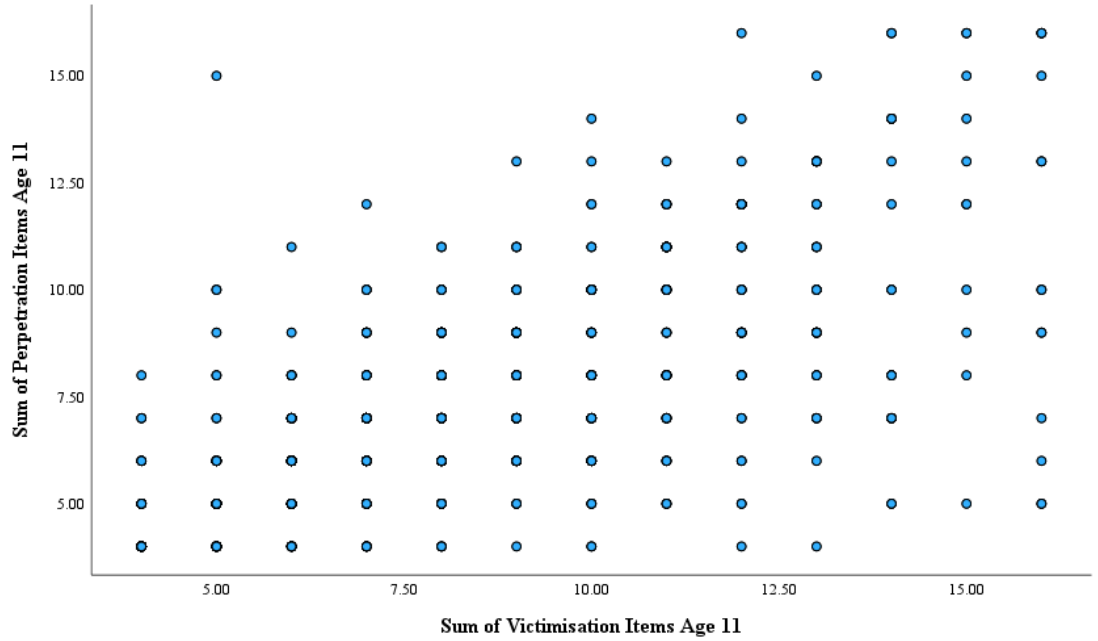
| | 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | 11. | 12. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | 1 | .82*** | .18** | .20*** | .17** | -.06 | .05 | -.03 | -.003 | .17*** | -.02 | .001 |
| 2. | | 1 | .10^ | .14* | .12* | -.02 | .03 | .01 | -.01 | .15** | .02 | -.05 |
| 3. | | | 1 | .75*** | .54*** | -.33*** | -.02 | .05 | -.01 | -.01 | -.02 | .08 |
| 4. | | | | 1 | .55*** | -.45*** | -.02 | .01 | -.01 | -.002 | -.03 | .08 |
| 5. | | | | | 1 | -.65*** | .01 | -.05 | -.003 | -.02 | .003 | .15** |
| 6. | | | | | | 1 | -.05 | .22* | -.09 | -.01 | .16^ | -.06 |
| 7. | | | | | | | 1 | -.22*** | .12* | -.01 | .21*** | -.04 |
| 8. | | | | | | | | 1 | -.37*** | -.19*** | -.10^ | -.05 |
| 9. | | | | | | | | | 1 | .09^ | .17*** | .02 |
| 10. | | | | | | | | | | 1 | .02 | .01 |
| 11. | | | | | | | | | | | 1 | .001 |
| 12. | | | | | | | | | | | | 1 |

*Note*. 1 = Sum Sibling Victimisation Ages 11 and 13. 2 = Sum Sibling Perpetration Ages 11 and 13. 3 = TILS. 4 = Loneliness Item. 5 = GHQ 12. 6 = SWEMWBS. 7 = Number of Siblings (Dummy Coded as 0 = Only One Sibling, 1 = Two or More Siblings). 8 = Equivalised Monthly Household Income divided by 100. 9 = Poverty Status (Dummy Coded as 0 = Not In Poverty, 1 = In Poverty). 10 = Lone Parents (Dummy Coded as 0 = Not Lone Parent, 1 = Lone Parent). 11 = Ethnicity (Dummy Coded as 0 = White, 1 = Ethnic Minority). 12 = Gender (Dummy Coded as 0 = Male, 1 = Female). Higher Scores = Higher Victimisation/Perpetration/ Loneliness (TILS, Lonely Item)/Psychological Distress (GHQ-12)/Mental Wellbeing (SWEMWBS) Respectively. *$p < .05$, **$p < .01$, ***$p < .001$, ^$p < .10$.

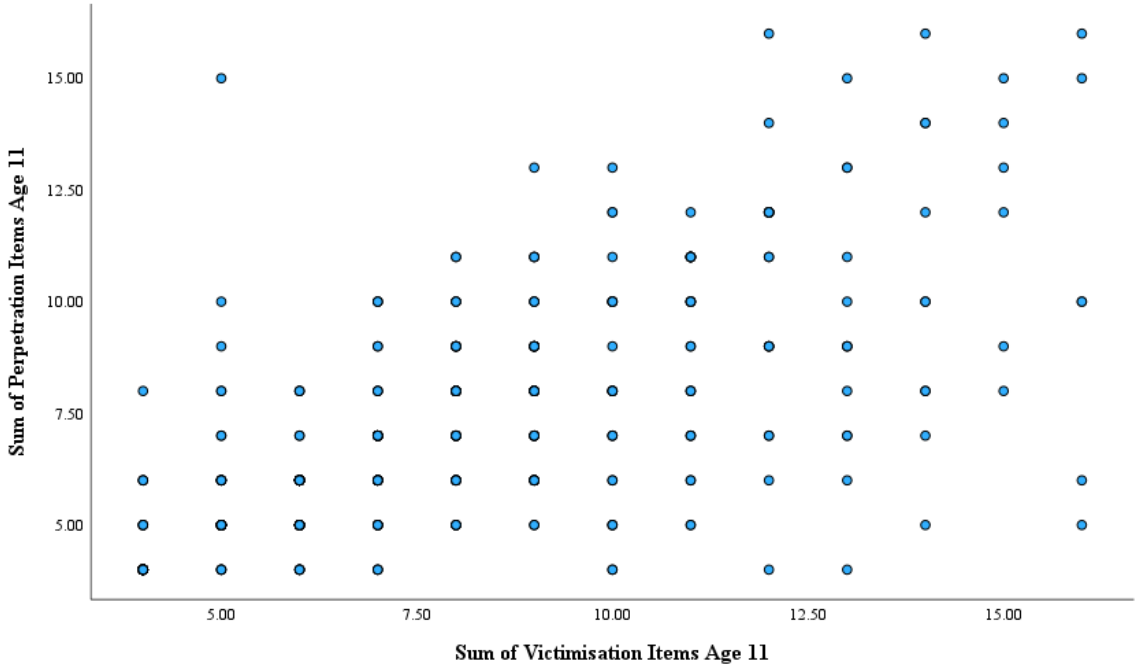
# Appendix K

Sibling Victimisation and Sibling Perpetration Scale Scatterplots Age 11 and 18 Sample

*A Scatterplot of Sibling Victimisation and Sibling Perpetration Scale Scores for the Age 11 and 18 Sample*




*A Scatterplot of Sibling Victimisation and Sibling Perpetration Scale Scores for Males in the Age 11 and 18 Sample*



*A Scatterplot of Sibling Victimisation and Sibling Perpetration Scale Scores for Females in the Age 11 and 18 Sample*