

Cognitive Factors in Adjustment after Social Trauma



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Thesis submitted for the Degree of Doctor of Philosophy

Trinity Term 2022

Abstract

This project uses mixed methods to investigate cognitive and behavioural factors associated with social anxiety disorder (SAD) and posttraumatic stress disorder (PTSD) symptoms among young people who have been bullied. The aim is to explore the social trauma of bullying, investigate factors that increase vulnerability to ongoing emotional distress, and develop bespoke measures that are clinically useful and statistically robust.

Following a general introduction in Chapter 1, this thesis is structured into two main sections. In the first section, I present four studies exploring and evaluating factors associated with adjustment after bullying. In Chapter 2, longitudinal analysis of a large prospective cohort study shows that children who were severely bullied and have an external locus of control are more likely to experience a steeper increase in social fear during early adolescence compared to those with an internal locus of control. The following chapters describe development and validation of measures of bullying-related cognitions and coping strategies associated with PTSD and social anxiety among young adults. Chapter 3 reports pilot data on cognitive themes related to bullying that are associated with SAD and PTSD symptoms and suggests the online survey format is acceptable. In Chapter 4, qualitative analyses of semi-structured interviews with young adults about their experiences of bullying and their past and ongoing reactions suggest additional themes that may be associated with higher ongoing symptoms. Chapter 5, the last in this section, draws these findings together and describes statistical evaluation of new measures of cognitions and behaviours related to bullying which were derived from the previous studies. Data is from an online survey study with over a thousand young people starting university or college in the UK. The newly developed measures were reliable and valid, defined as the Bullied Cognitions Inventory, Bullied Social Attitudes Inventory, and the Bullied Social Behaviours Scale. In the second section, associations of the new cognitive and behavioural measures with SAD and PTSD are tested. Chapter 6 reports the extent to which these measures distinguish between SAD, PTSD, or no likely clinical diagnosis in the online survey data. Participants in this study were invited to complete three additional surveys during their first year of university and, in Chapter 7, longitudinal analyses are reported that explore changes in PTSD and SAD symptoms and the extent to which the new measures can predict differing outcomes.

Together, these studies highlight the social trauma of bullying and identify cognitive and behavioural factors associated with SAD and PTSD symptoms among young adults who have been bullied. Psychometrically validated scales suggest themes that distinguish between symptoms as well as transdiagnostic features. Results and limitations are discussed, as well as suggestions for clinical application and future research.

Acknowledgements

Above all, I am grateful to the young people who took the time and emotional energy to share their stories with me and make this research possible. Thank you.

I would like to thank my supervisors Profs Anke Ehlers and Lucy Bowes for being formidable women role models. I have learned a huge amount and it is a privilege to work with you. I am also grateful for wise clinical supervision and insights over the years from the excellent Drs Jennifer Wild, Hannah Murray, Emma Warnock-Parkes, and Alice Kerr.

Huge thanks to my OxCADAT lab mates, Gaby Tyson, Laurence Yu, and Drs Kirsten Smith, Graham Thew, Hjordis Lorenz, Milan Wiedemann, Lizzie Woodward, Juliane Sachschal, Urška Košir, Esther Beierl, and Aimee McKinnon. How lucky I am to have been able to learn from you, laugh with you, and share the ups and downs of life in the office(s), online, and on our many adventures elsewhere.

Thank you to Jake, my forever-tech support and partner in all the tiniest details and the biggest decisions. And Elsa and Eli, our brilliant and chaotic little loves.

With gratitude also to Wadham College for creating a stunning backdrop to my time in Oxford, and the Wellcome Trust and Returning Carers Fund for supporting me and my work through parental leaves, a pandemic, and new motherhood.

And now, Forward.

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Introduction

In this thesis, I explore cognitive and behavioural factors associated with ongoing emotional distress after bullying experiences, understanding bullying as a socially traumatic experience, and using the framework of cognitive models of posttraumatic stress disorder (PTSD) and social anxiety disorder (SAD). First, I will introduce the prevalence of bullying and its consequences, and issues around definitions and measurement. Next, I will summarise the phenomenology of PTSD and SAD, as well as co-occurrence, evidence for their development following bullying experiences, and issues around conceptualising bullying as traumatic. I will describe cognitive models of PTSD and SAD and review maintaining factors. Then, I will discuss the potential benefits of bespoke bullying-related measures of cognitions and behaviours for treatments. Finally, I will give an overview of the chapters to follow.

1.1.1 Prevalence and consequences of bullying

Bullying is a pervasive form of interpersonal aggression, particularly among children and adolescents. International surveys suggest that up to 45% of children are exposed to bullying at some stage (Craig et al., 2009; Skrzypiec et al., 2018) although estimates of prevalence vary widely between countries (Cosma et al., 2020) and depend on several factors including the definition of bullying used, reporting method, and age of individuals. One survey found rates of 8.7-14.4% for frequent bullying and 26.8-38.1% for occasional bullying over a 10-year period in England (Chester et al.,

2015). In recent years, and particularly throughout the COVID-19 pandemic, internet use has increased across professional and personal domains for all age groups, and the online environment has evolved as a location for bullying. Perhaps unsurprising, given the increasingly blurry line between life on- and offline, studies demonstrate that cyberbullying is highly correlated with traditional bullying (Salmivalli et al., 2013). A large meta-analysis reported a mean prevalence rate of 35% for traditional bullying among adolescents and found that approximately 15% were involved with cyberbullying over the past 30 days (Modecki et al., 2014). A more recent review noted rapidly increasing prevalence rates of cyberbullying globally and included far higher estimates ranging from 14.0-57.5% (Zhu et al., 2021).

Bullying was historically dismissed as a normative component of growing up and investigation of potentially harmful effects among children and adolescents only really started to progress in Scandinavia in the 1970's (Olweus, 1978). In the decades since, awareness has grown of broad and long-lasting negative consequences for many people exposed to bullying and researchers have begun to explore in more depth the experiences of bullying victims as they transition out of school and into adulthood (Arseneault, 2018; Wolke & Lereya, 2015). Indeed, research into long-term effects of bullying in children and adolescents has uncovered a long list of related negative outcomes including poorer academic attainment, physical health risks, relationship difficulties, delinquent behaviour and violence, lower employment, and poorer mental health (Holt et al., 2014; McDougall & Vaillancourt, 2015; Schafer et al., 2004; Sigurdson, Wallander, & Sund, 2014; Wolke, Copeland, Angold, & Costello, 2013; Wolke & Lereya, 2015) as well as higher risk of being bullied as an adult (Andersen, Labriola, Andersen, Lund, & Hansen, 2015). An association between bullying and elevated long-term anxiety is evident from prospective studies

(Copeland, Wolke, Angold, & Costello, 2013; Gladstone, Parker, & Malhi, 2006; Sourander et al., 2007; Stapinski et al., 2014) and retrospective studies (Gladstone et al., 2006). The contribution of pre-existing vulnerabilities remains unclear (Singham et al., 2017). While not directly the focus of this thesis, bullying is also known to be associated with increased psychosocial problems (Bender & Losel, 2011; Takizawa et al., 2014; Wolke et al., 2013), and mental health problems including depression (see e.g., Klomek et al., 2008; Ttofi et al., 2011) and psychosis (see e.g., Fisher et al., 2013).

Bullying is of course experienced and reported within a social and political context, and it is possible that cultural shifts in awareness of bullying impact prevalence as well as retrospective reports and acknowledgment of psychological impact. For example, the #MeToo movement (metoomvmt.org) that grew rapidly from a social media campaign in 2006 highlighted the prevalence of sexual harassment and encouraged broader societal condemnation of abusive behaviours. In addition, many charitable organisations across the UK and globally are increasingly driving anti-bullying messaging in schools and online, endorsed by celebrities and supported by national guidelines (Department for Education, 2017). However, rates of traditional bullying have remained mostly constant over time (Cosma et al., 2020; Rigby & Smith, 2011) and these behaviours continue in public life, in many social contexts and across the lifespan.

Defining bullying

Among the many definitions of bullying (Smith, Cowie, Olafsson, & Liefvooghe, 2002) there is increasing consensus about what it does (and does not) mean. In pioneering work on bullying identification and prevention in Swedish schools, Dan Olweus (1978, 1993) coined the term *mobbing* which was defined as an

individual or group harassing, teasing, or pestering another. Since then, language and conceptualisations have evolved to include different behaviours and contexts, particularly online (e.g., trolling). Bullying is now commonly understood to include behaviours that are *overt* (e.g., name calling, making sexual comments or gestures at someone, or hitting, shoving, physically aggressing) or *relational* (e.g., excluding somebody from a social group, ignoring them, gossiping behind their backs). The task of defining bullying experiences is complicated by the fact that these events are not only diverse but also constantly evolving, situated within cultural norms and expectations that shift perceptions of what types of events qualify. Any definition must be narrow enough to establish boundaries, as well as broad enough to adapt to changing contexts. For example, online contexts have evolved with new technology, shifting from email on a desktop computer, to mobile internet use, to handheld devices and multiple and constantly evolving online platforms including Twitter, snapchat, Instagram, etc. Therefore, clarity is needed.

Over years of related research internationally, a framework has been developed for defining bullying behaviour that includes three components that distinguish it from conflict or other aggressive acts: intentionality, frequency, and power differential. Intentionality implies that the behaviour is deliberately hurtful. Frequency distinguishes bullying from one-off attacks. The presence of a power differential is thought to set bullying apart from disagreements, teasing between friends, playful fighting, or general hostility between individuals or groups. In fact, power imbalance may be of particular interest when evaluating appraisals of bullying experiences and their impact on mental health. There is evidence indicating that power imbalance exacerbates adjustment problems associated with victimisation (Malecki et al., 2014). Furthermore, the presence of a power imbalance between the

perpetrator and the target echoes interpersonal trauma and abuse (such as physical or sexual assault) that is characterised by the presence of a power differential and can precede stressor related disorders including PTSD. Therefore, evaluating the relationship between perceived power differential during bullying experiences and later psychopathology is potentially clinically important as it may explain some of the variance in later PTSD symptoms among people who have been bullied. These issues will be described in more detail below.

Measuring bullying

Given the complexity of the definition of the term, it is not surprising that measurement is difficult and inconsistent. A review of bullying measurement among young people aged 12 to 20 (Vivolo-Kantor et al., 2014) identified 41 separate measurement strategies across the literature including differing timeframes and locations, of which 31.7% used the word *bullying* and 26.8% included a definition of bullying. Measurement of bullying is complicated as it is by its nature subjective, culturally embedded, and varies according to developmental stage (Felix et al., 2011; Furlong et al., 2010). Events that are experienced as socially traumatic may differ for children compared with adolescents and adults, and the contexts in which these events occur is constantly evolving, most notably online. Variability in measurement of bullying includes single- versus multi-item assessment, real-time versus retrospective report, and assessment of perceived severity of experiences. In addition, measures vary on whether they include assessment of intentionality, repetitiveness, and power imbalance.

Single-item measures tend to provide a definition of bullying and may include a simple yes/no question of whether it has happened (Hamburger, 2011; Swearer & Cary, 2003) or ask for frequency of involvement to allow for a minimum inclusion

threshold and potentially avoid overreporting of single events (Solberg & Olweus, 2003). Using a single response to dichotomise between bullied or not bullied is pragmatic for estimating prevalence but lacks potentially useful information about types, contexts, and severity (Felix et al., 2011). There is debate over whether providing a definition of bullying is appropriate (Solberg & Olweus, 2003). Ybarra (2012) found that including the word *bullying* with a definition of what it means produced least misclassification. It is possible that asking participants to endorse whether they have been bullied without providing a definition provides a more ecologically valid assessment that captures the extent to which individuals perceive themselves as having been involved in bullying, but it may also miss those who (despite objectively fulfilling the criteria) do not consider themselves to be victims of bullying. These approaches invite different interpretations of their findings. An alternative approach is to provide participants with an inventory of bullying behaviours so that they are prompted to consider their experience of specific types of events, rather than define themselves within a category of having been bullied or not. Although no list is exhaustive, this provides more information about what happened and allows for inference of number of types and severity. As suggested by Shaw et al. (2013) there is no inevitable downside to including both a global binary question and a multi-item scale.

Reassuringly, while validity of retrospective reports is potentially of concern, research has demonstrated accuracy and stability of recollections of peer victimisation in adulthood (Olweus, 1993; Rivers, 2006). Retrospective assessment is also routinely utilised in existing measures of trauma history (e.g., The Impact of Event Scale, Weiss & Marmar, 1997). Retrospective measurement has been shown to be more reliable when assessing specific behaviours rather than broad categories (Hardt &

Rutter, 2004). Severity of bullying is subjective, assessed as perceived by the victim, and thus difficult to standardise (Chen & Huang, 2015). Of note, peer, teacher, or parent nominations are not suitable retrospectively, and are limited by others' perspectives and perceptions. For young adults reporting experiences that may have taken place years earlier, contacting additional informants is impractical.

In this thesis, multiple bullying behaviours are considered possible sources of social trauma, including behaviours taking place in person or online. As will be described later, studies in this thesis used a version of the California Bullying Victimization Scale that was originally developed with school children and adolescents (Felix et al., 2011) and then revised with students entering university for use with young adults (CBVS-R; J. Green et al., 2018). It includes retrospective self-report of specific physical and relational bullying experiences, namely teasing, rumour spreading, social exclusion, hitting, threatening, sexual jokes or gestures, stealing, and online aggression, which allows the number of types of experiences to be measured. It also assesses the extent to which the three components of bullying behaviour are present: intentionality, frequency, and power imbalance. Participants are asked to report whether they have experienced each type of event "in a mean or hurtful way" to infer intentionality. Frequency is rated for each type of experience. In a review of bullying prevalence, a frequency of 2/3 times per month at its worst was deemed a reasonable threshold associated with markedly different between-group characteristics (Solberg & Olweus, 2003) and also implies that the experiences were repeated. Studies in this thesis include young adults' lifetime experiences of bullying, defined by frequency (at least one type of bullying 2/3 times per month or more) and range (five or more types). The perceived existence of a power imbalance was measured but conceptualised as an additional cognitive variable rather than an

inclusion criterion, so that its contribution as a potential cognitive predictor of psychological adjustment could be investigated.

Better understanding the mechanisms linking victimisation with subsequent adjustment involves probing potentially relevant characteristics of the experiences and individual responses (Salmivalli, 2018). Despite the increasingly well-documented detrimental consequences of bullying, not all people who have been bullied suffer long term consequences. Identifying factors that increase risk of specific types of psychopathologies may suggest targets for prevention and intervention efforts. Studies in this thesis refer mainly to young adults, aged 18 to 29. This age frame was chosen as it includes adults but is proximal to childhood and adolescence when bullying experiences most commonly occur and includes a relatively uniform cohort compared with including participants from across the lifespan. Also of note, memories of negative social experiences early in life are rated by adult patients with social anxiety disorder as most intrusive, frequent, and distressing (Hackmann et al., 2000) and onset of psychiatric disorders and risk for ongoing difficulties in social, educational, employment, health domains is high during this period (Henin & Berman, 2016). This age range, between age 18 and mid-to-late twenties has been identified in the literature by multiple qualifiers of adulthood (early, emerging, young) and is broadly distinguished from extended adolescence (Arnett et al., 2014) and later adulthood. In this thesis, I will investigate cognitive and behavioural factors associated with bullying and two main outcomes, namely posttraumatic stress disorder (PTSD) and social anxiety disorder (SAD). Of note, there has been relatively little focus within bullying research on the potentially traumatic nature of the experiences and how this impacts maintenance of related psychological difficulties. This is where the focus of

this chapter will now shift, first describing the phenomenology of each disorder and then their associations with bullying.

1.1.2 PTSD and Social Anxiety Disorder (SAD)

PTSD

Posttraumatic stress disorder (PTSD) can develop after a traumatic experience, and diagnostic criteria defined by DSM-5 and ICD-11 (American Psychiatric Association, 2013; World Health Organisation, 2019) state that symptoms of PTSD include distressing intrusive memories of the traumatic experience (DSM-5 and ICD-11), avoidance of external reminders of the trauma and/or trauma-related thoughts and feelings (DSM-5 and ICD-11), negative alterations in cognitions and mood including overly negative thoughts about oneself and the world, exaggerated blame, feelings of isolation and/or decreased interest in activities (DSM-5), and alterations in arousal and reactivity including irritability, hypervigilance, risky behaviour, and/or difficulty concentrating and sleeping (DSM-5 and ICD-11). These types of symptoms are very common in the direct aftermath of a traumatic event but are classified as clinically meaningful if they persist beyond one month duration and are distressing and interfere with daily life (DSM-5 and ICD-11). In the DSM-5 criteria for PTSD, Criterion A refers to the traumatic stressor which is a necessary precondition for diagnosis. This means that the individual is exposed to actual or threatened death, serious injury, or sexual violence, either being involved directly, witnessing, or learning about a close friend or relative, or indirectly via hearing aversive details about the trauma (e.g., emergency workers). Similarly in ICD-11, exposure to an extremely threatening or horrific event or series of events is a diagnostic requirement for PTSD. This means that PTSD cannot be diagnosed in the absence of this type of event, although symptoms consistent with PTSD may be present.

SAD

Social anxiety disorder (SAD) is characterised by a marked and excessive fear or anxiety about one or more social situations in which the individual may feel judged by other people (American Psychiatric Association, 2013; World Health Organisation, 2019). This may include social interactions (e.g., conversations, meetings), being observed (e.g., eating, drinking, writing), or performing in front of other people (e.g., giving a speech). These situations are avoided or endured with intense fear or anxiety, which is disproportionate to the actual threat posed by the social situation or sociocultural context and persists for six months or more. It is a common and disabling anxiety disorder that usually starts in childhood or adolescence (Kessler et al., 2005) and rarely recovers spontaneously (Bruce et al., 2005).

PTSD and SAD co-occurrence

Social anxiety disorder and PTSD frequently co-occur (Collimore et al., 2010) and co-occurrence is associated with additional problems over and above each diagnosis alone, including decreased quality of life, greater suicidality (McMillan et al., 2017), and higher levels of anxiety and depression compared to individuals with either disorder alone (Zayfert et al., 2005). The estimated prevalence of SAD among people diagnosed with PTSD varies widely across studies, from 4 to 46% (Collimore et al., 2010) perhaps due to methodological differences including characteristics of the samples, changes in DSM criteria, and assessment tools. Though more rarely studied, estimated rates of PTSD among individuals with a primary diagnosis of SAD seem to hover around 7% (Zayfert et al., 2005) to 11% (Goisman et al., 1995). There is some evidence to suggest that people with SAD may be more likely to experience PTSD-like symptoms of reexperiencing, avoidance and hyperarousal in response to stressful

social events than non-anxious controls (Erwin et al., 2006). This will be discussed further below.

Bullying and PTSD

Previous studies conducted across different countries and contexts have demonstrated associations between bullying and PTSD symptoms in adolescents (Crosby et al., 2010; Guzzo et al., 2014; Idsoe et al., 2012; Mynard et al., 2000, 2000; Storch & Esposito, 2003) and adults (Idsoe et al., 2021; Nielsen et al., 2015). Moderate to large correlations ($r = .33 - .64$) were reported between bullying victimisation and PTSD symptoms among adolescent samples in the USA (Crosby et al., 2010; Storch & Esposito, 2003). A study with 331 adolescents in England (Mynard et al., 2000) found that 37% of those who had been bullied reported clinically significant PTSD symptoms, with higher symptoms associated with social manipulation type experiences and stronger belief in control lying with powerful others rather than internally. A similar pattern was reported in an Italian sample, where (compared with non-victims) bullying victimisation predicted slightly higher PTSD symptoms (Guzzo et al., 2014). Of note, Idsoe and colleagues (2021) suggested that bullying may also be associated with psychological reactions aligned with developmental trauma disorder and complex PTSD, such as problems with affect regulation, relationships, and distorted core beliefs, given its repetitive nature and common occurrence in childhood and adolescence.

Recent studies focus on the impact of childhood bullying on young adults, particularly students. History of bullying was associated with anxiety and PTSD among students in higher education (Manrique et al., 2020). Among sexual minority adults who self-identified as victims of homophobic bullying at school, just over a quarter continued to be distressed regularly by recollections of their experiences

(Rivers, 2006). In a sample of 400 university students in Greece (who also reported moderate levels of post-traumatic growth related to bullying) victims of school bullying reported mild levels of PTSD (Andreou et al., 2021). A case study of psychotherapy with a man who was bullied as a child (Miehls, 2017) describes how he perceived his brutal early experiences as traumatic and associated with ongoing “shame, anxiety and anger”. Studies investigating the impact of bullying that takes place in adulthood have also demonstrated a link with PTSD symptoms. In a study of healthcare workers, 44% who had experienced bullying in the past 2 years reported related PTSD symptoms, of which arousal was the most common cluster (Tehrani, 2004). In studies of workplace bullying, one found that up to 63% were experiencing PTSD symptoms, most commonly intrusive memories and avoidance (Matthiesen & Einarsen, 2004) and another study found even higher rates, though this was also associated with other traumatic life events (Mikkelsen & Einarsen, 2002). As such, there is a case for better understanding and addressing PTSD symptoms related to bullying and for further exploring the nature of bullying as potentially traumatic.

Bullying and SAD

Adults with social anxiety are particularly likely to report having been bullied or teased when they were younger (McCabe et al., 2003, 2010) and in a retrospective study with students, higher levels of recalled social exclusion and relational victimisation (but not teasing) predicted greater current social anxiety (Boulton, 2013). Increasing importance of peer relationships and changes in social dynamics during adolescence mean that negative experiences with peers may be particularly impactful during this time. Socially anxious adolescents have less positive experiences with peers compared to those who are less anxious (see Rubin et al., 2009) with evidence for bidirectional effects between peer victimisation and social

anxiety. While longitudinal studies have shown that adolescents with social anxiety are more likely to be victims of bullying (Acquah et al., 2016; Ranta et al., 2009) and cyberbullying (Juvonen & Gross, 2008; van den Eijnden et al., 2014), peer victimisation and particularly relational victimisation is also associated with later social anxiety (Siegel et al., 2009; Storch et al., 2005).

1.1.3 Is bullying traumatic?

There is longstanding debate regarding the definition and measurement of psychological trauma (Weathers & Keane, 2007) in relation to PTSD diagnosis (Brewin et al., 2009). Socially threatening experiences that do not involve threat to life do not fit the DSM-5 or ICD-11 criteria for trauma that is a prerequisite for developing stress related disorders including PTSD (American Psychiatric Association, 2013; World Health Organisation, 2019). However, they may be considered socially traumatic. Importantly, social trauma is differentiated from interpersonal trauma (e.g., Nishith et al., 2000) that includes “high-magnitude, high-impact” events such as sexual violence and physical assault. Socially traumatic events have been defined as extremely unpleasant social events during which the individual experiences intense anxiety and perceives ridicule or rejection by others (Wild & Clark, 2011). This goes beyond feeling that a social situation has gone poorly. Socially traumatic experiences occur in many environments (e.g., work meetings, performance events), but occur particularly frequently and repetitively in the context of bullying or victimisation by peers (Wild & Clark, 2011). Given the developmental context and repetitive nature of experiences, bullying is a particularly potent context for social trauma and can certainly be perceived as traumatic.

From an evolutionary perspective, humans are dependent on each other for fulfilling basic survival needs such as eating, mating, and staying safe and from this

perspective rejection from the group poses a threat to life that is as serious as a direct physical attack (Gilbert, 2002). Indeed, in a study comparing *Criterion A* traumatic events with negative social events (Carleton et al., 2011) one third rated the social event as most distressing, and those with both types of experiences had higher symptoms of both SAD and PTSD. Therefore, socially traumatic events can be perceived as extremely threatening (Idsoe et al., 2021), and can be understood as posing severe threat to the social self, with potential to produce distress comparable to events that are physically life-threatening.

Socially traumatic experiences are associated with the onset and maintenance of anxiety disorders including social anxiety (Hackmann et al., 2000; Norton & Abbott, 2017b; Pontillo et al., 2019). Indeed, for a large proportion of people with social anxiety disorder, their reaction to a socially traumatic experience may be pivotal in precipitating and maintaining the disorder (Bjornsson et al., 2020). Individuals with and without SAD were interviewed regarding their experiences of stressful social events (Erwin et al., 2006). Results demonstrated that such events were common (everyone with SAD, and 70% of those without SAD, had experienced a socially stressful event) and that more than a third of those with SAD, compared with none in the control group, met criteria for “PTSD-like” symptoms in connection to the stressful event, including similarly distressing and persistent intrusive thoughts and feelings. Related, Sansen and colleagues (Sansen et al., 2015) reported elevated skin conductance response to a personal narrative of a victimisation memory among individuals with SAD and high levels of victimisation experiences, again supporting possible psychological common ground between reactions to threats to physical and social self among clinical populations.

Bjornsson and colleagues (2020) explored experiences of social trauma among participants with SAD, Obsessive Compulsive Disorder (OCD) and no psychiatric diagnosis and although they found similar rates of social trauma across groups, they found that a third of the SAD group also suffered with PTSD symptoms related to their most significant social trauma. They also rated their worst experience as more severe. The authors suggest that the symptoms occur in response to the same severe social threat and reflect phenomenologically linked processes involving the same fundamental fear, thus suggesting the need for an integrated clinical perspective. Indeed, it is possible that individuals with SAD are more likely to interpret stressful social events as traumatic and respond with PTSD-like symptoms. Commonalities exist in the phenomenology of PTSD and SAD, in terms of avoidance of related stimuli (social interactions, relationships) and negative cognitions related to past experiences, the self and other people. In response to socially traumatic experiences, individuals may experience fear of negative evaluation (consistent with SAD), as well as distressing intrusive memories of the experience, physiological symptoms when reminded of it, feelings of detachment, restricted range of affect, and hyperarousal expressed as irritability, outbursts or difficulty concentrating (consistent with PTSD), and avoidance of social situations (consistent with both SAD and PTSD). Investigating related constructs may therefore be particularly important for a subgroup of people who experience social anxiety as well as PTSD symptoms in response to social trauma. It is possible this group may be best understood not as suffering with two distinct disorders but rather as experiencing a stress response to the social experience that involves an ongoing sense of social threat associated with intrusive memories, hypervigilance and avoidance related to their experience.

Recently, the gap in research and clinical practice between conceptualisations of bullying and interpersonal or social trauma have been recognised (e.g., Idsoe et al., 2021). The extent to which bullying is traumatic is debated (Idsoe et al., 2021; Nielsen et al., 2015) but some authors suggest it can be understood as a form of repetitive interpersonal trauma (Idsoe et al., 2012). Research has shown that relational victimisation can produce feelings of helplessness and fear (Storch & Esposito, 2003) and the immediate consequences of peer victimisation include symptoms consistent with PTSD (Mynard et al., 2000). Conceptualising social trauma alongside bullying is helpful for reconciling the literatures which have been historically distinct. Clinically, the urgency is clear given the mounting evidence of long-term negative mental health consequences related to bullying and the need to incorporate these experiences meaningfully into assessment and treatment practices.

1.1.4 Cognitive models of PTSD and Social Anxiety Disorder

Cognitive model of PTSD

Ehlers and Clark's cognitive model (2000) posits that PTSD symptoms persist due to an ongoing sense of current threat, which has two sources: 1. excessively negative appraisals about threat that is internal (i.e., threatening view of self) or external (i.e., threat from other people or the world) and, 2. features of trauma memories that lead to easy cue driven retrieval of parts of the traumatic experience without context, i.e., distressing intrusive memories of the event that feel as if they are happening again rather than being in the past or physiological symptoms from the trauma. The PTSD symptoms are maintained by unhelpful coping strategies, which are intended to reduce the perceived current threat, but maintain the problem. Examples are excessive precautions or *safety behaviours*, driven by overestimating the probability of a similar event happening again (e.g., "*Bad things always happen to*

me"); *rumination*, driven for example by negative interpretations of their own actions or lack thereof (e.g., "I should have been able to prevent the event", "I am inferior/weak/bad") or preoccupations with the injustice of the trauma (e.g., "The people who did this to me will get away with it"); *avoidance and memory suppression*, driven by negative interpretations of symptoms ("I am going crazy", "I will break down if I remember"); or *hypervigilance and social withdrawal*, driven by overgeneralised interpretations of others' actions or reactions (e.g., "People cannot be trusted"). Such coping strategies may be successful at reducing the perceived threat and the corresponding emotions and arousal in the short-term, but they also block opportunities for challenging negative appraisals and updating the worst moments of the experience with new information to give them a less threatening meaning. Ultimately, and consistent with neurobiological models that propose a lack of integration of trauma memories into the broader autobiographical context (Brewin et al., 2010), this prevents processing and contextualisation of the trauma memory.

Cognitive model of social anxiety disorder

Clark and Wells' (1995) cognitive model suggests that social anxiety symptoms persist due to overestimating social threat based on, 1. beliefs about unfavourable personal characteristics, and 2. negative expectations of others' reactions. These are maintained by unhelpful attempts to manage the threat, which maintain the problem. The model suggests that people with SAD are deeply concerned to make a good impression on other people but believe that they are unable to come across well. They may have distorted, negative images or impressions of how they fear they will come across to other people and expectations of negative evaluation and criticism. These negative images or impressions are often linked in meaning and content to previous embarrassing or humiliating experiences in social

situations and are triggered in new social situations which are also perceived as threatening. Of note, underlying beliefs about social threat also cause the dangerousness of otherwise non-threatening situations to be overestimated. As such, previous experiences can inform assumptions about new social situations, creating social attitudes that extend beyond negative experiences into new and ostensibly neutral environments. Unconditional beliefs such as “*I am boring*”, are associated with high expectations such as “*I must always be funny and engaging*”, and related conditional beliefs such as “*If I am not witty all the time other people will think I am dull*”. As well as bullying experiences being a potential source of negative self-imagery, bullies may even repeatedly and explicitly confirm negative beliefs (e.g., telling the person directly that they are boring/ weird/ unacceptable) making these experiences particularly potent. In anxiety provoking social situations, internal processes broadly characterised as processing the self as a “*social object*” are activated, including shifting to an internal focus and using internal information to judge how they are coming across to other people. This internal focus prevents learning of new information that could contradict existing beliefs (e.g., people are smiling and are interested in what I am saying). Based on their assumptions of threat, individuals may also employ various safety behaviours including rehearsing what they will say to make a good impression, using excessive make-up to cover blushing, drinking before going out or avoidance to prevent the expected embarrassment, which successfully reduce distress in the short-term but prevent accurate recalibration of actual social threat level. In addition, post-event rumination maintains the appraisal that they behaved inadequately, and others judged them negatively. This can lock the person into a cycle of social anxiety even when actual threat from bullies is no longer present.

Maintenance factors for ongoing anxiety after experiences of bullying

As described, long-term anxiety associated with bullying can persist even after bullying has stopped, that is, in the absence of objective current threat. Cognitive theories about maintaining cycles of anxiety after stressful experiences (D. M. Clark, Wells, A., 1995; Ehlers & Clark, 2000) suggest that particular characteristics of memory, appraisals and coping strategies perpetuate problems, with a core feature of perceived ongoing threat. For individuals with PTSD, traumatic memories remain vivid and are easily triggered, have a strong sense of nowness, and are associated with intense negative emotions (Kleim, Graham, Bryant, & Ehlers, 2013). For individuals suffering with SAD, distressing memories of social trauma remain vivid (Hackmann et al., 2000) and highly emotionally reactive (Sansen, Iffland, & Neuner, 2015). Thus, memory characteristics may also contribute to anxiety after bullying. However, this thesis has a particular focus on the role of cognitions and coping behaviours.

Cognitions

Maladaptive appraisals contribute to anxiety and specific appraisals are characteristic of different disorders (D. M. Clark, 1999). In PTSD, appraisals commonly relate to the traumatic experience (e.g., *“Bad things always happen to me”*, *“Others can see that I am a victim”*) and its sequelae (e.g., *“I’ll never be able to relate to people again”*, *“I’m going mad”*). These maladaptive appraisals lead to a wide range of negative emotions (such as fear, anger, guilt, shame, disgust) and motivate unhelpful coping strategies (Ehlers & Clark, 2000) that prevent changes in appraisals, memory features and symptoms. Similarly, appraisals related to experiences of bullying including beliefs about self, others, and personal reactions may contribute to distress, avoidance, shame (Wu et al., 2021) and ongoing sense of threat including

misinterpretation of new social experiences as excessively threatening (Fox et al., 2022). Indeed, common negative appraisals associated with social anxiety disorder are connected in meaning to past experiences of humiliation or rejection (Wild, Hackmann, & Clark, 2007) and relate to performance in current social situations (e.g., “*I always say the wrong thing*”, “*I am boring*”).

A recent systematic review of social cognitions among children who were victims of bullying (Kellij et al., 2022) suggested that victims of bullying tended to have a negative cognitive style regarding social interactions, including overestimation of threat in terms of heightened attention to negative social cues, and interpreting social situations and others’ intentions as more negative, hostile, or dangerous. They also found that victimisation was related to higher sensitivity to rejection. The authors suggest that this might create a risk for negative spirals, such that negative interpretations adversely affect future social experiences. While this study did not make an explicit link to SAD, the authors suggestions are in line with the cognitive model of social anxiety disorder (Clark & Wells, 1995) where social situations are thought to activate negative underlying assumptions that lead to increased perceived social threat and a cycle of cognitions and safety behaviours that inadvertently interfere with the social situation itself. In children, self-beliefs following victimisation are associated with psychological adjustment (Troop-Gordon & Ladd, 2005) and may include beliefs of being less than peers (Carlisle & Rofes, 2007). Notably, there is evidence for a reciprocal relationship between negative self-perceptions and victimisation among children (Boulton et al., 2010).

Cognitive factors have also been investigated among adults who were bullied. A study with young adults (Kopala-Sibley et al., 2013) found that overt victimisation predicted self-hating self-criticism and relational victimisation predicted inadequacy

self-criticism. There is also a concern that peer victimisation may undermine the victims' self-worth and give rise to self-blame beliefs that they were responsible for poor treatment and may even have deserved it (Boulton, 2013) leading to increased social anxiety in adulthood. In a large study of young adults (age 19 – 37), shame around childhood bullying victimisation mediated its relationship with poorer adult psychosocial adjustment, broadly defined as including distress, functioning, and social support (Strøm et al., 2018).

Measures of cognitions are used as process measures in research and clinical practice for guiding sessions and tracking progress. For PTSD, the Posttraumatic Cognitions Inventory (PTCI; Foa et al., 1999) includes items that measure negative thoughts about the self, the world, and self-blame. Adapted versions exist including a 20-item scale drawn from a wider item pool (Kleim et al., 2013) containing four factors with meanings of “*Negative appraisals of self*”, “*self-blame*”, “*preoccupation with unfairness*”, and “*overgeneralised danger*”. In SAD treatment, the Social Attitudes Questionnaire (SAQ; D.M. Clark, 2005) measures problematic beliefs about social behaviour, social situations and patient's evaluations of their social self and items cluster within three factors, with meanings of, “*excessively high standards*”, “*conditional assumptions*”, and “*unconditional assumptions*”. However, these measures were not developed within a bullied sample and there may be additional cognitions that are relevant for maintaining the sense of ongoing threat that perpetuates SAD and PTSD symptoms related to bullying experiences specifically.

Coping behaviours

After experiences of bullying, anxiety may also be maintained by applying unhelpful coping strategies. These may relate to coping with memories of past bullying experiences or coping with new experiences of perceived social threat. For

example, an individual may ruminate about the bullying experience itself as well as subsequent experiences that are perceived as reminiscent of that experience (e.g., group social situations). Safety behaviours may develop that were intended to manage threat (and may have been adaptive when threat was real, e.g., avoiding disagreeing with bullies) but which are currently no longer appropriate and prevent learning to distinguish threatening and non-threatening situations, therefore maintaining anxiety. In a retrospective study with students aged 23 and above (Boulton, 2013) provided some initial evidence that use of positive coping strategies described as “*problem-focused*” and “*positive appraisal*” weakened the association between childhood victimisation and later social anxiety. In a study with undergraduate students (Newman et al., 2011), those who reported a history of peer victimisation tended to use more avoidant coping strategies, which were also associated with higher ongoing stress in university.

Process measures of coping behaviours are utilised in research and clinical practice for guiding sessions and tracking progress. For PTSD, the PTSD-Safety Behaviours Questionnaire (PTSD-SBQ; Dunmore et al., 2001) measures coping behaviours intended to manage symptoms related to experiences of trauma, and the Social Behaviour Questionnaire (SBQ; D.M. Clark, 2005) measures behaviours commonly associated with social anxiety disorder. Again, these measures were not developed in bullied samples and additional specific behaviours may be particularly relevant in this population.

1.1.5 Relevance for Treatment

Clinical guidance for psychological interventions with people who have been bullied tend to focus on children and adolescents (Byers et al., 2021) despite evidence of long-lasting impact into adulthood (see, e.g., Arseneault, 2018; Wolke & Lereya,

2015) including social anxiety and related PTSD symptoms. Cognitive therapy based on Clark and Wells' (1995) cognitive model of social anxiety disorder and Ehlers and Clark's (2000) cognitive model of PTSD are recommended as first line treatments in clinical guidelines (American Psychological Association, 2017; International Society of Traumatic Stress Studies, 2019; National Institute of Health and Clinical Excellence, 2013, 2018). Cognitive therapy guidance for social anxiety disorder (Warnock-Parkes et al., 2020) and PTSD (Wild et al., 2020) recommend using process measures repeatedly throughout treatment to monitor progress and plan sessions.

Specific techniques are utilised that use information from the process measures and ongoing discussion in therapy to target processes known to maintain difficulties. While clearly distinct, there are commonalities between the two treatments, including challenging unhelpful beliefs, dropping safety behaviours, reducing avoidance of social situations, increasing social connection, and addressing interpersonal difficulties. This thesis includes detailed exploration of specific cognitive and behavioural features associated with PTSD and SAD among people who have been bullied to create bespoke measures for tracking and guiding therapy. This has the potential to improve psychological treatment for victims of bullying.

1.1.6 Aims

Cognitive theories of PTSD and social anxiety disorder recognise that features of memories, appraisals, and coping strategies maintain ongoing difficulties, and these are targeted in therapy. Measures of cognitions and coping are used regularly within therapy to guide the work and track progress. Certain characteristics of these features may be particularly prominent among people who have been bullied and distinguish non-clinical, PTSD, and SAD groups of people with a history of bullying. The nature

of these characteristics is explored in this thesis, which describes the development and testing of bespoke measures of cognitions and coping strategies related to bullying. The aim is that these should be valid, reliable, and clinically useful.

1.1.7 Outline of studies

In this thesis, I will explore cognitive and coping factors associated with social anxiety and PTSD symptoms after bullying. After this introduction (Chapter 1), the thesis is structured in two parts which are described below. At the end, an overall discussion (Chapter 8) will bring results of all the studies together and describe overall conclusions, limitations, and clinical and research implications.

Part A. The first four studies use mixed methodologies to explore and evaluate cognitive and behavioural factors that may be associated with social anxiety and PTSD in young adults who have been bullied. First, I will present a longitudinal data analysis (Chapter 2) from a UK cohort study that began in the 1980's exploring cognitive factors that predict increasing social anxiety among children who have been bullied. Then, I present three chapters about development and validation of measures of cognitions and coping strategies associated with PTSD and social anxiety among young adults who were bullied. An online pilot survey (Chapter 3) investigates potentially relevant cognitive and behavioural factors in a small sample of young adults. Next, a qualitative analysis (Chapter 4) of semi-structured interviews with a subset of the pilot study participants to further expand on relevant ideas and identify any cognitive themes or behaviours that were missing from the pilot study. Lastly within this section, factor analysis and psychometric evaluation of refined versions of these measures of cognitions and coping, using data from a large online survey sample of young people prior to starting university in the UK (Chapter 5).

Part B. The next two chapters test the associations of identified cognitive and behavioural factors with social anxiety and PTSD among young people who were bullied. These chapters describe cross-sectional and prospective results from the student cohort. First, testing whether the newly developed measures distinguish individuals with PTSD and/or social anxiety symptoms and non-clinical individuals (Chapter 6) and next testing whether the measures predict social anxiety or PTSD trajectories during the first year at university (Chapter 7).

2

Secondary data analysis of cognitive predictors of social anxiety among children who have been bullied¹

2.1 Introduction

Social anxiety is characterised by excessive fears of coming across badly or being judged harshly by others in social situations (American Psychiatric Association, 2013; World Health Organisation, 1992) and can lead to avoidance and poorer performance in school, work, and relationships (e.g., Stein & Kean, 2000; Van Ameringen et al., 2003). It is a chronic treatable condition (Bruce et al., 2005) that is maintained by unhelpful cognitions (Clark & Wells, 1995). Childhood bullying increases the risk of developing social anxiety (Arseneault, 2018; Pontillo et al., 2019) with higher risk conferred by more frequent exposure (Copeland et al., 2013) but not all bullied children are socially anxious and identifying subgroups at risk may inform prevention and intervention. Previous cross-sectional research has identified locus of control (Reknes et al., 2019) and self-esteem (Wu et al., 2021) as modifiers of the relationship between bullying and mental health outcomes. In this longitudinal study,

¹ A manuscript based on this chapter has been published with peer-review. Graham, B., Bowes, L., & Ehlers, A. (2022). External locus of control but not self-esteem predicts increasing social anxiety among bullied children. *Clinical Psychology in Europe*, 4(2), 1-19. <https://doi.org/10.32872/cpe.3809>

we evaluate the impact of locus of control and self-esteem on social anxiety over time among children with different levels of bullying exposure.

Bullying experiences can be socially traumatic (Wild & Clark, 2011) and contribute to the onset and maintenance of anxiety disorders (Norton & Abbott, 2017b) including social anxiety (Hackmann et al., 2000). Several studies report elevated rates of anxiety among people who have been bullied (Copeland et al., 2013; Gladstone et al., 2006; Sourander et al., 2007; Stapinski et al., 2014). Of note, problematic social anxiety commonly arises during adolescence, with rates of onset peaking around age 13 (Kessler et al., 2005). Therefore, it is well established that bullying increases risk of social anxiety. However, mechanisms are less well understood.

Locus of control (Nowicki & Duke, 1972) refers to the extent to which someone believes the outcomes of events or behaviours to be under personal control (internal) or down to luck or chance (external). Internal locus of control is associated with better wellbeing while external locus of control is associated with negative outcomes such as depression (Zhang et al., 2014) and higher levels of PTSD, for example among survivors of combat (Karstoft et al., 2015) and children exposed to stressful political life events (Hallis & Slone, 1999). It is possible that these outcomes are driven by associations with thinking and coping styles, such that internality is associated with positive thinking and help-seeking, while externality is associated with avoidance and helplessness (Reknes et al., 2019). Research has shown that adolescents who are victims of bullying generally have a more external locus of control compared with peers not involved in bullying (Radliff et al., 2016) and among severely bullied adolescents those with more external locus of control also had higher risk of psychotic symptoms (Fisher et al., 2013). Of note, Reknes et al. (2019)

suggested that externality may contribute to a diminished sense of personal responsibility that is actually protective for adult victims of workplace bullying, as they may more readily attribute negative experiences externally. This may suggest a reduced risk of negative outcomes for bullied children who have a more external locus of control. However, no longitudinal studies have specifically investigated locus of control as a mechanism driving social anxiety among bullied children.

Low self-esteem refers to an unfavourable attitude towards the self (Rosenberg, 1979) and may be informed by negative social interactions including experiences of bullying that are internalised (van Geel et al., 2018). Cross-sectional studies show that lower self-esteem is associated with bullying (Brito & Marluce, 2013; O'Moore & Kirkham, 2001) and cyberbullying (Patchin & Hinduja, 2010) but cannot speak to the direction of the effect, such that although bullying may contribute to reducing self-esteem it is also possible that children with lower self-esteem are more likely to be targeted (van Geel et al., 2018). Wu et al., (2021) found that self-esteem explained some of the cross-sectional relationship between bullying and social anxiety among adolescents, but did not investigate causation due to the study design. In this study we investigate longitudinally whether lower self-esteem increases the risk of social anxiety among children who are bullied.

Cognitive models suggest that negative beliefs maintain social anxiety (Clark & Wells, 1995) and PTSD (Ehlers & Clark, 2000). For social anxiety, beliefs are commonly connected in meaning to past experiences of humiliation or rejection (Wild et al., 2007) and include themes of personal capacity to perform adequately and appear acceptable to other people (e.g., "*I am inadequate*"). Bullying may also produce PTSD-like symptoms, and in PTSD beliefs are commonly connected with the traumatic event and its sequelae including themes about loss of control in terms of

personal reactions (e.g., “*I cannot handle stress*”) and the environment more broadly (e.g., “*The world is completely dangerous*”). Of note, these maintaining cognitions related to self and past or future events are not limited to explicit thoughts, but rather include imagery and “felt sense” that is highly emotional (Ehlers et al., 2004; Hackmann et al., 2000). Beliefs consistent with external locus of control and low self-esteem may be fruitful targets for cognitive interventions with bullied children if these factors negatively impact anxiety trajectories in this group. In this cohort, data was available for social anxiety symptoms but not PTSD symptoms related to bullying.

2.1.1 Aims

The current study assessed the moderating effects of locus of control and self-esteem on social anxiety among children using a three-wave longitudinal design over five-years, from age 7.5 to 13. The goal of this study was to assess whether externality of locus of control and self-esteem at age 8 influence the trajectory of social anxiety among children up to the age of 13, and whether the impact of these cognitive factors differs depending on bullying exposure.

2.1.2 Hypotheses

1. Social anxiety will increase from age 7.5 to 13.
2. Children exposed to more severe peer victimisation will have higher initial social anxiety and steeper increase in social anxiety over time.
3. Lower self-esteem and 4. more external locus of control will predict higher initial social anxiety and steeper increase over time for those with more severe victimisation experiences.

2.2 Methods and materials

2.2.1 Procedure

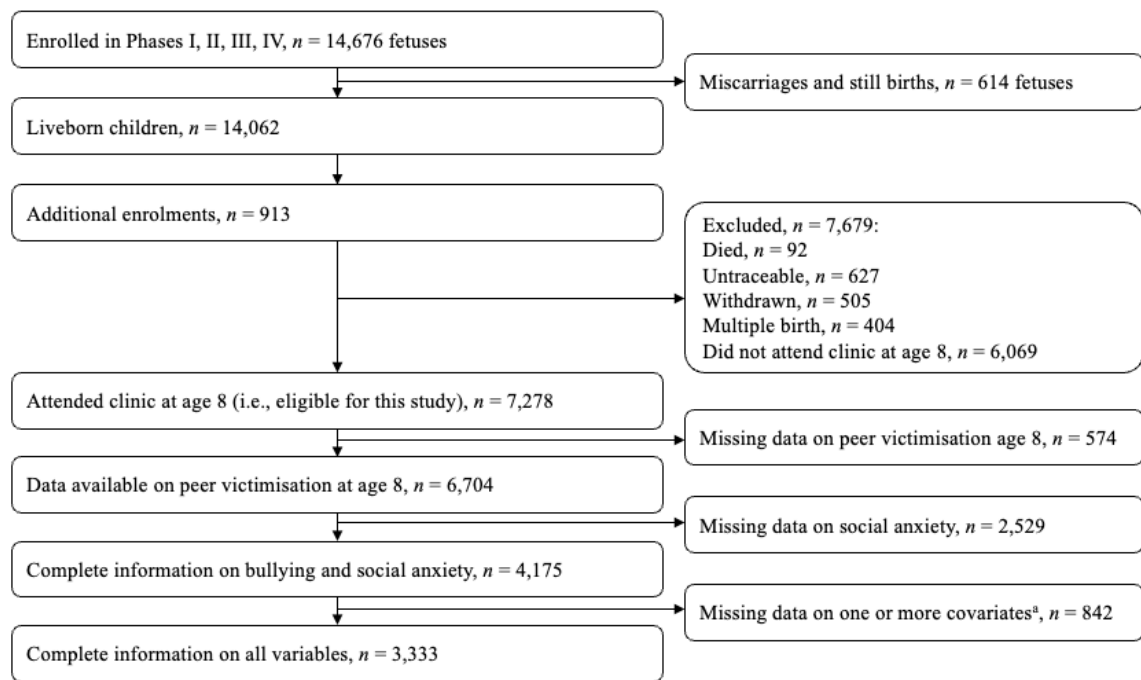
This sample was drawn from the Avon Longitudinal Study of Parents and Children (ALSPAC) which is a large prospective observational study of health and development in children. Pregnant women resident in Avon, UK during 1991-2 were invited to take part in the study. Of 14,541 pregnancies initially enrolled, there was a total of 14,676 fetuses, resulting in 14,062 live births and 13,988 children who were alive at 1 year of age. When the oldest children were approximately 7 years of age, an attempt was made to bolster the initial sample with eligible cases who had failed to join the study originally. The number of new pregnancies not in the initial sample (known as Phase I enrolment) is 913 (456, 262 and 195 recruited during Phases II, III and IV respectively), resulting in an additional 913 children being enrolled. The phases of enrolment are described in more detail in the cohort profile paper and its update (Boyd et al., 2013; Fraser et al., 2013). The total sample size is therefore 15,454 pregnancies, resulting in 15,589 fetuses, of whom 14,901 were alive at 1 year of age. This includes multiple births. Participant flowchart shown in Figure 2.1. Informed consent for the use of data collected via questionnaires and clinics was obtained from participants following the recommendations of the ALSPAC Ethics and Law Committee at the time. Please note that the study website contains details of all the data that is available through a fully searchable data dictionary and variable search tool (<http://www.bristol.ac.uk/alspac/researchers/our-data/>). This project proposal received approval from ALSPAC executive committee [B2804].

2.2.2 Inclusion and exclusion criteria

In total 7,278 participants attended clinic assessment at age 8 making them eligible for this study. Of these, 6,704 provided data on bullying exposure, of whom

2,529 were missing data on social anxiety at one or more time points and 842 were missing data on one or more covariates. Complete data was therefore available for 3,333 cases. The current sample includes singleton births only to reduce within family confounds.

Figure 2.1 Participant flowchart



Note.

^a Prior emotional problems (Strengths and Difficulties Questionnaire), locus of control (Nowicki-Strickland Internal-External Scale), self-esteem (Harter's Self-Perception Profile for Children). Data available at www.bristol.ac.uk/alspac/researchers/cohort-profile/

2.2.3 Measures

Peer victimisation.

A modified version of the bullying and friendship interview (Wolke et al., 2001) was used to determine the frequency that children had experienced nine different types of relational and overt peer victimisation involving other children at school or to/from school in the past six months. Specifically, four relational

behaviours (others wouldn't play with them to upset them, been made to do things didn't want to do, had lies/nasty things said about them, had games spoiled) and five overt behaviours (had personal belongings taken, been threatened/blackmailed, been hit/beaten up, been tricked in a nasty way, been called bad/nasty names). For each type, participants responded "no", "yes sometimes" (less than four times), "yes repeatedly" (four or more times), or "yes very frequently" (at least once per week). Fisher et al., (2013) established an index of bullying severity in the same sample comprising three levels of bullying severity at age 8, such that children who reported exposure to both overt and relational victimisation at least 4 times each or at least once per week were classed as severely bullied, those who had experienced only one of these types at this frequency were classed as occasionally bullied, and all remaining children were classified as not bullied. Internal reliability was acceptable ($\alpha = 0.73$).

Locus of Control

An adapted version of the Nowicki-Strickland Internal-External scale (Nowicki & Duke, 1972) suitable for use with children was completed during in-person assessment at age 8 years, comprising 12 items answered yes/no. A sum score was calculated (range 0-12), with higher scores indicating more external locus of control and lower scores indicating more internal locus of control. Data not available for internal reliability.

Self-esteem

The global self-worth subscale of Harter's Self Perception Profile for Children (Harter, 1985) was completed during in-person assessments at age 8 years, comprising 6 items each split into two components reflecting high and low self-esteem (e.g., some children are often unhappy with themselves, other children are

pretty pleased with themselves). Each component was rated as “*sort of true for me*” or “*really true for me*” to produce a four-point scale for each item. A sum score was calculated (range 4 – 24), with higher scores indicating higher self-esteem. Internal reliability was acceptable ($\alpha = 0.73$).

Prior emotional problems

Parents rated their child’s emotional wellbeing using the relevant subscale from the Strengths and Difficulties Questionnaire at age 6.75 years. A sum score was calculated (range 0 – 10) with higher scores indicating more emotional difficulties. This variable was included as a covariate in the model. Data not available for internal reliability.

Social Anxiety

Parents rated their child’s fear of new people, lots of people, and eating, speaking, reading, or writing in front of others over the last month as either “*no*”, “*a little*”, “*a lot*”, using the Development and Well-being Assessment (Goodman et al., 2000) six-item social fears subscale (DAWBA-SF) at age 7.5, 10, and 13. A total score was calculated (range 0 – 12), with higher scores indicating more severe social anxiety. Internal reliability was good ($\alpha = 0.77 - 0.80$).

2.2.4 Data Analysis

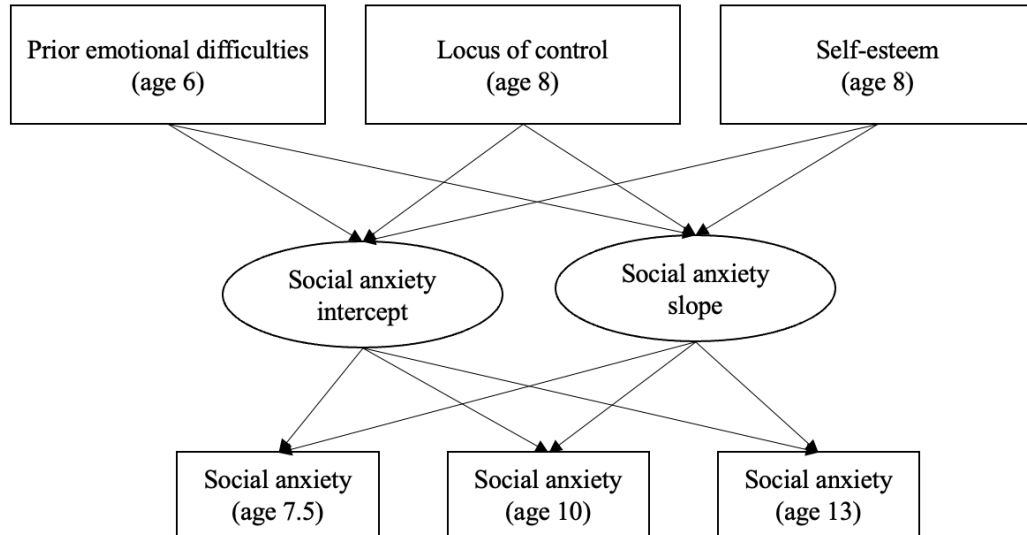
First, the pattern of growth in social anxiety over time was modelled using a first-order latent growth curve model (LGCM), specifying initial severity (intercept) and shape of change (slope) using a repeated measure sum score of severity of social anxiety (DAWBA-SF). Data was collected at three time points so linear shape was assumed and loadings for time were fixed at 0 (baseline, age 7.5), 2 (age 10), and 5 (age 13) in order to allow interpretation of the intercept as severity at age 7.5 and

slope as linear change over time (Hypothesis 1). Intercepts and slopes were allowed to vary between individuals. Good model fit was assessed using recommended indices (Hooper et al., 2008), namely standardised root mean square residual (SRMR) below 0.08, root mean square error of approximation (RMSEA) below 0.05, comparative fit index (CFI) above 0.95, and Tucker-Lewis Index (TLI) above 0.90. Models were run in Mplus using the MLR estimator (maximum likelihood estimation with robust standard errors) to minimise bias associated with missing data from study attrition and to account for non-normality of observations. Chi-square significance was not used to assess model fit as it is unreliable in large samples and is not estimated when using MLR. All measures were assumed to be influenced by random measurement error.

Second, to test the hypothesis that trajectory of social anxiety differs by level of exposure to victimisation (Hypothesis 2), exposure to victimisation was tested as a predictor of social anxiety overall, and in addition initial level and slope was compared between not bullied ($n = 4,037$), occasionally bullied ($n = 1,955$), and severely bullied ($n = 712$) groups (Fisher et al., 2013) in a multi-group LGCM grouped by exposure to victimisation. Presence of additional variance in social anxiety trajectory was also assessed within each victimisation exposure group, with and without adjustment for prior emotional problems.

Third, to test the contribution of cognitive predictors (Hypothesis 3, 4) locus of control and self-esteem were entered into the model to determine their ability to explain variance in initial level and slope in the full sample, in each bullying exposure group, and between bullying exposure groups. See Figure 2.2.

Figure 2.2 Diagram of multigroup latent growth curve model, grouped by bullying severity (“not”, “occasionally”, “severely”).



Univariate ANOVA suggested no evidence of a differential relationship between bullying and social anxiety according to sex so analyses were conducted in the full group. Data was inspected in SPSS27 and analysed in Mplus 7.4.

2.3 Results

2.3.1 Participants

Enrolment and participation flowchart is shown in Figure 2.1. At age 8, over a third of participants ($n = 2,667, 39.8\%$) reported exposure to either relational or overt victimisation at least four times over the last six months, and of these over a quarter ($n = 712, 26.7\%$) experienced both types and were classified as severely bullied.

Severity of bullying exposure at age 8 was not associated with level of social anxiety but was associated with lower self-esteem and more external locus of control. Those

exposed to bullying also had higher prior emotional difficulties compared to those not exposed to bullying. Characteristics are shown in Table 2.1.

Table 2.1 Sample characteristics by severity of bullying victimisation at age 8

	Severity of Bullying at age 8, M (<i>SD</i>) or N (%)			F, χ^2
	Not bullied (<i>n</i> = 4,037)	Occasional (<i>n</i> = 1,955)	Severe (<i>n</i> = 712)	
Gender Female (N, %)	2,136 (52.9)	910 (46.5)	341 (47.9)	17.68 ^a
Social Anxiety				
Age 7.5	0.83 (1.50)	0.81 (1.44)	0.86 (1.67)	0.31 (<i>ns</i>)
Age 10	0.89 (1.57)	0.92 (1.62)	1.01 (1.76)	1.49 (<i>ns</i>)
Age 13	1.12 (1.75)	1.17 (1.80)	1.32 (1.97)	3.23 ^a
Self-Esteem	19.67 (3.18)	18.98 (3.51)	18.02 (3.72)	80.14 ^b
Locus of Control	5.71 (2.05)	6.21 (2.00)	6.67 (2.12)	78.69 ^b
Prior emotional difficulties	1.43 (1.58)	1.57 (1.74)	1.59 (1.71)	5.06 ^c

Note. Self-reported severity of bullying victimisation using Bullying and Friendship Interview and categorised following Fisher et al. (2013); Social anxiety = DAWBA Social Fears subscale (Range 0 – 12; higher is more social anxiety); Self-esteem = Harter’s Self Perception Profile for Children: Shortened Form (Range 6 – 24; higher is better self-esteem); External locus of control = Nowicki-Strickland Internal External Scale (Range 1 – 12; higher is more external); Prior emotional difficulties = relevant subscale from Strengths and Difficulties Questionnaire age 6.75 (Range 0 – 10; higher is more emotional difficulties). Significant group difference between, a. “not bullied” and “severe”, $p < .05$, b. all groups, $p < .01$, c. “not bullied” and both bullied groups ($p < .05$).

2.3.2 Missing data

Among the sample with data on bullying at age 8, missing data on social anxiety at age 13 was more likely among those who were severely bullied, $\chi^2 (2, n = 6,704) = 9.89, p = .007$ and those whose parents had a lower socio-economic status, $\chi^2 (1, n = 5,601) = 29.84, p < .001$. Missingness did not differ by sex, $\chi^2 (1, n = 6,704) = 0.241, ns$.

2.3.3 Growth curve model of social anxiety

A single linear growth curve model of social anxiety over time had a good fit for the data, CFI = .992, TLI = .977, SRMR = .010, RMSEA = .037 [90% CI: 0.018 - 0.060]. Across the sample, the social anxiety variable was highly positively skewed but mean levels increased slightly from age 7.5 (Range 0 – 12, $M = 0.83, SD = 1.51$),

to age 10 (Range 0 – 12, $M = 0.91$, $SD = 1.60$), to age 13 (Range 0 – 11, $M = 1.15$, $SD = 1.79$), confirmed by small but significant positive slope ($M = 0.07$, $SE = .005$, $p < .001$). There was also significant variability in social anxiety intercept ($M = 1.27$, $SE = .090$, $p < .001$) and slope ($M = 0.55$, $SE = .008$, $p < .001$) indicating individual differences around the mean trajectory.

Model fit improved when level of prior emotional difficulties, which are expected to be associated with social anxiety at age 7.5, was included in the model, $CFI = .996$, $TLI = .987$, $SRMR = .009$, $RMSEA = .024$ [90% CI: 0.010 - 0.040]. Prior emotional difficulties predicted initial social anxiety ($B = 0.39$, $SE = .021$, $p < .001$) but did not impact on the rate of subsequent change in social anxiety over time ($B = -0.02$, $SE = .030$, ns).

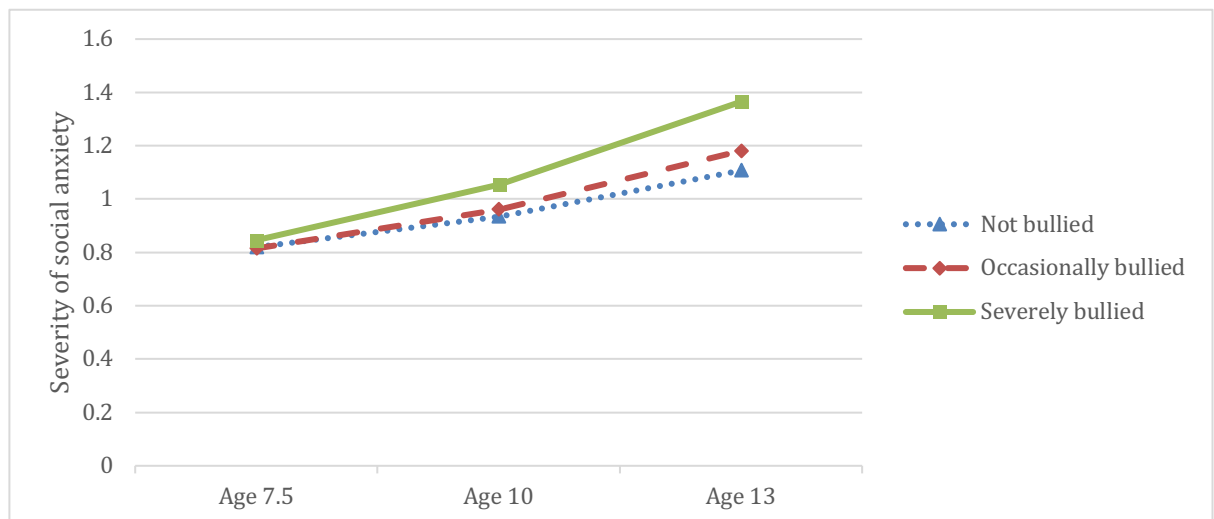
2.3.4 Trajectories of social anxiety by severity of bullying exposure

When severity of bullying exposure at age 8 was added as a predictor of overall social anxiety trajectory alongside prior emotional problems, the expected effect of bullying on social anxiety was shown, such that higher bullying exposure at age 8 predicted a slightly steeper increase in social anxiety over time ($B = 0.06$, $S.E. = 0.02$, $p = .014$). However, bullying exposure at age 8 was not associated with concurrent social anxiety ($B = -0.01$, $S.E. = 0.02$, ns).

In order to test the impact of cognitive factors on social anxiety in the context of differing bullying exposure, the sample was split following Fisher et al. (2013) into three groups of bullying severity, namely “*not bullied*”, “*occasional*”, and “*severe*”. Model fit for this grouped model was good, $CFI = .995$, $TLI = .986$, $SRMR = .011$, $RMSEA = .025$ [90% CI: 0.007 - 0.042]. All three groups had significant positive slope indicating increasing social anxiety over time (“*not bullied*”: $M = .063$, $S.E. = 0.01$, $p < .001$; “*occasional*”: $M = .075$, $S.E. = .01$, $p < .001$; “*severe*”: $M = .102$, $S.E.$

= .02, $p < .001$) but hypothesis 2 was not supported as there were no significant differences in mean initial social anxiety severity or mean slope between bullying exposure groups. See Figure 2.3. Of note, there was significant variance in slope within each group indicating that other factors are responsible for explaining individual differences in trajectory.

Figure 2.3 Estimated mean social anxiety (age 7.5 – 13) grouped by bullying exposure at age 8



Note. Grouped by self-reported level of bullying victimisation in Bullying and Friendship Interview. Social anxiety assessed at three time points (age 7.5, 10, 13) using DAWBA Social Fears subscale (Range 0 – 12; higher is more social anxiety). At age 10, group differences in social anxiety are not significant. At age 13, social anxiety was significantly higher in the severe group compared with the not bullied group ($p = 0.013$) but not the occasionally bullied group ($p = 0.090$).

2.3.5 Cognitive predictors of social anxiety by severity of bullying exposure

The final model including hypothesised predictors (locus of control, self-esteem, and prior emotional difficulties) had good model fit, CFI = .995, TLI = .986, SRMR = .010, RMSEA = .019 [90% CI: 0.004 - 0.032]. Contrary to hypothesis 3, lower self-esteem at age 8 was not independently associated with concurrent social

anxiety or rate of change in social anxiety over time in any group. In contrast, while more external locus of control at age 8 was not associated with concurrent social anxiety in any group, it predicted a moderate increase in anxiety in the severely bullied group ($B = .167, p = .011$) with smaller effects for those who were never bullied ($B = .095, p = .005$) and occasionally bullied ($B = .097, ns$). Prior emotional problems strongly predicted social anxiety at age 7.5 in all groups but did not impact the rate of change in social anxiety over time. See Table 2.2.

Table 2.2 Predictors of social anxiety trajectory from age 7.5 to 13 grouped by age 8 bullying exposure.

Trajectory components and predictors	Not bullied, <i>n</i> = 4,037		Occasional, <i>n</i> = 1,955		Severe, <i>n</i> = 712	
	Coefficient (<i>SE</i>)	<i>p</i>	Coefficient (<i>SE</i>)	<i>p</i>	Coefficient (<i>SE</i>)	<i>p</i>
Intercept (social anxiety age 7.5)	0.816 (.024)		0.810 (.035)		0.846 (.066)	
<i>Predictors of intercept</i>						
<i>Self-Esteem</i>	-0.041 (.023)	<i>ns</i>	-0.059 (.034)	<i>ns</i>	0.009 (.055)	<i>ns</i>
<i>Locus of control</i>	0.039 (.024)	<i>ns</i>	0.038 (.034)	<i>ns</i>	0.075 (.049)	<i>ns</i>
<i>Prior emotional problems</i>	0.393 (.026)	< .001	0.412 (.043)	< .001	0.344 (.063)	< .001
Slope (social anxiety over time)	0.057 (.007)		0.073 (.010)		0.102 (.018)	
<i>Predictors of slope</i>						
<i>Self-Esteem</i>	-0.021 (.033)	<i>ns</i>	0.027 (.048)	<i>ns</i>	-0.031 (.069)	<i>ns</i>
<i>Locus of control</i>	0.095 (.034)	< .05	0.097 (.051)	<i>ns</i>	0.167 (.065)	< .05
<i>Prior emotional problems</i>	-0.033 (.040)	<i>ns</i>	-0.013 (.057)	<i>ns</i>	-0.008 (.081)	<i>ns</i>
Intercept x Slope	-0.061 (.023)		-0.067 (.035)		-0.081 (.070)	

Note. Cells contain unstandardised coefficients for intercept and slope estimated without predictors, standardised coefficients for predictors, with standard errors (*SE*) and probabilities (*p*; two-tailed). Social Anxiety = DAWBA Social Fears subscale; Self-esteem = Harter's Self Perception Profile for Children: Shortened Form; Locus of control = Nowicki-Strickland Internal External Scale; Prior emotional problems = mother report relevant subscale from Strengths and Difficulties Questionnaire

2.4 Discussion

Children who were bullied at age 8 were more likely to have a more external locus of control than other children and higher externality within severely bullied children was associated with steeper increases in social anxiety up to the age of 13. Of note, exposure to bullying at age 8 was not associated with existing social anxiety at age 7.5 but was associated with subsequent increases social anxiety, and this increase was larger for those with external locus of control. This pattern was not observed in relation to self-esteem. This suggests that external locus of control in early childhood could be a risk factor for later anxiety among severely bullied children and is a potential target for intervention.

External locus of control describes a tendency to consider events and experiences as outside personal control. In this sample, the effect of externality on negative outcomes was small overall but larger in the severely bullied group, such that external locus of control was associated with steeper increases in social anxiety for severely bullied children. Beliefs around bullying that are consistent with external locus of control may include thoughts such as, “*being picked on is inevitable*”, or “*others will always target me*”. Evidence from personal experiences that contradict these types of beliefs related to bullying may be accessible for those who are not bullied or bullied occasionally. In contrast, beliefs about lack of control over a threatening and unpredictable social environment may be strengthened by repeated confirmatory evidence and therefore more likely to persist for children who are severely bullied. In line with existing literature suggesting that external locus of control is a risk factor for psychopathology (Hallis & Slone, 1999; Karstoft et al., 2015; Zhang et al., 2014), there was some indication of a dose response relationship between external locus of control and social anxiety, but with only minimal effects among children who were never or occasionally bullied. Reknes and colleagues (2019) suggested that external beliefs were protective against general psychological strain for adult victims of workplace bullying, enhancing acceptance

and enabling external attribution of negative experiences towards negative characteristics of the perpetrator or bad luck instead of taking personal blame. However, the current study suggests that while external control beliefs do not confer additional risk of social anxiety for occasionally bullied children there is an additional risk for severely bullied children. For children who are severely bullied and have a tendency towards externality, promoting personal control beliefs may be one route towards encouraging more constructive coping strategies.

The cognitive model of social anxiety disorder (Clark & Wells, 1995) posits that those suffering with social anxiety hold unhelpful beliefs about their ability to perform well in social situations that, when triggered in a social situation, lead to increased self-consciousness and self-monitoring. In an effort to mitigate the perceived risks, the person then engages in “safety-seeking” behaviours that are intended to keep them safe (e.g., looking down and avoiding eye contact). However, these behaviours can also have unintended consequences (e.g., looking unfriendly or disinterested) which negatively impact the social interaction. Therefore, it is possible that excessive perception of threat may persist even in the absence of an ongoing objectively threatening environment and that perceiving threat may encourage children to act in ways that could inadvertently increase likelihood of ongoing bullying. In this analysis, social anxiety at age 7.5 was not associated with higher bullying exposure at age 8, so it is not necessarily the case that more fearful children were being targeted or perceived that they were being targeted. However, appraisals associated with external locus of control may contribute to excessive perceptions of ongoing social threat and to passive or unhelpful forms of coping that contribute to increasing social anxiety over time.

It is interesting to note that early self-esteem did not influence the trajectory of social anxiety to age 13 among any bullying exposure group. As such, it is possible that early cognitive processes related to self-esteem could be less important in terms of predicting

future anxiety (Sowislo & Orth, 2013) despite evidence of cooccurrence (Lee & Hankin, 2009). In fact, these results support cross-sectional associations between bullying, self-esteem and social anxiety (Gómez-Ortiz et al., 2018; Núñez et al., 2021) but our findings suggest that children who are bullied and have low self-esteem are not necessarily at increased risk of social anxiety over time. Furthermore, self-esteem could be a less important marker of future risk than locus of control, a feature that has been largely overlooked in this domain. Similarly, although our analyses showed the expected association between prior emotional problems and social anxiety at age 7.5, there was no ongoing impact of early emotional problems on increasing social anxiety over time. This suggests that external locus of control may be a relevant clinical target for assessment and intervention.

This study has important clinical implications. It is notable that long-term anxiety associated with bullying can persist even in the absence of current threat, that is, even after bullying has stopped. Cognitive theories of anxiety after stressful experiences (Clark & Wells, 1995; Ehlers & Clark, 2000) suggest that cycles develop between unhelpful beliefs, particular memory characteristics, and behavioural and cognitive coping strategies to maintain anxiety. Maladaptive beliefs associated with bullying may contribute to social anxiety that increases over time and children who have been bullied may be supported with cognitive behavioural approaches (Pontillo et al., 2019). This study suggests that particularly among children who have been severely bullied, beliefs associated with external locus of control may be relevant to maintaining and exacerbating social anxiety. More specific investigation of these beliefs could inform targeted and developmentally appropriate approaches to treatment among young people. In addition, these findings underline the importance of repeated measurement of social anxiety during adolescence to recognise differential trajectories of change. It appears that the differentiated trajectories in social anxiety were not visible prior to age 10 and rather became apparent first between age 10 and

13. This underscores the importance of developmental models of psychopathology that can be linked to a developmental clinical approach. Of note, the predominantly low symptoms in this non-clinical sample may have contributed to lower effect sizes that would be larger in a restricted clinical sample. This issue is common in research with clinical outcomes in unselected community samples.

2.4.1 Limitations

Some limitations in this study should be kept in mind. The sample suffered from attrition, but this is common in prospective studies of this duration. Although higher exposure to bullying was associated with dropout, this would have if anything likely attenuated findings rather than increased them, such that effect sizes may have been greater if these participants had been retained. Small effect sizes indicate that substantial variance in the model remains unexplained, perhaps due to cognitive or social factors that were not measured, or due to biological or genetic factors. Observed effects between bullying and social anxiety accounted for early internalising problems, but these were measured after starting school (age 6), so the possibility that very early bullying triggered anxiety cannot be ruled out. It is also possible that past or ongoing bullying may negatively impact self-esteem later, but this is not measured in this study. Of note, the locus of control and self-esteem measures used in this study were not developed within the cognitive model framework but can provide a useful proxy for the meaning of the constructs within this model. Future research should assess whether the observed effect of external locus of control on social anxiety is indeed replicated for cognitions that are consistent with this construct and tailored to perceptions of bullying experiences. Also, future research could investigate the impact of these factors on symptom trajectories of PTSD related to bullying experiences.

2.4.2 Conclusions

Overall, it is well known that bullying contributes to increased risk of anxiety among children. It is also known that this is a critical developmental stage for increasing social anxiety symptoms and onset of social anxiety disorder, a mental health problem with severe consequences which once chronic rarely abates in the absence of specific interventions. It is also widely recognised that cognitive factors are central to the onset and maintenance of anxiety disorders including social anxiety. The present study aimed to understand the impact of specific cognitive factors, namely locus of control and self-esteem, on trajectories of social anxiety among children aged 8 to 13. Results suggest that children who are severely bullied at age 8 are particularly at risk of increasing social anxiety if they also hold an external locus of control. However, self-esteem does not appear to have the same moderating effect.

It is possible that beliefs consistent with external locus of control contribute to further reduced perception of control over the environment in the context of bullying, which leads to more passive or ineffective coping strategies. The results of this study offer new insight into potentially modifiable factors that increase risk of social anxiety among bullied children and suggest that external control beliefs could be useful targets for cognitive interventions. The following chapters expand on this work to also investigate trauma-related symptoms associated with bullying and how they may persist into adulthood.

3

Pilot study for measures of bullying-related cognitions and behaviours

3.1 Introduction

Bullying increases the risk of anxiety disorders (Stapinski et al., 2014) and is strongly associated with social anxiety disorder (SAD) in particular (Hackmann et al., 2000; McCabe et al., 2003). Socially traumatic events that involve humiliation and rejection in social situations often occur in the context of bullying (Wild et al., 2007) and, despite not necessarily fulfilling the “*threat to life*” criterion defined in DSM-5 (American Psychiatric Association, 2013) can also lead to symptoms consistent with posttraumatic stress disorder (PTSD) including intrusive memories, avoidance, negative alterations in mood and cognitions, and changes in arousal (Bjornsson et al., 2020). Specific cognitions and behaviours around bullying may be associated with increased risk of social anxiety and PTSD symptoms. In this chapter, I present an initial exploration of cognitions and behaviours thought to be related to experiences of bullying. This will include evaluation of the relevance of items and content themes within this group, their associations with emotional distress, specifically symptoms of SAD and PTSD, and acceptability of an online format for collecting this data.

Using measures of cognitions and behaviours related to social anxiety and posttraumatic stress is recommended in clinical practice to guide cognitive therapy for SAD (Warnock-Parkes et al., 2020) and PTSD (Wild et al., 2020). Cognitive measures for social

anxiety include the Social Attitudes Questionnaire (SAQ; Clark, 2005) that measures broad social beliefs and the Social Cognitions Questionnaire (SCQ; Clark, 2005) that measures negative automatic thoughts in social anxiety provoking situations. For PTSD, the Posttraumatic Cognitions Inventory (PTCI; Foa et al., 1999) measures beliefs about self, the world and self-blame related to trauma. These measures are described in more detail below and are widely used in clinical practise. However, although bullying experiences and individual reactions to them may be particularly important for maintaining symptoms in this group, these commonly used measures do not reference bullying experiences and were not developed specifically with participants reporting a history of bullying.

Items included in this pilot were developed based on literature as described above and discussion with expert clinicians. These items will be further expanded and refined using qualitative analysis of interviews with a subset of participants (Chapter 4) to inform a more thorough assessment of the items and structure of measures within a larger national online survey of young people (Chapter 5). Therefore, this chapter describes the first step towards specifying measures of beliefs and behaviours held by young people who have been bullied that may be associated with social anxiety and PTSD.

3.1.1 Aims

The aim of this study is to test preliminary items for new measures of cognitions and behaviours that predict emotional distress among a sample of young people who have been bullied. Items will be reviewed, categorised, and preliminary scales will be evaluated for reliability and validity. Scale scores will also be compared between participants with low and high severity social anxiety and PTSD symptoms. In addition, feedback will be elicited regarding acceptability of the survey format and ways to improve it prior to increasing the sample size in later studies.

3.1.2 Hypotheses

1. Higher scores on initial scales of cognitions and behaviours related to bullying will be associated with higher levels of social anxiety and PTSD symptoms.
2. Initial scales of cognitions and behaviours will have acceptable internal consistency and criterion validity.

3.2 Methods and materials

3.2.1 Procedure

Young people ($n = 115$) responded to an online advertisement (local announcements website, social media) asking for participants who have been picked on by their peers. The language of being “*picked on*” rather than “*bullied*” was chosen deliberately to broaden potential inclusion. They were sent a survey link and first completed a questionnaire detailing the extent of their experiences of victimisation by peers. They then completed several validated measures of psychological functioning and two newly devised measures of bullying related cognitions and behaviours. Items for these measures were developed through detailed reading of the relevant literature, and tailored interviews with Clinical Psychologists who specialise in cognitive therapy for anxiety disorders, in particular social anxiety disorder and PTSD. Questionnaires took 40 minutes to complete online via Qualtrics (qualtrics.com) and participants were encouraged to take breaks if needed but to complete the questionnaires on one day. Since the survey included emotionally difficult themes, information about support services was offered to all participants and an automatically generated email was sent 24 hours after completing the survey to check-in regarding wellbeing and offer additional options for support if needed. Participants were compensated for taking part with online shopping vouchers. This study received ethical approval from University of Oxford Medical Sciences Inter-Divisional Research Ethics Committee (R51437/RE001) [Appendix 1].

3.2.2 Inclusion and Exclusion criteria

Participants were aged between 18 to 29 years and reported being picked on by peers. The reasons for including this age range are described in Chapter 1. Briefly, to allow more proximal measurement of sequelae given higher prevalence of bullying in childhood and adolescence, and to coincide with a period associated with onset of psychiatric disorders. Ability to read English was required but there were no other exclusion criteria to allow for broad participation.

3.2.3 Measures

Victimisation

Participants completed an adapted version of the California Bullying Victimization Scale for adult self-report (Felix et al., 2011; Reid et al., 2016). They reported experiences of up to nine types of bullying (teased, gossiped about, ignored, hit, threatened, sexual comments, belongings stolen, online, other) “*in a mean and hurtful way*”, to establish intentionality. They stated the maximum frequency of each type, “*a few times a year or less*”, “*about once a month*”, “*2 or 3 times a month*”, “*about once a week*”, “*several times a week*”. In addition, participants selected the “worst” of their experiences and rated its severity from 0 (*not severe at all*) to 10 (*extremely severe*) and, to reflect existence of a power imbalance, the extent to which they could defend themselves from the main person involved (“*yes, definitely*”, “*yes, somewhat*”, “*no, not usually*”, “*no, not at all*”) which was ultimately dichotomised. Participants also stated whether they consider themselves to have experienced “*bullying*”, as defined in the Swearer Bully Survey (Hamburger, 2011).

PTSD and Social Anxiety

Participants completed the 20-item PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013) which includes all symptom clusters specified in the DSM-5. Participants rated how much they have been bothered by each PTSD symptom over the last month on a 5-point

Likert scale of 0 (*not at all*), to 4 (*extremely*), with higher scores indicating more severe PTSD symptoms (range 0 – 80).

Participants completed the 17-item Social Phobia Inventory (SPIN; Connor et al., 2000) which includes each of the symptom domains (fear, avoidance, and physiologic arousal). Participants rated how much each statement applied over the past week on a 5-point Likert scale of 0 (*not at all*) to 5 (*extremely*), with higher scores indicating more severe social anxiety symptoms (range 0 – 68).

Cognitions

Participants completed a shortened version (Kleim et al., 2013) of the posttraumatic cognitions inventory (PTCI; Foa et al., 1999) which is a measure of excessively negative appraisals of a traumatic experience and its consequences. It was adapted in this study to refer to the worst bullying experience as the index event. It includes negative cognitions about the self, the world and self-blame that are rated on a 7-point Likert scale from 1 (*totally disagree*) to 7 (*totally agree*). Item 8, “*I cannot accept the way my body has changed since the trauma*”, and item 20, “*Since the trauma, I feel that my body is ruined*” were not included. A mean score was calculated (range 1 – 7). The measure has shown good psychometric properties. It can be downloaded from oxcatatresources.com.

Participants completed the Social Cognitions Questionnaire (SCQ; Clark, 2005) which is a 22-item scale covering negative automatic thoughts that are commonly reported in social anxiety provoking situations. It produces two subscale scores: a mean thought frequency, ranging from 1 (*thought never occurs*) to 5 (*thought always occurs when I am anxious*); and a mean belief rating ranging from 0 (*I do not believe this thought*) to 100 (*I am completely convinced this thought is true*). The beliefs subscale was used in this study as it maps more closely to agreement with the new measures than thought frequency. It can be downloaded from oxcatatresources.com.

New cognitions and behaviours items

Participants rated 54 newly developed items of cognitive factors thought to be related to adaptation after bullying, rating how much each item applied to them over the past month from 1 (*totally disagree*) to 7 (*totally agree*). Five items within the “positive outcomes” category were reverse coded. Cognitions were grouped into six categories:

1. Social defeat: 12 items related to being degraded on a perceived social hierarchy (e.g., “*Other people are much more important than I am*”).
2. Ongoing social threat: 9 items related to perceptions threat in social situations (e.g., “*If I show vulnerability other people will exploit it*”).
3. Social distance: 10 items related to benefits of distance from others (e.g., “*Other people don't like spending time with me*”).
4. Defined by my past: 9 items related to current identity in relation to bullying experiences (e.g., “*If people knew I was picked on they would find me less attractive*”).
5. Appraisals of reactions to bullying: 9 items related to judging a personal reaction as inadequate or faulty (e.g., “*The way I have reacted to being picked on is over the top*”).
6. Positive outcomes: 5 items related to personal benefits derived from experiences of bullying (e.g., “*I am a kinder person because of my experiences of being picked on*”).

Participants also reported their use of 30 behaviours (e.g., “*I put myself down in a social situation to avoid someone else doing it*”), rated over the past month, from 0 (*never*) to 4 (*always*). Six behaviour items (19, 20, 21, 22, 23, 24) referred to positive behaviours, (e.g., “*I connected with others on social media who had similar experiences*”) and were separated from the other items. Item pools are presented in Appendix 2.

3.2.4 Data analysis

Analysis was carried out using SPSS versions 25-28. Data were reviewed for missingness, skewness and kurtosis, and outliers using histograms, box plots and descriptive statistics. Kolmogorov-Smirnov test suggested significant positive skewness in the *Defined by my Past* subscale within the no PTSD/SAD group, therefore non-parametric tests are reported in group comparisons for this scale. All other dependent variables met parametric assumptions of variance and normality. No significant outliers were detected. Homogeneity of variance was assessed for each group test and the appropriate alternative statistic was reported if the assumption was violated.

3.3 Results

3.3.1 Participants

The survey was completed by 115 young adults, mostly women (80.9%) who defined as White British/Other (78.1%) and were largely either students (41.7%) or working at least part time (42.6%). Just over half of the participants (54.8%) described themselves as heterosexual. All reported having been picked on by peers at least once in their lifetime. Regarding experiences of both overt types of bullying (being hit, being threatened, receiving sexual comments or gestures, having belongings stolen or broken) or relational types (being teased, gossiped about, ignored, picked on over the internet), the majority reported multiple experiences, with only nineteen participants (10.4%) reporting fewer than four types of bullying and almost a third (27.8%) reporting seven or more types. The single experiences reported as being the worst were being ignored (28.7%) or teased (17.4%), followed by gossip (10.4%) and sexual comments or gestures (12.2%). Bullying was reported across early childhood, adolescence, and early adulthood. When asked, 86.1% of participants described themselves as having been “*bullied*” in addition to endorsing one or more of the bullying experiences listed. Regarding prior disclosure, 27% told no one about what had happened,

while others most often disclosed their experience to a parent, friend, or teacher (42.6%, 32.2%, 31.3%). Subjective severity was high (maximum range 0 – 10, M = 7.23, SD = 1.77) and 19 participants (16.5%) rated their worst experience at 9 or higher.

The sample was diverse in terms of current psychopathology and cognitive features. Participants were grouped according to those who met criteria for probable diagnosis of PTSD related to bullying (PCL \geq 31) and/or had symptoms indicative of moderately severe social anxiety (SPIN \geq 31) and those who were below the threshold on both measures. The threshold for probable diagnosis of social anxiety is 19 points on the SPIN but a higher threshold was chosen to create a more useful group comparator given the high levels of social anxiety symptoms in the sample overall. See Table 3.1.

Table 3.1 Crosstabulation of social anxiety and PTSD symptom severity

		PTSD	
		Low (PCL < 31)	High ^a (PCL \geq 31)
Social Anxiety	Low (SPIN < 19)	13 (12.1%)	2 (1.9%)
	Moderate ^a (SPIN \geq 19 and < 31)	39 (36.4%)	4 (3.7%)
	High ^a (SPIN \geq 31)	17 (15.9%)	27 (25.2%)
	Missing ^b		5 (4.7%)

Note. Total N = 107. Percentage of total. SPIN = Social Phobia Inventory (range 0 – 68). PCL = PTSD Checklist for DSM-5 referring to worst bullying experience (range 0 – 80). ^aDSM-5 Diagnosis likely. ^b Four participants were categorised as low PTSD but were missing SPIN data and were excluded from group comparisons below.

Groups did not differ in terms of gender, sexual orientation, employment status, or ethnicity. Both groups, particularly the high symptoms group, included a high proportion of sexual minority individuals compared to the general population (Office for National Statistics, 2021). The high symptoms group was slightly younger, but both were in the early twenties age range. This difference was also reflected in education attainment such that the

low group had more university graduates, likely due to being aligned with a common age for graduating from university in the UK, an assumption also supported by the larger number of current students in the high group. Participant characteristics are shown in Table 3.2.

Table 3.2 Participant background and victimisation characteristics categorised by high or low symptoms of either SAD or PTSD

	High Social Anxiety and/or PTSD (<i>n</i> = 55)	Low Social Anxiety and PTSD (<i>n</i> = 52)	Statistic (<i>t</i> , χ^2)
Demographics			
Age in years <i>M</i> (<i>SD</i>)	21.59 (3.80)	23.69 (3.31)	<i>t</i> = 3.033**
Gender <i>n</i> (%)			
Female	45 (81.8)	42 (80.8)	χ^2 = 0.019
Sexual orientation <i>n</i> (%)			
Heterosexual	28 (50.9)	32 (61.5)	χ^2 = 4.090
Bi-, homosexual, other, unsure	27 (49.1)	20 (38.5)	
Highest level of education <i>n</i> (%)			
School (GCSE/A-level)	36 (65.5)	16 (30.8)	χ^2 = 12.873***
Undergraduate or above	19 (34.5)	36 (69.2)	
Current employment status <i>n</i> (%)			
Student	27 (49.1)	18 (34.6)	χ^2 = 6.240
Working part time	6 (10.9)	8 (15.4)	
Working full time	14 (25.5)	18 (34.6)	
Unemployed	4 (7.3)	6 (11.5)	
Other	4 (7.3)	2 (3.8)	
Ethnicity <i>n</i> (%)			
White British/Other	41 (74.5)	41 (78.8)	χ^2 = 7.144
Black British/Other	2 (3.6)	1 (1.9)	
Asian/Other	12 (21.8)	9 (17.3)	
Victimisation characteristics			
Power imbalance <i>n</i> (%)			
Yes	52 (94.5)	48 (92.3)	χ^2 = .219 ^a
Type of victimisation experienced			
Teasing	52 (94.5)	50 (96.2)	χ^2 = .155 ^a
Gossiped about	49 (89.1)	40 (76.9)	χ^2 = 2.828
Ignored	49 (89.1)	45 (86.5)	χ^2 = .163
Hit	26 (47.3)	33 (63.5)	χ^2 = 2.832
Threatened	23 (41.8)	26 (50.0)	χ^2 = .721
Sexual comments	38 (69.1)	27 (51.9)	χ^2 = 3.304
Belongings stolen	25 (45.5)	25 (48.1)	χ^2 = .074
Online	27 (49.1)	15 (28.8)	χ^2 = 4.594*
Other	7 (12.7)	9 (17.3)	χ^2 = .441
Age worst bullying experienced			
Primary (under 10)	13 (23.6)	24 (46.2)	χ^2 = 7.481
Secondary (10-18)	32 (58.2)	24 (46.2)	
College/University (19-22)	3 (5.5)	1 (1.9)	
After university (22+)	1 (1.8)	3 (5.8)	
Psychopathology			
Social Anxiety <i>M</i> (<i>SD</i>)	40.62 (11.17)	21.06 (6.77)	<i>t</i> = -10.742***
PTSD <i>M</i> (<i>SD</i>)	39.75 (18.29)	12.33 (8.49)	<i>t</i> = -10.035***
Depression <i>M</i> (<i>SD</i>)	14.94 (6.43)	6.15 (4.32)	<i>t</i> = -7.535***
General Anxiety <i>M</i> (<i>SD</i>)	12.75 (5.68)	5.27 (4.46)	<i>t</i> = -6.99***

Note. Participants were categorised into the SAD/PTSD group if they had high symptoms of social anxiety disorder (SPIN \geq 31) or PTSD related to bullying experience (PCL \geq 31).

^a Fishers Exact test (2x2)

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

3.3.2 Preliminary item evaluation

In this pilot study, selection criteria for items were deliberately loose with an overall intention to guide adaptations to items and concepts that would be included in the measures for the main study rather than to create final measures at this stage. Items were deemed more appropriate if they had a wide range of responses, a non-extreme mean indicating lack of floor or ceiling effect. Also, acceptable internal consistency (Cronbach's $\alpha > .7$) within a priori defined category, and significant correlations with PTSD, SAD, and existing measures of cognitions and behaviours.

3.3.3 Preliminary scale validity and reliability

Validity and reliability analyses were conducted for the total sample. The *Positive Outcomes Cognitions* subscale had poor internal consistency (Cronbach's $\alpha = .514$) and low mean corrected item-total correlations ($r = 0.084 - 0.381$). The *Positive Behaviours* subscale had marginally acceptable internal consistency (Cronbach's $\alpha = .716$) and highly variable mean corrected item-total correlations ($r = 0.218 - 0.715$). Item deletions suggested by alpha improvements did not substantially change the stability of this subscale. These scales were not considered stable enough for subsequent statistical analyses.

The main Behaviours scale and remaining Cognitions subscales had good internal consistencies (Cronbach's $\alpha > .8$) other than the *Appraisals of Reactions* subscale which was acceptable (Cronbach's $\alpha = .770$). Item deletion statistics in the *Appraisals of Reactions* subscale indicated that removing the item "*The way others have treated me isn't that bad*" would improve internal consistency for the scale. This was also flagged as a confusing item. After removing this item, Cronbach's alpha improved slightly (0.773) and no further item deletions were indicated although there was a relatively low mean corrected item-correlations for the item, "*people who are picked on deserve it*" (0.359). Other mean corrected item correlations were all $> .4$. Item deletion alphas suggested that internal consistency in the

Defined by my Past subscale could be slightly improved (from Cronbach's $\alpha = .890$) by deleting one item, "I have to be successful to show them they were wrong about me" which also had a low corrected item-total correlation ($r = 0.314$) and was therefore removed.

Criterion validity was assessed using correlations with social anxiety and PTSD symptoms, and existing measures of cognitions (see Table 3.3). Correlations with the PTCI were high, particularly for the *Social Defeat* and *Defined by my Past* subscales. There were also moderate to high correlations with the SCQ, particularly *Social Distance*. Behaviours and all Cognitions subscales were positively correlated with PTSD and SAD symptom severity. Test- retest reliability was not assessed in this pilot study for pragmatic reasons.

Table 3.3 Bullying cognitions and behaviours scales internal consistency and criterion validity

	Internal consistency Cronbach's α	Outcome correlations r		Cognitions r		
		Social Anxiety	PTSD	PTCI	SCQ-F	SCQ-B
1. Social defeat	.912	.652**	.655**	.821**	.673**	.524**
2. Ongoing social threat	.861	.683**	.634**	.783**	.681**	.503**
3. Social distance	.905	.684**	.603**	.793**	.709**	.602**
4. Defined by my past ^a	.905	.580**	.610**	.810**	.568**	.484**
5. Appraisal of reactions ^a	.773	.638**	.557**	.740**	.612**	.463**
Behaviours	.909	.654**	.662**	-	-	-

Note.

^a Following item deletions due to alpha improvement statistics

* $p < .05$; ** $p < .001$

3.3.4 Group differences in cognitions and behaviours

Discriminant validity was assessed by conducting group comparisons between participants with high symptoms of social anxiety or likely PTSD diagnosis, and those with low social anxiety and no likely PTSD diagnosis. This approach of grouping high versus low symptoms overall was used due to relatively small sample size and cell sizes, with high comorbidity. As hypothesised, all cognitions scales and the behaviours scale distinguished

between low and high symptom groups ($p < .001$), such that higher scores were associated with being in the high symptoms group. See Table 3.4.

Table 3.4 Mean bullying cognitions subscales and behaviours scores grouped by high or low scores on social anxiety and/or PTSD

	High Social Anxiety and/or PTSD <i>M (SD)</i>	Low Social Anxiety and/or PTSD <i>M (SD)</i>	<i>t</i>
Cognitions subscales			
1. Social Defeat	4.20 (1.18)	2.60 (.96)	- 7.599 **
2. Ongoing social threat	4.55 (1.28)	3.00 (.96)	- 6.962 **
3. Social distance	4.39 (1.31)	2.87 (1.11)	- 6.399 **
4. Defined by my past	3.98 (1.47)	2.40 (1.09)	531.50 ^a **
5. Appraisal of reactions	3.82 (1.04)	2.71 (.93)	- 5.715 **
All cognitions items	4.21 (1.13)	2.72 (.85)	- 5.857 **
Behaviours scale	2.98 (.77)	2.20 (.51)	- 6.023 **

Note.

^a Mann-Whitney U Test. Cognitions subscales range 1-7. Behaviours scale range 0 - 4.

* $p < .05$; ** $p < .001$

3.3.5 Perceived power differential

Bullying definitions include the existence of a power imbalance between bully and victim (Olweus, 1993) and in the current sample, 92.0% participants reported that in their worst experiences they could not defend themselves (definitely not, usually not) against the main perpetrator. There was no difference in proportion with perceived power imbalance across low and high symptom groups and, using multiple regressions alongside the new cognitive and behavioural scales, presence of power imbalance did not explain any significant additional variance in social anxiety or PTSD symptoms ($p = .438 - .784$).

3.3.6 Acceptability

After completing the pilot study, I had individual telephone conversations (average length 13 minutes) with four participants to discuss their experience and to ask for additional suggestions for rollout of the survey. I asked for feedback and suggestions on newly devised

items (wording, clarity), user-friendliness (legibility, answer options, format), and manageability (length of time taken to complete, emotional impact). I also asked for suggestions on how to reach a diverse cohort of young people across the UK for the larger study.

Unanimous feedback was that the survey was manageable and clearly signposted, and although one participant mentioned some repetition across measures and all participants commented that the survey asked a lot of questions, they appreciated it being comprehensive. I learned that existing efforts to increase manageability were appreciated (e.g., guidance to complete the survey in a private place and take breaks, progress bar indicating position within the survey, email check-in on wellbeing 24 hours after taking survey, email confirmation that survey response has been recorded, list of support services at the end of the survey).

Participants also appreciated initial contact via email rather than by phone. One participant suggested allocating a specific place in the survey to take a break and adding extra page breaks to avoid long lists of items on one page. All participants suggested that logos of affiliations were helpful in elevating the apparent legitimacy of the survey. Suggestions for advertising included physical posters and ads at universities and GPs surgeries, targeted advertising via social media, student forums and information websites, messaging via the Universities and Colleges Admissions Service (UCAS), and youth mental health charities. Feedback was incorporated into the design of the larger survey study (Chapter 5).

3.4 Discussion

Initial inspection of the preliminary bullying cognitions and behaviour scales indicates that they may be viable for predicting severity of symptoms among individuals who have been bullied, producing acceptable reliability and validity statistics and correlations with symptoms and existing cognitive measures. Items include direct references to bullying experiences (*defined by my past*), reactions to those experiences (*appraisals of reactions to*

experiences), as well as relational factors that may be more prominent following experiences of bullying (*social defeat, ongoing social threat, social distance*). However, items and subscales will benefit from further refinement in terms of wording and content.

Wording for some items was overly complex. Some of the items included in this pilot study incorporated two different features, which may have been confusing and affected outcomes for those items. For example, “*The people who picked on me must have been right that I’m weak or I would have been able to cope*” includes a belief and a consequence of the belief that may each elicit different responses from the participant and impact the reliability of the item. Despite functioning adequately within the current study, simplifying items may improve the main study.

Criterion validity was supported by significant correlations with PTCI (posttrauma cognitions) and SCQ (social anxiety cognitions). The proposed measures include items that refer directly to bullying experiences and more general beliefs. Higher correlations overall between the new items and PTCI is not surprising given the focus on a distressing index event in these measures, compared with SCQ which reflects cognitions during anxiety provoking social experiences. Of note, PTCI correlations with subscales *Social Defeat* and *Defined by my Past* were above 0.8, which may suggest scope to refine these items relative to bullying experiences specifically rather than traumatic events more broadly and improve incremental utility of these subscales, beyond the PTCI.

Within the *Social Defeat* subscale, the highest PTCI correlations were with items reflecting fear and wariness about other people, “*Other people will always violate me*” ($r = 0.673$), “*Most other people are basically bad and will exploit each other if they can*” ($r = 0.654$), “*I will be attacked or humiliated and won’t be able to escape or make it stop*” ($r = 0.653$), and “*Other people always treat me badly*” ($r = 0.640$). Of note, relatively lower correlations within this scale that discriminate from the existing themes in the PTCI were

with items reflecting perceptions of relative social status, “*I definitely rank myself below other people*” ($r = 0.588$) and control, “*There is no way I can control what happens in my social life*” ($r = 0.444$) and “*I have no control over the ways that other people treat me*” ($r = 0.408$). Within the *Defined by my Past* subscale, the highest individual item correlations with PTCI reflected negative judgment by others if they knew about past bullying, “*If people knew I was picked on they would reject me*” ($r = 0.743$) and “*The people who picked on me were right that I deserve to be treated poorly*” ($r = 0.694$). Lower correlations were with negative self-evaluation related to bullying “*If I fail at anything it means they were right and they win*” ($r = 0.591$) and “*It is shameful to have been picked on*” ($r = 0.533$).

The *Ongoing Social Threat* and *Appraisal of Reactions* subscales had moderate to large correlations with both PTCI and SCQ subscales, with slightly higher associations with PTCI. Of note, within the *Appraisal of Reactions* subscale, the item, “*The way I have reacted to being picked on is over the top*” correlated more highly with SCQ ($r = .511$) compared with PTCI ($r = .425$). Within the *Ongoing Social Threat* subscale, items “*I am unacceptable to all other people*”, and “*I am totally unattractive to other people*” discriminated particularly strongly between PTCI ($r = .702, .614$) and SCQ ($r = .567, .520$).

The *Positive Outcomes* cognitions subscale had poor internal consistency reflected in low inter-item and item-total correlations. Similarly, despite marginally acceptable internal reliability the positive behaviours subscale also had very variable inter-item and item-total correlations. This implies that the concepts within these domains were not sufficiently specific to create a meaningful scale. These factors could be explored further in the qualitative analysis to suggest whether alternative items may more reliably capture positive outcomes from bullying, or indeed whether these outcomes are consistently perceived among people who have been bullied. These domains are less likely to discriminate clinical

diagnosis but could have clinical utility in terms of prompting ideas for new and more adaptive cognitions or behaviours.

Most participants reported that they felt unable to defend themselves against the main perpetrator, so lack of power imbalance indicated by ability to defend oneself was very rare. This variable did not explain any additional variance in symptoms compared with the cognitions and behaviours scales. Ability to detect differences was limited by the sample size. Additionally, it is possible that meaning of the power imbalance were already captured within the meaning of the proposed cognitions and behaviours, such that perceived retrospective power imbalance was captured within the extent of endorsement of the proposed items.

3.4.1 Limitations

Of note, despite high representation of sexual minority groups, the sample was comprised mostly of white women, thereby limiting generalisability of findings. The main study would benefit from increasing sample diversity, particularly increasing participation of men and people from non-white ethnic groups. Advertisements for this study specifically targeted young people who had been picked on, and there were high levels of both bullying and symptoms in the sample. In the larger study, a broader range of respondents would be reached with advertising that does not include reference to bullying-type experiences. More generic advertising could include people who have experienced relevant types of events that are potentially upsetting and consequential (teasing, gossip, threats, etc.) but who would not define as having been victimised.

3.4.2 Conclusions

In conclusion, the survey format and content were acceptable, and the steps taken to protect wellbeing were appreciated. Initial items were evaluated and opportunities for improvement noted. Categories that were developed to reflect cognitive factors and behaviours associated with bullying had preliminary reliability and validity. Among young

people who were bullied, responses across these categories of items distinguished those with and without high symptoms of PTSD and social anxiety. The following two chapters will describe improvements in the quality of individual items and coherence of scales, via qualitative analysis of interviews with young people who were bullied (Chapter 4) and psychometric evaluation of scales in a large survey study (Chapter 5).

4

Qualitative analysis of cognitive and behavioural factors associated with ongoing emotional distress after bullying

4.1 Introduction

As described previously, measures of cognitions and coping behaviours associated with social anxiety disorder (SAD) and posttraumatic stress disorder (PTSD) are used in research and to guide cognitive therapy. However, to date no specific measures have been developed among people who have experienced bullying who are suffering with these symptoms. There is a need for qualitative research with young adults who were bullied in the past to better understand cognitions and behaviours that may drive poorer outcomes (McDougall & Vaillancourt, 2015), and factors that might help explain why anxiety associated with bullying persists even in the absence of current threat, that is, even after bullying has stopped. Bespoke measures of factors that predict outcomes will help to identify new targets for interventions for those who are suffering. Insights from this study will inform further development of item pools for measures of cognitive and behavioural factors associated with SAD and PTSD among young people who were bullied. These will be evaluated and applied in later chapters.

Qualitative studies have explored social and psychological consequences of bullying. A study with men who were bullied as children (Carlisle & Rofes, 2007) found that they

attributed significant long-term negative effects to their experiences, including elevated fear and anxiety, feelings of isolation, shame, thoughts of revenge, and relationship difficulties. Another study with young adults who had been victims of bullying (Thornberg et al., 2013) suggested experiences of social exclusion and being labelled as “different” together led to an enduring internalised self-image of victimhood. Lasting effects of bullying included a sense of not fitting in, distrust of others, self-doubt, and attempts at self-protection. Strategies for self-protection included self-isolating by withdrawing socially, introverting into a safe inner world, attempting to shield themselves from harm by appearing emotionally unconcerned, and self-inhibiting by attempting to blend in or become socially invisible. Some participants also reported positive consequences including increased capacity for understanding human interactions and reading others’ moods and signals.

Additionally, since this research was designed and conducted, three qualitative studies have been published exploring the impact of bullying on emerging adults (deLara, 2019; Lidberg et al., 2022; Pabian & Vandebosch, 2021) that have all identified lasting consequences of bullying on social and emotional well-being. Students in a large American study (deLara, 2019) found that many perceived lasting consequences of bullying on eating disorders, weight and body image, and relationships and trust issues. Among emerging adults with poor mental health who perceived themselves as suffering long-term consequences of victimisation, Lidberg and colleagues (2022) reported feelings of insecurity, avoidance of social situations, feelings of worthlessness, and body image problems. They also reported anger towards school personnel who they did not remember stopping the victimisation. In another recent study that included victims of cyberbullying (Pabian & Vandebosch, 2021) similar long-term impacts on personal characteristics were suggested, including increased anxiety, poorer self-esteem, and increased empathy, as well as lasting consequences for social

interactions including reticence sharing personal information and difficulty managing conflicts.

In this qualitative study, twenty young people aged 18 to 29 with a history of bullying were recruited via online advertisements and interviewed about their experiences of being bullied and their related reactions, thoughts, and feelings. Themes generated from qualitative analysis of the interview transcripts are described and discussed in this chapter. Findings informed items for new measures of cognitions and behaviours related to bullying.

4.2 Methods and materials

4.2.1 Procedure

After completing pilot study questionnaires online (Chapter 3), participants were asked if they were interested in meeting with the primary researcher to discuss their experiences. Of the 115 participants who completed the online surveys, 59 asked for more information about an in-person interview, and the first 20 who agreed to take part were interviewed. Interviews were conducted in-person individually with each participant and the primary researcher at the research office either in Oxford or London. After explaining the remit of the interview and obtaining written informed consent, interviews were recorded. Semi-structured interview questions [Appendix 3] probed characteristics of bullying, characteristics of memories related to bullying, perceptions of threat in daily life, beliefs about self and others, coping strategies, and rumination. Interviews were audio-recorded. Participants were compensated for their time. They were debriefed after the interview and encouraged to contact the researcher using the original contact details if further information or support was needed. Tapes were transcribed verbatim. This study received ethical approval from University of Oxford Medical Sciences Inter-Divisional Research Ethics Committee (R51437/RE001) [Appendix 1].

4.2.2 Inclusion and Exclusion criteria

Participants were 20 women and men aged 18 to 29 who reported at least one distressing experience of being picked on by peers at some time in their life. Participant characteristics are presented in Table 4.1. Participants included individuals currently reporting difficulties related to bullying and individuals who did not report any current impairments. Participants were English speaking. There were no other inclusion or exclusion criteria.

4.2.3 Measures

Participants completed questionnaires online via Qualtrics (qualtrics.com) prior to attending an interview at the research team office in Oxford or London, UK. They provided their age, gender, educational attainment, current occupational and relationship status, and sexual orientation. They reported experiences of bullying throughout their life, and current symptoms of PTSD related to their worst bullying experience, social anxiety, general anxiety, and depression symptoms. All questions included an option “*prefer not to say*”. Participants provided written informed consent to participate in the study.

Bullying victimisation

Bullying was assessed using the California Bullying Victimization Scale (CBVS; Felix, Sharkey, Green, Furlong, & Tanigawa, 2011) which was adapted for retrospective adults self-report (Reid, Holt, Bowman, Espelage, & Green, 2016). This measure asks about experiences of nine specific types of bullying, including an option for “other”. In addition, participants selected the worst of their experiences.

Posttraumatic stress disorder

PTSD symptoms were measured with the posttraumatic stress disorder checklist for DSM-5 (PCL-5; Weathers et al., 2013) which is a 20-item self-report measure assessing distress associated with each of the symptom domains of PTSD (reexperiencing, avoidance,

negative alterations in cognitions and mood, hyperarousal) over the past month. Items were rated on a five-point scale, from 0 (*not at all*) to 4 (*extremely*).

Social anxiety disorder

Social anxiety symptoms were measured with the Social Phobia Inventory (SPIN; Connor et al., 2000) which is a 17-item self-rating scale assessing each of the symptom domains of social anxiety disorder (fear, avoidance, and physiologic arousal) over the past week. Items were rated on a five-point scale from 0 (*not at all*) to 4 (*extremely*).

Semi-structured Interview

Interview content, including question structure and sequence, was developed by reviewing existing literature on mental health consequences of bullying, and refined through discussion with experienced clinical psychologists specialising in cognitive therapy for anxiety disorders. The interview included questions relevant to bullying experiences and the existing cognitive models of PTSD and SAD, including types and locations of bullying, perceived past and current impact, memories of bullying and triggers, coping strategies, and meaning of bullying for self and others. The interviewer asked additional questions flexibly according to what was discussed in response to the original questions to capture a full impression of current functioning in relation to past experiences of bullying.

4.2.4 Data analysis

A thematic analysis approach to qualitative analysis of the data was chosen to explore patterns of meaning within and between interviews. Acknowledging the broad interpretations of this approach in the literature, the method used in this study is described in detail to provide transparency (Braun & Clarke, 2006; Nowell et al., 2017). I read and re-read paper copies of the transcriptions in order to become familiar with all the data prior to coding using QSR International's NVivo 12 software (2018). Detailed codes were produced that reflected my perception of what was said in the interviews and tagged within the documents. Then,

themes were developed that corresponded to broader patterns of meaning in the codes across the interviews. These were my interpretations of the underlying ideas and assumptions expressed by the participants. Themes were reviewed, refined, and then defined. An inductive process was used, guided by the data, such that the labelled themes were strongly related to the words spoken by interviewees. However, I acknowledge my pre-existing clinical and theoretical foundation in cognitive-behavioural approaches that guided the content of the interview questions and therefore inevitably to some extent the derived data. This work was not intended to exhaustively review every possible aspect of the topic, but rather to introduce additional ideas from the perspective of young adults who have been bullied. The importance of each theme is not equivalent to its prevalence (Braun & Clarke, 2006) but the number of participants who made statements that were coded within each theme was recorded to provide one marker of relevance.

I worked actively with the data to develop codes and related themes. This work was done knowing that the goal was ultimately to refine these themes further into items for written measures and probe the relevance of cognitions and behaviours that might reside within each theme quantitatively. Therefore, in order to assess reliability of attribution of statements to these themes, an independent rater recoded 10% of statements into defined themes (Barbour, 2001). Reliability was very high ($kappa = 0.85$) indicating that the themes I developed were clear and distinct as perceived by the second rater. Noting the importance of being transparent about methodology and meaning (Braun & Clarke, 2020) it is acknowledged that the process used in this study was derived from various approaches to thematic analysis (Braun & Clarke, 2021). The reported reliability statistic does not mean that the themes that were created are inherently reliable, but rather that the data were reliably recoded within into themes that had been identified. Inconsistencies and questions were

discussed between raters to explore disparities in perceived meaning of the data and refine the codes and themes again.

Symptoms of social anxiety and PTSD related to bullying experiences were measured using online questionnaires and used to categorise participants with “high” or “low” symptoms related to bullying. Therefore, alongside broader descriptions across the full sample, the potential meaning of themes can be explored in light of how commonly they are endorsed among those with high or low symptoms.

4.3 Results

4.3.1 Participants

The sample included participants with relatively higher ($n = 8$) or lower ($n = 12$) current symptoms of PTSD related to experiences of bullying and/or social anxiety. These were operationalised as being above the suggested clinical cut-off for PTSD measured using the PCL-5 (33 or above; range 0 - 80) and at least a level representing moderate symptoms of social anxiety on the SPIN (31 or above; range 0 – 68).

The sample was comprised predominantly of white female students, who had experienced multiple types of peer victimisation and reported a wide range of psychopathology in terms of SAD, PTSD related to experiences of bullying, depression, and generalised anxiety disorder (Table 4.1). There were no significant differences in background characteristics or bullying experiences between the two groups. Symptoms across all measures were higher among the high symptoms group compared with the low group, though statistical difference was only observed in social anxiety symptoms, likely due to the small sample size limiting power.

Table 4.1 Participant background and victimisation characteristics, and symptoms

	Low SAD and/or PTSD related to bullying (<i>n</i> = 12)	High SAD and/or PTSD related to bullying (<i>n</i> = 8)	Statistic (<i>t</i> , χ^2)
Age in years <i>M</i> (<i>SD</i>)	23.50 (2.88)	23.00 (3.63)	<i>t</i> = .344
Gender <i>n</i> (%)			
Female	9 (75.0)	8 (100.0)	$\chi^2 = 2.353$
Male	2 (16.7)	0 (0)	
Other	1 (8.3)	0 (0)	
Current employment status <i>n</i> (%)			
Student	8 (66.7)	3 (37.5)	$\chi^2 = 3.766$
Working part time	1 (8.0)	0 (0.0)	
Working full time	3 (25.0)	4 (50.0)	
Unemployed	0 (0.0)	1 (12.5)	
Sexual Orientation <i>n</i> (%)			
Heterosexual	5 (45.5)	7 (87.5)	$\chi^2 = 3.753$
Bisexual	4 (36.4)	1 (12.5)	
Homosexual	1 (9.1)	0 (0)	
Unsure	1 (9.1)	0 (0)	
Prefer not to say	1 (9.1)	0 (0)	
Ethnicity <i>n</i> (%)			
White	7 (58.3)	5 (62.5)	$\chi^2 = 2.112$
Not White	4 (25.0)	3 (37.5)	
Prefer not to say	1 (8.3)	0 (0)	
Victimisation characteristics			
<i>Total types of bullying M</i> (<i>SD</i>)	5.58 (1.44)	6.25 (1.83)	<i>t</i> = -0.910
<i>Type of victimisation experienced</i>			
Teasing	11 (91.7)	8 (100.0)	
Gossiped about	11 (91.7)	8 (100.0)	
Ignored	10 (83.3)	7 (87.5)	
Hit	9 (75.0)	5 (62.5)	
Sexual comments	8 (66.6)	7 (87.5)	
Threatened	6 (50.0)	4 (50.0)	
Belongings stolen	5 (41.7)	6 (75.0)	
Online	5 (41.7)	3 (37.5)	
Other	2 (16.7)	2 (25.0)	
Psychopathology			
Social Anxiety ^b <i>M</i> (<i>SD</i>)	22.67 (3.89)	36.86 (7.84)	<i>t</i> = -5.32*
PTSD ^c <i>M</i> (<i>SD</i>)	15.25 (7.78)	27.88 (21.15)	<i>t</i> = -1.62
Depression <i>M</i> (<i>SD</i>)	6.64 (3.70)	10.57 (5.44)	<i>t</i> = -1.836
General Anxiety <i>M</i> (<i>SD</i>)	6.92 (4.27)	10.14 (4.85)	<i>t</i> = -1.51

Note.

^a Measured using the 20-item SPIN, range 0-68. ^b Measured using the 17-item Posttraumatic Stress Disorder Checklist for DSM-5 (Weathers et al., 2013), range 0-80. ^c Measured using the 9-item Patient Health Questionnaire (Kroencke, Spitzer, & Williams, 2001), range 0-27. ^d Measured using the 7-item Generalised Anxiety Disorder scale (REF), range 0-21.

* *p* < .001

4.3.2 Perceptions of bullying experiences and impact

Frequencies of superordinate and subordinate themes generated from the interviews are presented in Table 4.2.

Characteristics of bullying experiences

Participants reported a range of bullying experiences in the online questionnaires and during the interview they were asked to briefly describe a timeline of their experiences, providing more detail about their worst experience. No single type of experience was more commonly reported as being more impactful than others, but timing was most commonly during secondary school years (age 11 – 18). In all cases it was confirmed that the bullying was intentional and hurtful, in line with the working definition of bullying (Green et al., 2018) but existence of a power imbalance was difficult to establish given the dynamic nature of many of the relationships involved. There did not appear to be differences between those currently experiencing low or high symptoms in terms of the types of bullying they had encountered. The range of experiences was broad and aligned with the categories listed in the CBVS bullying measure (Reid et al., 2016) including on- and offline bullying, being ignored, gossiped about, teased, having belongings stolen, sexual comments and gestures, being hit, and threatened.

I was like, physically terrified to go to school. I hated going to school. I would walk into, like, rooms and people just didn't even bother to stop talking about me. They would just make fun of me right to my face. And it was terrible. [108]

Also cyberbullying from girls at my school sort of called me names and would always sort of leave comments on my profile, they'd be quite rude and mean. [113]

I would get my things stolen. My homework, my things in my bag. They just took my bag and my pencil case and everyone took something and put all my belongings on the floor. [Participant 111]

Like, making, I don't know, making sexual comments when they were, for example, so we were, we had benches, so we had, you know, for example, they would be sitting, like, two benches behind me, so, those classmates, and I could hear them, distinctly hear them talking about me and making weird comments. [104]

Chewing gum in the hair... I got locked in the change room quite a lot... And a small kick to the shin when I would ask to get out the class. A kick to shin if you tell anything. [111]

One participant who was repeatedly teased by peers about their perceived sexuality described how others were unable to see the severity of what he was going through.

If you go home with a black eye you know something's going to happen about it. You know that those guys are going to get suspended. Because you don't just go around punching people... But with verbal abuse, I think it's much easier to kind of... To get away with it and it's... Like it's more difficult to see on the victim... Like, you know, you don't see things written... Things that people have said about you... But if you saw a black eye you'd know someone's been bullying that guy. [103]

Suggested reasons for bullying

Participants offered thoughts about possible reasons that they were bullied. The main reasons were personal characteristics (appearance, personality, perceived sexuality or conformity with gender norms) and being in an unsupportive or new environment.

Personal characteristics

I was quite scrawny, weedy. [102]

Well, I think the reason of it was because of me. I wasn't thinking it's because they're having a bad day or because they're wanting to pick on me. I just thought oh yes, it's because I have puffy hair, it's because I've got braces, it's because I'm really tall.

[118]

It was kind of based on me not being the most masculine person [103]

I was also a bit quirky. Like, I was also a bit short, I was also a bit not very talkative, and I wouldn't tend to respond. [104]

I was really, abnormally scared of things, unlike the other kids, and I got picked on for that. [105]

I was too shy for them. I was a bit different but nothing bad. It comes from that. I was easy to pick on. [111]

Unsupportive environment

Some participants reflected on their environment encouraging (or at least not discouraging) bullying, or a social network that involved keeping someone in a victim position as part of the ongoing group dynamic.

There was kind of a culture where bullying was almost seen as a rite of passage that would happen to you [103]

I think that the environment of that prep school was very unhealthy. [109]

It was the standard, like, picking on the new kid. [108]

Perceived impact of bullying

Strikingly, all participants reported a negative impact on their mental health at the time of the bullying. Participants did not consistently report clear perceived associations between experiences of bullying and current mental health difficulties, although several suggested that their experiences of bullying may have been one of many factors contributing to mental health problems such as anxiety and depression.

Some participants reported that bullying may have contributed to mental health problems but that other experiences were “worse”. Though not directly addressed as part of the interview, several participants spontaneously reported additional life stresses at the time of the bullying. For some, this overshadowed the perceived impact. For others, it compounded the impact. In addition, some participants suggested that they were bullied because of other difficulties they were experiencing, such as family financial difficulties or parental divorce.

See at the same time my parents had broken up when I was 11 and... they were very unhappy with each other and arguing, passive aggressiveness in general in the house and I think that contributed to me maybe thinking that that was in some way my fault as well or that I deserved that as well. [112]

Because the other thing that I found difficult then was, I moved in with my mum and my step-dad, right... So, it's quite hard to tell. [115]

Notably, memories and emotions connected with experiences of bullying were reported by some participants to be exacerbated during challenging situations or periods of poorer mental health, therefore potentially contributing to a worsening of wellbeing (described later in terms of triggers for memories). One participant who did not report ongoing mental health impacts nonetheless acknowledged their current sense of loss associated with missed opportunities due to bullying.

It's wasted years, I mean wasted as in feeling just horrible, not enjoying life? [112]

Of note, several participants in the low symptoms group described that their mental health had improved since they acknowledged to themselves the negative impact bullying had had on them. This suggests that previously avoiding the issue or minimising it was not helpful and may have contributed to past difficulties.

Yes, and it took me until very recently to realise, wow, this period did matter. So I'm finally coming to terms with... Because you don't want to be like, oh, I'm like this

because I was six... Because you feel... It feels like it's so far back that it shouldn't matter at all. But then kind of really giving myself permission to say that was a trauma in its own way and it had nothing to do with me. That gave me a sense of relief, I think. [116]

I started to realise, you know, actually maybe I feel low about myself because you know I've taken on the way they put it on me... I definitely wanted to deny that these people could have any impact on me whatsoever. But you know I was above it. I wasn't going to allow it to affect me. But it had. [103]

Underlining the potential importance of avoidance or minimising, only one of the participants in the high symptoms group made a statement that acknowledged the severity of their experiences without also attempting in some way to downplay it.

There were small things every day but at the end of the day when it's six months, even more than that, with 30 persons, each one of them saying a comment a day, it's a lot. [111]

Finally, participants in both groups (even among those currently experiencing high symptoms) described positive components to having been through their experiences of bullying, including increased compassion for others, recognition of personal strength, and openness to expressing individuality.

I feel like my compassion for other people is a lot more expansive because of it. [108]

But, actually, looking back now, the fact that like I was able to manage and get through all of the things shows that I'm quite a strong person. [103]

It made me feel like I was different but it also made me feel like I kind of had a licence be myself in a way. So, I felt like I, like I say kind of like accepted that I wasn't kind of perfect or well liked. So, then it was sort of like well I'll just wear what I want and say what I want. I can be weird because they already think I am. [113]

So, I think it was important but I wish I could have, you know, like read a book or something to learn the same lessons. [107]

Table 4.2 Frequencies of Superordinate and Subordinate Themes

Superordinate theme	Frequency <i>n</i> (%)		Subordinate theme	Frequency <i>n</i> (%)	
	Low symptoms	High symptoms		Low symptoms	High symptoms
Bullying impacted my life	12 (100.0)	8 (100.0)	Damaged my mental health	12 (100.0)	8 (100.0)
			Positive consequences	5 (41.7)	4 (50.0)
Upsetting memories	9 (75.0)	8 (100.0)	Similar feeling (e.g., rage, worthlessness, panic, hopelessness, loneliness)	7 (58.3)	3 (37.5)
			Visual (e.g., image, video, gif)	4 (33.3)	3 (37.5)
Triggers	10 (83.3)	8 (100.0)	Social situations	3 (25.0)	6 (75.0)
			Ruminating or feeling low	5 (41.7)	3 (37.5)
			Social media	2 (16.7)	2 (25.0)
			Similar people	3 (25.0)	3 (37.5)
			Locations	0 (0.0)	3 (37.5)
			Making a mistake	0 (0.0)	1 (12.5)
Personal deficiency (<i>"I am the problem"</i>)	10 (83.3)	8 (100.0)	I shouldn't be liked	8 (66.7)	7 (87.5)
			I am worth less than others	6 (50.0)	6 (75.0)
			I deserve to be targeted	3 (25.0)	5 (62.5)
			I lack social skills	3 (25.0)	5 (62.5)
Social world is dangerous (<i>"They are the problem"</i>)	6 (50.0)	7 (87.5)	Friendships are unsafe	4 (33.3)	5 (62.5)
			People cannot be trusted	5 (41.7)	3 (37.5)
Social acceptance is fragile	7 (58.3)	7 (87.5)	Rejection is inevitable	6 (50.0)	6 (75.0)
			I work hard to blend in	3 (25.0)	3 (37.5)
			I need to be perfect to be acceptable	4 (33.3)	4 (50.0)
Minimising	5 (41.7)	7 (87.5)	I should be over it	3 (25.0)	4 (50.0)
			It wasn't bad enough to warrant a reaction	2 (16.7)	3 (37.5)

Note. Percentages reflect the proportion of participants in each group (low symptoms, *n* = 12; high symptoms, *n* = 8) who included a statement coded under that theme. High symptoms were defined as PTSD related to bullying (PCL ≥ 31) and/or social anxiety (SPIN ≥ 31).

4.3.3 Memory characteristics

Although participants reported being capable of remembering vivid details of their experiences, memories were more often described as blurry, unfocused, and as a combination of similar impressions rather than a single snapshot frozen in time. Furthermore, while memories were sometimes described as images or scenes from bullying experiences, most participants spoke about their recollection being more of a “feeling” or “felt-sense” strongly reminiscent of what was experienced at the time of the bullying.

Just like drop in the pit of my stomach and I had a sense of alert. [119]

I think it's sort of the same thing, feeling flushed and thinking well, it's just, it's probably just a reaction I cannot fully control, so I'm just feeling embarrassed and sad and angry and not fully in control of what's going on. Yes, I think it's the same sort of feeling. [104]

Interviewee No, I don't really have just random, like, flashbacks.

Interviewer Right. So, it's not like a picture or image will pop into your mind.

Interviewee No. I think it's more just the familiarity of feeling.

Interviewer How it felt.

Interviewee Yes, like a remembered feeling. And it's just kind of, like, yes. Gross.
[108]

A minority of participants did report memories as images related to past experiences, in the form of pictures, video clips, or ‘gifs’ (short repeated visuals), as well as more auditory components, varying in quality from vivid to more abstract.

Like a... Kind of like a video clip. And like sometimes there's audio to it as well.

Sometimes not. But yes. And full HD colours, everything. [117]

I would kind of just have this self-image of myself as just like metaphorically and mentally standing alone, if that makes sense. [116]

Triggers

Social situations were common triggers, especially in the symptomatic group, as well as existing low mood or rumination on other topics, social media, similar situations (or situations perceived as similar), locations, and making a mistake. Overall, more memory triggers were identified by those in the high symptoms group.

One participant described how social situations triggered anxiety and then memories related to experiences of bullying along with other negative personal experiences.

Interviewee I would find myself remembering and kind of tapping into the sort of emotional stress from the past, and also specific memories about things that had been awkward and stressful in the past.

Interviewer Yes, so it's kind of the social situation would sort of trigger an emotional parallel with something that happened before?

Interviewee Yes, and then I would also remember things that had happened before. [115]

Episodes of rumination on other negative aspects of life, or feeling low or anxious in general, was associated with increased memories of bullying in both groups.

Because sometimes you reflect on your childhood and it will come up and... Or sometimes when I think about how I see myself and who I am. Because I do that a lot. [105]

If I'm having a bad day, I suppose, if I'm feeling down about myself, then those sorts of things are more likely to appear. [110]

Yes, because if I'm thinking of that then I'm thinking of bullying and then I'll think oh yes, remember when that happened as well, and then remember when that happened as well and then that's when the other sort of little snapshots come in then. [118]

Social media was a trigger for memories for some participants, particularly if they remained connected online with those who picked on them.

It will be like if I see one of the friends come up on my newsfeed on Facebook or he pops up on my notifications, I just kind of flash back to all of that. I just remember like oh my God, you did that like you've got all these friends now and they probably don't know what you did [107]

People perceived as similar to bullies may also prompt memories of personal experiences.

Seeing groups of teenagers made me really, really anxious and seeing groups of, like, 12-year-olds or 13-year-olds, girls particularly and hearing groups of people laughing gave me lots of anxiety. [119]

Locations either directly involved in bullying or reminiscent of environments where bullying occurred may also trigger memories.

I still find it difficult going back to some of the places that I used to be because it still reminds me of how I felt back then and I didn't want to be stuck in that kind of place that had like caused me so much sadness. [107]

Making a mistake was described by one participant as being a prompt for negative memories that seemed to confirm the perception of worthlessness instilled on the participant by those who had bullied them.

Interviewee Sometimes episodes like that when I felt... Over a stupid thing like being late for the bus or forgetting my phone at home. The small things.

Interviewer Like making a little mistake about something?

Interviewee Yes. And during bad days I would just blow it out of proportion in my head and I'll be like, they were right, I'm worthless. [111]

4.3.4 Personal deficiency (“I am the problem”)

Several participants used statements that suggested a sense of deserving to be at the bottom of a perceived social hierarchy. This included acceptance that being targeted, disliked, and lacking worth are permanent features of their life due to personal deficiencies. They

described their treatment by others as being linked to their own inherently low value or undesirable features rather than being linked to negative characteristics of others or other environmental factors.

I shouldn't be liked

This subtheme refers to questioning others peoples' affection and whether others can truly feel positively towards them given their deficiencies. This can exist even in the context of positive and close current relationships.

I underestimate a lot what I might mean to them... For example, I might think that if my boyfriend, if me and my boyfriend have planned this, real life example, planned to do something on Sunday. Then he's like, oh cricket on Sunday. I might think, oh he's not going to do something with me. But he might be thinking, oh we can all together and make a day of it. But in my head, I would immediately go to, oh he's forgotten, he doesn't want to spend time with me, he doesn't... I would jump there, rather than more trusting that he still wants to do something with me. [106]

Even with friendships, I still sometimes have the... Those thoughts where I'm like, oh, if he or she didn't answer me back, it's because I'm annoying them, I'm a not a good friend to them and everything. Five years later and I'm still working at that. So working and giving myself... I'm worth it. You know, building that confidence back and that's hard. [111]

Sometimes when you are in a group of friends or when your classmate rolls your eyes while you're talking or his eyes while you're talking. Or... Yes... Sometimes I feel like, I know you people, they hate me but it's not being bullied. [111]

I think the thing that, like, still stays with me is feeling like I am intentionally being left out. Or, like, that the people are, like, engaging with me out of, like, politeness, rather than genuine interest in my life. [108]

Of note, some participants recognised having had these beliefs during and directly after their experiences of bullying, but no longer identifying with them.

I couldn't really build authentic relationships. I did forget to mention something, which is just kind of like trust being broken. Like somebody I thought I could trust would not turn out to be like trustworthy... But now I realise I was actually pushing away friendships because I didn't like to get hurt. I realised I was pushing away other kinds of interactions too. [116]

I am worth less than others

This subtheme refers to a connection made between experiences of bullying and being inferior to other people. For some, bullying exacerbated preexisting low self-esteem.

I couldn't blame anyone else, so it felt like because the people who supported me slightly were still friends with her and still... And so, I just assumed it must be something wrong with me. It was proof, or I took it as proof that these negative things I believed about myself were true. I was also really angry because it wasn't fair. [105]

Other participants saw bullying as a trigger for feelings of worthlessness.

I never felt worthless before the bullying. And, still today, the fear the of not being enough for someone. For them to leave me because I'm not enough to have them to stay by my side. [111]

And I'd say it reinforced some beliefs I already had about myself. Thinking that I was... My self-worth being low and confidence. I think that those were things that already existed in my head. So I think it reinforced them a bit. Which, even now, I still have issues sometimes with those types of feelings. So I think that was an added thing for that. [106]

And I mean certainly underrate myself in everything. I generally have not a really high opinion of myself in any way [112]

Feelings of worth were explicitly linked to perceived social status relative to peers and two participants made specific references to being very aware of the perceived social hierarchy in any given situation. Positioning themselves among people considered “low value” has the function of increasing comfort and increasing potential for perceiving themselves rising to the top of that social subset.

I guess I always feel quite uneasy in peer situations. And I feel... I find myself drawn to the outsider people, as opposed to the cool people. If I can see it. If I can see that that distinction exists in a group. [109]

So say there a room full of people my age, if there's someone who's extremely attractive or confident or things that I wouldn't sort of class myself as I guess then I would be really wary of talking to them because they're kind of better. Whereas if there's someone who, this sounds really bad, but if there's someone who's like less attractive or there's someone who's clearly not as confident I will gravitate to them. Because then I feel like I can help them I guess to join in and I always want to be like an enabler for people to feel comfortable and feel confident in themselves. Because then I feel like I'm the one who's in authority and I'm the one who's the highest level in that situation. I feel like I can kind of take control of that a bit better. [118]

I deserve to be targeted

This subtheme refers to an upsetting sense of being permanently marked out as a target. This is not necessarily associated with ongoing victimisation but rather reflects a belief that although future victimisation may take a new form, there will always be an increased risk of being targeted in some way due to factors that are intrinsic to them as a person.

Or I think if it happened again, maybe I wouldn't think it is so random, if it is happening again. But I sort of, like, crack it up to being, like, just kind of drawing the, like, social short straw. Like, I don't know, for whatever reason, you are the perfect storm of someone who is easy to pick on. [108]

Just that I have a very strong sense of not being... I think maybe a lot of children or people have this sense that there is something fundamentally not right about them and

that's the feeling which is one of the strongest that I've had with my experiences.

Almost like there's something naturally wrong with you [105]

One participant went further, describing a sense that they were marked out as deserving maltreatment and unable to recognise when others are treating them poorly.

I do find that sometimes when people, like, don't treat me very well, or like, say things that aren't necessarily appropriate and stuff, I don't tend to realise. I kind of expect it, and don't... And I don't realise until afterwards. So I don't know. Yes, I think I kind of sometimes expect to be treated badly, and then don't, don't really... And don't really realise that I'm being treated badly when I am, because I just kind of expect it. Which isn't very good. [117]

I lack social skills

This subtheme refers to being socially unsuccessful due to a personal lack of social skills. It was not clear whether this was considered a cause or consequence of bullying experiences, but neither was it clear that this was considered an important distinction. Rather, perceived lack of social skills during bullying continues to contribute to uncertainty in social situations.

I blindly navigate. I feel like I have a really hard time perceiving how people perceive me. [108]

I find it really really hard to know if I am being too clingy or too aloof, like, I find it really, really hard to find the balance because I didn't know I can trust my reading of

the situation. So I don't actually know if I am too quiet or not, because sometimes I just, like, don't speak or don't go and talk to people. But I don't know [119]

4.3.5 The social world is dangerous (“They are the problem”)

This theme was developed from statements suggesting wariness of other people, due to them being essentially unreliable and untrustworthy.

Friendships are unsafe

This subtheme refers to insecurity about friendships because it is not possible to be completely certain of other peoples' motives. This includes questioning other people's intentions in terms of maintaining or breaking off the relationship.

This participant describes her small current social network as intentional, mitigating the risk of exposing herself to the possibility of being betrayed, hurt, or abandoned again by multiple friends.

I feel like having a very small network is almost more beneficial. Because it is less people that can, like... I think relationships are, like, implicitly, like, they take something from you. And I feel like the less people I have close relationships with, the less people are, sort of, taking things from me... It's sort of a numerical thing. Where I am like, well, if I lose all of these people at one time, I'm, like, at least losing five, rather than 25... I would rather process, emotionally, only losing five close friends. Or having five close friends hurt me than dealing with 25. [108]

Not only, but I don't like really telling people that I get to know a lot about me or my life because I feel like it's not safe maybe to do that. Or otherwise they're not going to be interested in it at all. [112]

The sense of lack of safety associated with friendship was more deeply described by a participant who explained that although bullying seems less prevalent among adult relationships the possibility remains for hurtful behaviour that is perceived in the same way as bullying.

It's more confusing as an adult, than anything. Like, at least children, like, they are simple creatures. Like, they treat people like garbage. And that's very, like, obvious when they invite you somewhere as a joke and they laugh. At least they're laughing in your face. And I think, as an adult, I'd much rather have someone, like, laugh in my face, than, like, me not know if they're laughing behind my back. So, I think it's more just the, like, subtlety of adulthood that's got me quite on edge, and kind of paranoid.

[108]

People cannot be trusted

This subtheme refers to drawing connections between experiences of being bullied in the past and current unwillingness to rely on others, invest in them, or trust them to have good intentions.

And I think that's the only thing that I have really carried up until now... I was just always really anxious about if people were, like, if people were being truthful with me or, like, if it was all a joke. I don't really know how you would describe that... I think it's just, like, the ambiguity of it all is what makes me feel like this heightened sense of like unawareness. Or, like, suspicion I guess? [108]

4.3.6 Social acceptance is fragile

This theme was developed from statements suggesting a deeply held wish to be accepted by others and considerable corresponding effort to achieve acceptance, but also conviction that friendships can be lost at any moment and social acceptability is transient.

Rejection is inevitable

This subtheme refers to a belief in the inevitability of rejection by friends, such that it is highly likely to happen, uncontrollable, and remains a risk even in the context of positive interpersonal experiences. It is possible that rejection could be perceived even when it is not happening, as described by the following participant.

I think even if, for the rest of my life, I, you know, only ever really had... very nice interpersonal experiences, I would always still think, how long is this going to last. And I can't see how I could ever be completely convinced. Yes. I guess if I never... But yes. No, I think. Because sometimes I experience things that aren't rejections, or things that would cause this feeling. They can be very... They can be quite neutral really, looking at them from the outside. But I might still... I guess even people that I've known for a long time [109]

One participant who was bullied for several years as a teenager reported having recovered from this experience in her later adolescence as she developed different friendships and became more confident in personal qualities and likability. However, a recent move to a new environment led her to have familiar feelings of being rejected associated with the prior bullying she had been through.

Because I had kind of forgotten about all of the things that happened, until I'm starting to feel those feelings again. Like, I guess I really haven't dealt with this as, like, I probably should have. Or maybe this wouldn't be happening. So, maybe I should have dealt with it. And I think I am just becoming really hyper-analytical of the whole situation. Like how I can resolve it. So, yes, it's a weird thing to feel that all over again. And it's sort of, like, just getting home, when all the, sort of, chaos of the day stops. When I'm like... I just feel, like, bummed out that I don't have any plans. I have, like, three contacts on my phone. Like, everyone has read my messages but hasn't responded to it. Like, do you guys want to do this over the weekend? And not getting any sort of reception from anything. I mean it's not that I feel like totally alone. Because I have friends I can talk to. It's just sort of isolating. And I feel as isolated as I did in middle school. [108]

Connected to a fear of being rejected, a subset of participants spoke of feeling a constant need to receive reassurance that their relationships are valued. This was described both in friendships and romantic relationships.

I just always need that sort of reassurance that people haven't gone off me or know that they haven't taken this in the wrong way... I do feel like I need some sort of contact or clarification just to double-check that they still like me. [118]

I think that's the thing is like I need people to tell me that they want me around and people don't do that naturally and I know that but I don't ever want to be a pest and I think that's like my worst trait as an adult is that I don't want to pester people [107]

I need to try hard to blend in

This subtheme represents an eagerness to be accepted socially and a belief that remaining neutral (e.g., being uncontroversial, avoiding attention) is less likely to risk this outcome.

Interviewee I guess when you see what it can be like when people turn on you and do stuff like that, it does make you, as well, want to go under the radar and just not have that happen.

Interviewer What do you mean by go under the radar?

Interviewee Well, just not do anything that makes you really noticeable, good or bad. Just like cruise in that middle area.

Interviewer Yes. So, because that's safer?

Interviewee Exactly. It's safer.

Interviewer So you don't make yourself stand out?

Interviewee Yes. Because then if you're out there again, it might bring other stuff back up. Or something else might happen. It's just easier to just coast a bit. [106]

I might have something to say, but not want to draw attention to myself. I will not express an opinion that could be seen as controversial. Unless I was very, very comfortable with the audience. And so, I think I described earlier. I have this kind of neutral mask. That I can't really stop doing. [109]

I need to be perfect to be acceptable

Some participants noted a need to demonstrate their worth externally, via social success to be socially acceptable or using other markers (charity work, helping others, academic achievement) to be acceptable to themselves.

Social success was described as developing deep and perfect connections with friends, being unconditionally nice to escape criticism, or giving the appearance of being deeply socially impressive.

It's like a perfectionism that I have to be the perfect friend, I have to be perfectly understanding, I want them to think that I'm the only person... I'm not the only person, but I want them to think that I'm someone who really gets them. [105]

I'd, kind of, like, have a value because I'm nice. And that like I might not be... because no one's perfect and, you know, maybe I'm not really, really good at one thing or really, really good another but I'm really nice, I'm nice, I can be nice. And find value I suppose. [113]

I want people to think the bar is pretty high. I want people to think I'm the funniest. I want people to think I'm really confident. Yes, I kind of feel like if I'm not immediately likeable and confident and the best version of me then people will kind of think oh she was boring, won't bother seeing her again. [118]

Others reported the importance to them of academic attainment or other concrete examples of achievements to provide proof of self-worth.

Interviewer Okay. And, if you weren't 100% academically, it would feel like that?

Interviewee Yes, definitely. It would be horrible. I can feel my stomach sinking thinking about it. Because I don't know how to be with myself, unless I have those rules that I make up for myself in place. [105]

I think it became an obsession really because it was the only way that I felt, maybe good. I could feel, I was allowed to feel good about myself. It was like approved, you know, if you get a grade, it's black and white and you can say, oh that's good. [112]

The feeling of worthlessness, yes. Because since that time, I'm still making myself do things to feel like I'm worth something. I even did a humanitarian trip into an orphanage to help the orphanage but also selfish enough to make me feel helpful. To have a cause. And I... And I want to work with charities. To help those charities, of course, but also I'm doing something, I'm actually helping people, I'm worth something. [111]

4.3.7 Minimising

Participants in both groups expressed a sense of shame that they had been picked on and a wish to downplay past bullying experiences. For some, this was associated with a belief that if current social connections knew about their past experiences, their current social wellbeing could be damaged.

I definitely feel ashamed to come here and talk about it, because it's admitting... Like I said, admitting a part of your life you're not proud of because it was proved that you

weren't good enough... I think I didn't want to admit to anyone now that I ever was in a position where I did feel like that. [105]

I am slightly worried that I'll be associated with these things in a negative way as if it was like my fault. [113]

I should be over it

This refers to a belief that as an adult they should have left behind their negative experiences growing up.

I blame myself because I can't seem to be able to get over it. Like, I realise that it wasn't my fault that I was bullied, but I think that it's, sometimes I think that it's my fault, sadly myself for not being able to move on because I keep thinking about it and it's, I still let it affect me. [104]

That's what's frustrating about it. Is like how have you not found a way to get over this feeling? How are you still, like, thinking that everyone doesn't like you and doesn't want to be around you, when you have plenty of people back home that love you? And who want to be around you. [108]

I suppose the ideas and things that I picked up then, that that still shapes, to a very large extent, I think, how I behave now and how I interpret things, and I suppose still finding things stressful maybe when you shouldn't be and finding that annoying. [114]

It wasn't bad enough to warrant a reaction

This subtheme refers to a sense that experiences of bullying were not serious enough to warrant the reaction they have had.

I think sometimes, I feel really guilty and I'm not sure if that's something common, but I do feel sometimes really guilty that maybe in my, let's say in my bad days, I feel like I'd love to have a proof of how bad it was. Do you know what I mean, look, don't get me wrong, I'm very glad I didn't get beaten up or something but, sometimes it feels like it's... Do you know people have scars and everyone looks at them and goes oh yes, oh well that's what must have been bad, but if it's something that happens on this sort of, do you know, just weird, inter-personal level, you have no proof? What I say or just maybe what's true is what she says, and I can't go to anyone and say, but look, look, there's the proof. [112]

Sometimes I feel like a senior drama queen or do you know, I tell myself it wasn't that bad. I mean, other people, you know, get raped beaten and I don't know what, that is horrible. But then at the same time I've got a feeling that I want just especially the people involved to acknowledge that it happened. [112]

And compared with all of that, like, somebody making jokes about you being a lesbian, it's just one more thing... It felt worse. It was sort of, like, not even, you weren't really kind of legitimate to be upset about it. [115]

4.3.8 Coping strategies

The main means of coping with past experiences that has not been mentioned previously was distancing themselves from the experience in time and space.

This could be achieved by some by physically moving on from the situation (e.g., moving house, changing school). However, some participants also talked positively about having achieved distance from their former identity simply as a consequence of “*growing up*”. For these participants, coping relative to their experience actually appeared to be less relevant to them now.

I'm very separate to everything now. I'm in a different city, I studied something different, I'm around different people, I'm different in myself. For me it's more of a memory now just as starting school is a memory rather than something that's still kind of is ongoing, I suppose. It's one of those doors that's closed, it doesn't open very often. [107]

On the other hand, some participants also spoke about deliberately maintaining distance from their experiences to avoid associated feelings of shame.

I feel bad talking about it now. There was something wrong with me. I have that feeling sometimes still, of shame almost. Like I don't like that person I was, almost. Not that I think there was anything bad about me, but... Or disgust and... I don't want to be that person... But, I feel very disassociated from who I was. I really do. I'm just thinking about it now. I wouldn't want to say I am that person now and touch my body and be like, oh, that's me still. Even though I was. [105]

Avoidance and distancing from experiences (physically moving away from the location the bullying took place and emotionally distancing from a prior identity as a victim of bullying) were therefore prevalent coping strategies. Participants also mentioned attempting to avoid conflict using multiple strategies of over-apologising, trying not to “get in the way”, not asking for things (e.g., help, favours). In addition, participants noted putting up with bad treatment from others to maintain relationships and expecting to be treated poorly by others, even those close to them.

4.3.9 Romantic relationships

Although not directly addressed within the interview, some participants shared important insights about how past bullying by peers impacted current romantic or sexual relationships, even when peer relationships may no longer be impacted. This was in terms of expecting poor treatment within a relationship, putting up with being treated badly in order to maintain a relationship, doubting the other person’s feelings and requiring frequent reassurance, or avoiding emotional intimacy entirely to protect oneself.

Interviewee I think that now that I’ve gotten older, what, as a child, I think I was attracted to that in friends. But as I got older, I think my friendships have become a bit less like that. But my romantic relationships have taken on a lot of that.

Interviewer No boundaries?

Interviewee Also putting up with things. Which I did in friendships. There are quite a few that I’ve described. Where people would, even when I was about seven or eight. You know, being physically violent to me. And I put up with that. And in romantic relationships, I have sometimes put up with some things like that. And also just a kind of, a level of manipulation. [109]

And I think with boys as well, I liked having really overprotective to the point of a little bit controlling. I didn't see it as controlling. I liked it that somebody cared that much. [106]

I dated a few toxic persons who would just use that feeling of being worthless against me. Oh you're nice, but you're not enough, you're not worth it. And no, never again. I am worthy, I can do it. I just... Yes... And then romantic relationships are quite harder to... Because it's a different level of intimacy with friends. [111]

Like if I'm dating someone then I always need that double-check just to... Instead of blatantly saying do you like me, I need to have like a little sign that they still want to know me or want to get to know me. So I guess I always need that sort of little bit of thing [118]

Interviewee I guess even now, even though I have issues with confidence still, I'd say the sexual stuff I don't really worry about it, like I would other stuff. And that's not saying that I think I'm amazing. I just feel I find it easier to go into that place. Rather than let the people in, sometimes, that way.

Interviewer Than like, emotional...

Interviewee Yes, and trust and things like that. [106]

4.4 Discussion

This study explored characteristics of memories, appraisals, and coping strategies related to bullying that may contribute to ongoing symptoms of SAD and PTSD. In common with other qualitative studies with emerging adults who were bullied (deLara, 2019; Lidberg et al., 2022; Pabian & Vandebosch, 2021) all participants stated that their experiences of

bullying had negatively impacted their social and emotional wellbeing, either in the past or currently. Themes were developed across the full sample and differences in prevalence were noted between groups with high and low symptoms of SAD and PTSD, with particular focus on those themes which distinguished between symptom profiles. Notably, the high symptoms group generally reported a stronger sense of being a problem in themselves (permanently a target, not liked by others, lacking social skills and social worth), being at unsafe within friendships, and feeling at risk of being rejected by others regardless of their behaviour or evidence to the contrary. In addition, there was a stronger sense of minimising the impact of bullying experiences and hiding them from others among the high symptoms group.

Memory Characteristics.

Memories reported among this sample were not usually spontaneous intrusive memories but instead often impressions of past experiences of bullying that emerged alongside other related thoughts. Participants described a mix of phenomenology, between vivid memories and broader impressions of their experiences. However, they rarely considered their memories to be spontaneous or intrusive and rather described bringing them to mind more deliberately and experiencing them as an “only too familiar feeling” rather than an obvious call back to a previous experience. Descriptions of memories echoed the often highly emotional “felt sense” described in previous clinical research in relation to past traumatic events (Ehlers et al., 2004) and social trauma (Hackmann et al., 2000; Wild & Clark, 2011).

Personal deficiency (“I am the problem”)

A sense of being inevitably stuck at the bottom of a perceived social hierarchy was common among participants, though perhaps unsurprisingly was more common in the high symptoms group. Related cognitions may distinguish SAD and PTSD outcomes among people who have been bullied in a larger sample.

The social world is dangerous (“They are the problem”)

Lack of trust in others and insecurity in friendships was evident in both low and high symptom groups, although a sense of risk inherent in friendship appeared perhaps to be more common among the high symptoms group. Risk was perceived as it is not possible to fully know other peoples’ motives, or to know for sure their intention to maintain or break the relationship. Fear and mistrust of other people is common among people experiencing SAD and PTSD. It was notable, however, that some participants seemed to suggest beliefs that extended beyond mistrust of others in general to almost paranoid beliefs regarding known others, even those who were considered close friends or partners, despite lack of objective current evidence to support those beliefs. Of note, statements consistent with beliefs of “personal deficiency” and “social world is dangerous” were not mutually exclusive, such that the same participants reported both types of beliefs, suggesting a belief of deserving low social status (perhaps being treated poorly) and also being wary of other people who might be more socially powerful or likely to inflict harm.

Social acceptance is fragile

Participants in both groups described striving for social acceptance and behaving in ways that would support this goal, including trying hard to blend in and putting a lot of effort into trying to be perfect. However, this striving seemed to imply that this effort is necessary for social survival. Although these ideas were reported in both groups, participants in the high symptoms group seemed to more readily subscribe to the idea that ultimately rejection was inevitable, regardless of any efforts to avoid it. Efforts could include trying hard not to upset other people, not treading on other people’s toes, and being unquestionably nice. While these could be seen as positive prosocial behaviours, they may also be limiting if exercised to an extreme to which personal needs or wishes are disregarded. It is possible that these efforts suggest an inability to distinguish current (unthreatening) cues from past (threatening) cues,

such that ongoing neutral experiences continue to elicit previously practiced responses that were adaptive when being bullied but that are no longer appropriate. In cognitive therapy for PTSD, this is labelled as an inability to distinguish “then versus now”. For example, this could refer to a misinterpretation of a disagreement between friends as implying that the friend does not like them, intends to gossip about them behind their back, or will inevitably betray them in another way as they may have done in the past.

Minimising

Playing down the extent or objective severity of past bullying experiences seemed to be particularly concrete and unquestioned in the high symptoms group. Several participants in both groups expressed a sense of shame that they had been picked on, stating that their experiences of being bullied in the past would present a risk to current social wellbeing if others found out about it. This is because the fact that they were targeted in the past would mean something negative about them that remains true today, even if it is only true by virtue of knowing about their history (rather than being an obvious negative personality trait or visible feature). The fact of it having happened left a negative mark that is only visible once the information about past bullying is shared, and understandably they therefore wish to keep the information hidden. For example, if having been the target of bullying in the past holds a personal meaning of being weak or unattractive, then that same interpretation could be made by current friends or acquaintances. Further supporting this sense of shame around experiences of bullying, most participants downplayed the seriousness of past bullying experiences despite all participants stating that bullying had had a negative impact on their life, either in the past or in an ongoing way.

Coping strategies

Several participants spoke about feeling very disconnected from their past bullied self, and where participants were aware of their behaviour specifically in relation to past

experiences it was mainly as avoidance (including avoiding conflict or potentially socially threatening situations) and distancing from past experiences (physically being in a different place or different environments, emotionally identifying as a different person). Strategies for maintaining relationships were described as important even when they come at personal cost (putting up with bad treatment). Additional themes referred to “working hard to blend in”, “keeping quiet about experiences of bullying”, and “avoiding friendships or intimacy”.

Romantic relationships

Romantic relationships were not explicitly included in the interview schedules but important statements were made that suggested prior difficulties in peer relationships may be displaced into intimate relationships, regarding excessive or inhibited closeness, and even revictimisation. Thus, further investigation could be warranted.

4.4.1 Limitations

Most participants in this study were female and the high symptoms group did not include any male participants. Therefore, relevance of themes to men with higher symptoms cannot be guaranteed. Increased diversity and improved gender balance is a key target for subsequent studies. The interviews were flexible but core questions were developed from a cognitive behavioural perspective, and therefore explored the importance of memories, appraisals, and coping strategies. Therefore, this work differed from other qualitative studies with different *a priori* assumptions. A subset of data was recoded by a second rater to gauge reliability and it is possible that analytical rigour may have been further improved by a re-rating a larger proportion of the original codes. However, the purpose of the analysis was to provide ideas for subsequent work on measures and this was achieved. Percentage coverage of codes between groups was calculated to give an impression of which themes were shared between groups and which distinguished groups but the expression of these ideas and perceived importance of statements is more relevant here than the numbers. In common with

other qualitative studies with people who were bullied (Carlisle & Rofes, 2007; deLara, 2019; Pabian & Vandebosch, 2021; Thornberg et al., 2013), this study uses convenience sampling and lacks objective information about causality between bullying and mental health problems, relying on self-assessment of experiences and their impact. A strength of the current study was its focus on a relatively small age range (see also Lidberg et al., 2022).

4.4.2 Conclusion

First-hand accounts of bullying and its consequences among young people are foundational to this work. Uniformity in background characteristics of the current sample highlighted the need for a sampling strategy in future studies that accesses a more diverse group, probably with geographical spread beyond Oxford and London. Items representing themes generated in this analysis will be included in new measures for young people who were bullied. These items will be included in a larger scale survey and subjected to psychometric evaluation in the next chapter.

5

Exploratory and confirmatory factor analyses and psychometric validation of bullied cognitions, social attitudes, and behaviours measures

5.1 Introduction

Past experiences of social trauma, including events that happen in the context of bullying, are associated with social anxiety disorder in adolescents (Pontillo et al., 2019) and adults (McCabe et al., 2010). Symptoms consistent with PTSD are also associated with experiences of social trauma, including reexperiencing, avoidance of social situations, and unhelpful beliefs related to the events and their consequences (Bjornsson et al., 2020; Carleton et al., 2011). Cognitions related to memories of such events can also contribute to maintenance of social anxiety (Hackmann et al., 2000; Norton & Abbott, 2017a; Wild & Clark, 2011) and are important therapeutic targets. Furthermore, frequent assessment of cognitions and behaviours is recommended for guiding treatment and monitoring progress in cognitive therapy (Warnock-Parkes et al., 2020; Wild et al., 2020). Yet, there is a lack of bespoke bullying-related measures of cognitions and behaviours that predict symptoms of SAD and PTSD.

The previous chapters described exploration of cognitions and behaviours potentially relevant to maintaining SAD and PTSD among young people who have been bullied. In this chapter, items thought to represent these concepts are tested using a rigorous methodology in a large sample of young people who have experienced bullying to develop new measures including coherent factors. The ability of these measures to predict SAD and PTSD symptoms will be tested.

As described in Chapter 3, Ehlers and Clark's group have developed measures of cognitions and behaviours related to social anxiety and posttraumatic stress that are used to guide cognitive therapy for SAD (Warnock-Parkes et al., 2020) and PTSD (Wild et al., 2020). The Social Attitudes Questionnaire (SAQ) measures social beliefs and the Posttraumatic Cognitions Inventory (PTCI) measures beliefs about self, the world and self-blame related to trauma. The PTSD Safety Behaviours scale (PTSD-SBQ) measures coping behaviours for trauma-related symptoms and the Social Behaviour Questionnaire (SBQ) measures behaviours commonly associated with social anxiety. These are widely used scales that are described in detail below. However, there is scope for items to be more specifically tailored for young people who were bullied, where cognitive and behavioural responses to those events specifically may be particularly important for maintaining symptoms.

Bespoke measures of unhelpful cognitions and behaviours relevant to people who have experienced bullying could help to focus cognitive interventions. In cognitive therapy, idiosyncratic beliefs are elicited during skilled psychological assessments and throughout therapy and this process is supported by using validated measures of cognitions and coping behaviours. Bespoke measures would provide specific relevant prompts for therapists and may even aid disclosure. Bespoke measures also provide a replicable basis for research into specific mechanisms that may maintain emotional difficulties among people who have been bullied.

Three proposed measures are:

- 1) Bullied Cognitions Inventory (BCI), measuring beliefs about self, others, and the social environment.
- 2) Bullied Social Attitudes Inventory (BSAI), measuring beliefs about relationships, friendships, and social interactions,
- 3) Bullied Social Behaviours Scale (BSBS) measuring behaviours in relation to social interactions and relationships.

There have been numerous recent advancements in measure development methods (Sellbom & Simms, 2019) including using multiple indices to statistically evaluate how well suggested models fit the data. Potential items for each measure are first evaluated using an exploratory factor analysis (EFA). Items within a measure that correlate more strongly constitute factors and represent subthemes, of which there may be one or many. The conceptual and theoretical framework for each measure is balanced with the empirical structure derived from the EFA to produce a solution. This solution is then tested via confirmatory factor analysis (CFA) in a separate sample of individuals who have completed the same items to assess the extent to which the designated structure fits the data and therefore the extent to which it may be generalised beyond the original sample (Brown, 2015). The structure of the model is assessed using model fit statistics as well as multiple tests of reliability and validity. This is an important methodological improvement on basic factor analyses which rely exclusively on factor loadings and conceptual interpretability without considering how well the solution actually represents the data or how different factor structures compare to each other (Boateng et al., 2018; Muthén & Muthén, 2012). Therefore, the proposed measures will be subjected to rigorous psychometric evaluation.

5.2 Methods and materials

Initial themes of cognitions and coping behaviours related to bullying were derived from consultation with expert clinicians and literature review and items reflecting these themes were subjected to initial evaluation within an online pilot study (Chapter 3). Feedback was elicited regarding clarity and suitability of items, as well as the survey process, including format, content, and acceptability. Furthermore, qualitative analysis was conducted on interviews with young people who experienced bullying (Chapter 4). Items were further refined and this chapter describes more stringent statistical evaluations with a large sample of young people with experiences of bullying.

5.2.1 Procedure

In total, 1879 young people aged 18 to 29 who anticipated starting university or college in the UK in September 2018, completed a survey about bullying and mental health. Potential students were contacted via email using a student app mailing list. When the survey was distributed, all higher education applications were managed via UCAS (the university application system) and anyone registered with that system was eligible for free membership of the networking app. Measures were completed online during August 2018. Participants were invited to repeat the survey at three further time points (November 2018, February 2019, May 2019) and this data is reported in Chapter 7. A subgroup of 10% of participants ($n = 190$) completed selected items and measures again one week later for test-retest reliability. This subgroup also completed measures required for criterion validity. Compensation for taking part was via entry into a prize draw for online shopping vouchers at each time point. The study received ethical approval from University of Oxford Medical Sciences Interdivisional Research Ethics Committee (R58149/RE001) [Appendix 4].

5.2.2 Inclusion and exclusion criteria

Participants were young people expecting to begin university in the UK in Autumn 2018, aged 18 to 29. Participants included both individuals with and without personal experiences of bullying. Prospective students aged under 18 at the time of the first assessment in August 2018 were excluded due to being legal minors at that assessment point and therefore not permitted to take part.

5.2.3 Measures

New measures

There is no definitive recommendation for the optimum number of response options in self-report scales, but there is evidence that measurement precision increases up to five response options, with diminishing returns after six but no detriment to including seven (Simms et al., 2019). These recommendations were considered alongside similar existing scales and need for creating response options with meaningful distinctions for each measure.

Bullied Cognitions Inventory (BCI).

Items proposed for this measure reflect thoughts about self and others in relation to experiences of bullying. Participants who have experienced bullying rate items on a 7-point Likert scale, from 1 (*totally disagree*) to 7 (*totally agree*) over the last month. Higher scores indicate more maladaptive appraisals, so lower scores indicate better outcomes. The format of this scale is modelled on the PTCI.

Bullied Social Attitudes Inventory (BSAI).

Items proposed for this measure describe beliefs about self and others in social interactions, relationships, and friendships. Participants rate their agreement with each item on a 7-point Likert scale, from 1 (*totally disagree*) to 7 (*totally agree*) over the last month.

Higher scores indicate more maladaptive appraisals, so lower scores indicate better outcomes.

The format of this scale is modelled on the PTCI.

Bullied Social Behaviours Scale (BSBS).

Items proposed for this measure describe covert behaviours in social situations and relationships. Participants rate how often they engaged in each of the behaviours when in social situations, on a 5-point Likert scale, from 0 (*never*) to 4 (*always*) over the last month.

The format of this measure is modelled on the PTSD Safety Behaviours Questionnaire.

Cognitive and Behavioural Measures.

Posttraumatic Cognitions Inventory.

The PTCI (Foa et al., 1999) is a measure of excessively negative appraisals of a traumatic experience and its consequences. A 20-item version was used (Kleim et al., 2013) that was adapted to refer to the worst bullying experience as the index event. It includes negative cognitions about the self, the world and self-blame that are rated on a 7-point Likert scale from 1 (*totally disagree*) to 7 (*totally agree*). Item 8, “*I cannot accept the way my body has changed since the trauma*”, and item 20, “*Since the trauma, I feel that my body is ruined*” were not included as they were not relevant for the current study. A mean score is calculated (range 1 – 7). Higher scores indicate more maladaptive appraisals. The measure has shown good psychometric properties and internal consistency in this sample was excellent, $\alpha = .94$. It can be downloaded from oxcadatresources.com

Social Attitudes Questionnaire (SAQ).

The SAQ is a 50-item scale (Clark, 2005) measuring social anxiety related beliefs. Agreement with each item is rated on a 7-point Likert scale from 1 (*totally agree*) to 7 (*totally disagree*) and a mean score is calculated (range 1 – 7), with higher scores indicating

better outcome. Internal consistency in this sample was excellent, $\alpha = .98$. It can be downloaded from oxcadatresources.com. This was completed by the retest subsample only. Of note, this measure was considered more closely aligned with the new measures so it replaced the Social Cognitions Questionnaire (Clark, 2005) that was used in the pilot study (Chapter 3).

PTSD Safety Behaviours Questionnaire (PTSD-SBQ).

The PTSD-SBQ is a 14-item scale, adapted from earlier versions (e.g., Dunmore et al., 2001) measuring how often individuals have used safety-seeking behaviours to make their lives and that of significant others safer over the past month. Frequency of using each behaviour is rated on a 4-point Likert scale from 0 (*never*) to 3 (*always*) and a mean score is calculated (range 0 – 3). Higher scores indicate more extensive use of the behaviours. Internal consistency in this sample was excellent, $\alpha = .92$. It can be downloaded from oxcadatresources.com. This was completed by the retest subsample only.

Social Behaviour Questionnaire (SBQ).

The SBQ is a 28-item scale (Clark, 2005) measuring how often individuals use a range of common safety-seeking behaviours. Frequency of using each behaviour when feeling anxious in or before a social situation is rated on a 4-point Likert scale from 0 (*never*) to 3 (*always*) and a mean score is calculated (range 0 – 3), with lower scores indicating a better outcome. Internal consistency was excellent, $\alpha = .92$. It can be downloaded from oxcadatresources.com. This was completed by the retest subsample only.

Victimisation.

California Bullying Victimization Scale (Felix et al., 2011), adapted for retrospective adults self-report (Reid et al., 2016). This measure asks if the participant has experienced any of nine specific direct and indirect bullying experiences, including over the internet in a mean

or hurtful way. Participants also rate the frequency each type of bullying occurred, “*a few times a year or less*”, “*about once a month*”, “*2 or 3 times a month*”, “*about once a week*”, “*several times a week*”. They reported whether the main aggressor held a position of power over them in terms of being older, bigger, more athletic, attractive, popular, wealthy, or intelligent. In addition, participants selected the “worst” of their experiences and rated its severity from 0 (*not severe at all*) to 10 (*extremely severe*). A threshold for categorisation as having been bullied was defined in this study as reporting five or more types of bullying and/or frequency 2 to 3 times per month or more.

Psychopathology.

Participants reported symptoms of posttraumatic stress disorder related to their worst bullying experience on the PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013) and social anxiety symptoms on the Social Phobia Inventory (SPIN; Connor et al., 2000).

Background characteristics.

Participants provided their age, gender, ethnicity, and sexual orientation.

5.2.4 Data analysis

Data preparation

Special procedures were used to assess reliability of the data given that oversight of data collection was limited by the online format. Possible “straight-lining”, referring to repeatedly selecting the same response across the survey, was suspected if the same response value was provided across all items on multiple questionnaires. Total time taken to complete the survey is automatically recorded by Qualtrics and was used as a secondary factor to assess reliability, such that very quick response time compared with the total number of measures completed might indicate unreliable data. Of note, long recorded duration is not an accurate reflection of actual completion time because it does not account for participants taking breaks or stopping answering questions without properly exiting the software. Flagged

cases were reviewed individually. No participants were excluded as a result of these checks. Data were prepared using SPSS 27 and R software (R Core Team, 2022). Cases were included for each analysis if they responded to at least one item within the relevant item pool.

Item reduction.

Items were flagged as possible candidates for removal if responses did not cover the full range of possible options on the scale, there was a very low spread of scores across the sample, there were low correlations ($r < 0.4$) with main outcomes of social anxiety (SPIN) and PTSD related to bullying (PCL-5), if they were very similar in meaning to other items, or if wording was unclear. Removed items are described in detail for each measure below.

Original item lists are in Appendix 5.

Exploratory/Confirmatory Factor Analysis.

Analyses were conducted in R (R Core Team, 2022) using RStudio (RStudio Team, 2022) and results were collated using R packages markdown (Allaire et al., 2022) and papaja (Aust & Barth, 2022). I used R packages haven (Wickham, Miller, et al., 2022), tidyr (Wickham & Girlich, 2022), dplyr (Wickham, François, et al., 2022), conducted EFA using psych (Revelle, 2021) and CFA using lavaan (Rosseel, 2012; Rosseel et al., 2022).

Exploratory factor analysis (EFA) determines the smallest number of interpretable factors needed to explain the correlations among a set of items. Confirmatory factor analysis (CFA) tests the suggested factor structure in a different sample. The sample was split into two random half datasets using R's random sampling function for model development (EFA) and validation (CFA). To establish that factor analysis of the selected items was appropriate, I assessed Kaiser-Meyer-Olkin (KMO) sampling adequacy, a relative measure of correlation (Kaiser & Rice, 1974), and Bartlett's test of sphericity. Analysis could proceed with KMO > 0.7 and significant sphericity.

Due to the limitations of any one approach (Finch, 2019), multiple metrics guided decision making regarding the number of factors to extract within each measure. These were number of factors with Eigenvalues > 1 (Guttman-Kaiser rule), number of factors indicated before the elbow on a scree plot, number of factors suggested by parallel analysis, and comparison of fit between models, as described below.

Model testing requires selection of an appropriate estimator and, assuming the model has more than one factor, an appropriate rotation technique is applied to ensure that the solution is interpretable. A model is considered to fit the observed data to the extent that the model-implied covariance matrix is equivalent to the empirical covariance matrix. Different methods can be applied for estimating parameters once a model is specified and empirical covariance matrix is given. Appropriate model estimation procedures depend on the characteristics of the data involved, namely skewness and kurtosis, missingness, and classification as categorical, ordered, or continuous. Skewed data is common when assessing potentially clinical features within a non-clinical sample such as in this study. Missingness in this study at baseline measurement was low (completion rate 0.995-0.998). The measures in this study were rated on Likert scales with five to seven response options. MLR, a “*maximum likelihood robust*” estimator, is robust to non-normality in continuous variables, including scales with more than four or five scale points (Finney & DiStefano, 2006). WLSMV, a “*weighted least squares mean and variance adjusted*” estimator, is generally used for categorical variables or scales with up to four response options (Schermele-Engel et al., 2003) and is robust to deviation from normality in continuous variables. Although WLSMV is a viable alternative, ultimately the MLR estimator was chosen in these analyses given the characteristics of the data. Choice of rotation technique depends on correlations between factors. If there is negligible correlation between factors, then orthogonal rotation can be applied. However, if intercorrelation between factors is expected then oblique rotation is

preferred. As is the case with most measurement instruments used in psychological research (Schermelleh-Engel et al., 2003) intercorrelation was expected between factors in the measures being developed, so an oblique (oblimin) rotation was applied.

After initial items were removed using the item reduction process described above, items were evaluated for their statistical contribution to the measures and variance explained in the construct being assessed. I reviewed the factor loadings within the specified factor matrix (i.e., regression coefficients of each item on each factor, representing the extent to which an item explains the trait described in the factor). Factor loading above an absolute value of 0.3 indicated that the item was potentially associated with the factor, with larger values being indicative of greater affinity with the specified factor and therefore increasingly well-defined structure. Items with relatively weaker factor loadings (< 0.4) were candidates for removal. I also evaluated item complexity, indicated by the the extent of cross-loading across factors (difference below 0.2) and item complexity ratings, such that complexity ratings closer to one indicated lower complexity (Pettersson & Turkheimer, 2010). If any item had two significant loadings (> 0.3) I considered it for removal. Otherwise, it was placed within the most conceptually appropriate factor. The item reduction process and and reasons for removal are described in detail for each measure below. After removing an item, the EFA was re-run so that subsequent decisions regarding removal of additional items were based on the new results.

Model Fit Statistics.

I assessed model fit according to four recommended fit statistics (Brown, 2015; Hu & Bentler, 1999). Chi-square fit was determined such that χ^2 :df ratio below 3:1 is acceptable (i.e., χ^2 /df below 3). Of note, chi square is often statistically significant in models with more than 200 cases, values are higher in highly skewed and kurtotic variables, and higher correlations within the model are associated with poorer fit. Model fit was also assessed using

Comparative Fit Index (CFI), Tucker Lewis Index (TLI), and root mean square error of approximation (RMSEA). Acceptable fit was indicated by $CFI \geq .90$, $TLI \geq .90$, $RMSEA \leq .08$. Good fit was indicated by $CFI \geq .95$, $TLI \geq .95$, and $RMSEA \leq .06$.

Once a suitable structure was defined in the EFA sample, I applied the same structure within the CFA sample and evaluated model fit using the same indices. To assess the appropriateness of using single scale scores, I also evaluated fit statistics for each full scale using a single second-order factor. Modification indices represent the improvement in model χ^2 that is achieved by freeing the residual variance correlation between two items and were considered only if very large (> 30) and conceptually appropriate (Brown, 2015).

Reliability and Validity.

In addition to establishing good model fit, I applied several tests of reliability (internal consistency, test-retest) and validity (convergent, discriminant, criterion) to evaluate the robustness of the scales.

I assessed internal consistency by calculating Cronbach's alpha for each of the extracted factors and for the full scale, such that 0.7 to 0.8 is considered respectable, 0.8 to 0.9 very good, and recognising that an alpha > 0.9 may suggest multicollinearity. I calculated test-retest reliability to determine the stability of the total scale and subscales over time within a subset of the sample who completed the same items a week later, such that a correlation > 0.7 between time points was considered acceptable and > 0.8 was good.

I assessed convergent validity by calculating the percentage of item variance explained by the extracted factors (R^2 in linear regression) and applied a minimum threshold of 0.5, meaning that 50% of item variance is explained by all extracted factors (Hair et al., 2010).

I assessed discriminant validity between factors (representing subscales) to test the extent to which they reflect distinct constructs. Between factor correlations below 0.85 were

considered acceptable (Brown, 2015) with higher correlations indicating potential multicollinearity.

I assessed criterion validity of the extracted scales using Pearson correlations with symptoms of PTSD to bullying experience (PCL-5) and Social Anxiety (SPIN) and pre-existing measures of cognitions and behaviours that are relevant for PTSD (PTCI, PTSD-SBQ) and SAD (SAQ, SBQ) respectively. As an additional step to assess the unique contributions of the new measures to explaining variance in the outcomes, multiple logistic regressions included the new measures alongside pre-existing measures of cognitions and behaviours, and power imbalance during the event.

5.3 Results

5.3.1 Participants

Of those who completed the survey, 1279 reported experiences of bullying and were included in these analyses. Participants were split at random into two groups, the first for developing the measures and the second for testing them. Participant characteristics for the full sample, and exploratory and confirmatory samples are presented in Table 5.1. The groups did not differ in terms of bullying exposure, age, gender, ethnicity, sexual orientation, or PTSD and social anxiety scores. Analyses for each measure included cases with a response to at least one item in the item pool for that measure. Ten percent of those who completed the initial assessments ($n = 190$) completed a selection of measures again one week later for test-retest reliability assessment. Of these, 145 were categorised as having experienced bullying and were included in these analyses. This subgroup was 70.3% women, 37.2% sexual minority (lesbian, gay, bisexual, other, unsure), 83.4% white, had experienced on average 5 types of bullying (of a maximum 9 types) and was similar to the full sample in terms of symptoms of PTSD (PCL; Mean = 28.6, SD = 20.89) and social anxiety (SPIN; Mean = 33.07, SD = 16.75).

Table 5.1 Participant Characteristics for Full Sample and EFA/CFA Samples

	Full sample (n = 1279)	EFA sample (n = 650)	CFA sample (n = 629)	Statistic (<i>t</i> , χ^2)
Age in years <i>M</i> (<i>SD</i>)	19.33 (2.31)	19.26 (2.23)	19.41 (2.38)	<i>t</i> = -1.151
Gender n (%)				
Female	958 (74.9)	488 (75.1)	470 (74.7)	$\chi^2 = 2.701$
Male	290 (22.7)	145 (22.3)	145 (23.1)	
Other	25 (2.0)	12 (1.8)	13 (2.1)	
Prefer not to say	6 (0.5)	5 (0.8)	1 (0.2)	
Sexual Orientation n (%)				
Heterosexual	875 (68.4)	440 (67.7)	435 (69.2)	$\chi^2 = 3.941$
Bisexual	215 (16.8)	113 (17.4)	102 (16.2)	
Homosexual	74 (5.8)	42 (6.5)	32 (5.1)	
Other/Unsure	104 (8.1)	48 (7.4)	56 (8.9)	
Prefer not to say	11 (0.9)	7 (1.1)	4 (0.6)	
Ethnicity n (%)				
White	1020 (79.7)	503 (77.4)	517 (82.2)	$\chi^2 = 4.600$
Other	254 (19.9)	144 (22.2)	110 (17.5)	
Prefer not to say	5 (0.4)	3 (0.5)	2 (0.3)	
Type of bullying experienced n (%)				
Teased	1213 (94.8)	609 (93.7)	604 (96.0)	<i>t</i> = 0.948
Ignored	1159 (90.6)	597 (91.8)	562 (89.3)	
Gossiped about	1112 (86.9)	563 (86.6)	549 (87.3)	
Sexual comments	873 (68.3)	452 (69.5)	421 (66.9)	
Threatened	764 (59.7)	394 (60.6)	370 (58.8)	
Hit	731 (57.2)	369 (56.8)	362 (57.6)	
Online	644 (50.4)	353 (54.3)	291 (46.3)	
Belongings stolen	552 (43.2)	273 (42.0)	279 (44.4)	
Other	130 (10.2)	69 (10.6)	61 (9.7)	
Number of types experienced <i>M</i> (<i>SD</i>)	5.61 (1.83)	5.66 (1.82)	5.56 (1.85)	
Social Anxiety ^b <i>M</i> (<i>SD</i>)	31.4 (16.53)	32.34 (16.53)	30.45 (16.48)	<i>t</i> = 1.750
PTSD ^c <i>M</i> (<i>SD</i>)	28.3 (19.56)	28.92 (19.52)	27.59 (19.59)	<i>t</i> = 1.162
Depression <i>M</i> (<i>SD</i>)	11.42 (7.09)	11.50 (7.26)	11.34 (6.93)	<i>t</i> = 0.332
General Anxiety <i>M</i> (<i>SD</i>)	9.02 (6.02)	9.10 (6.11)	8.94 (5.94)	<i>t</i> = 0.423

Note. Full sample includes participants classified as having been bullied (five or more types, 2/3 times per month or more). EFA = Exploratory factor analysis. CFA = Confirmatory factor analysis. Statistic refers to comparison between EFA and CFA samples. Social anxiety measured with Social Phobia Inventory (SPIN; range 0 – 68). PTSD to worst bullying experience measured with PTSD Checklist for DSM-5 (PCL-5; range 0 – 80).

5.4 Bullied Cognitions Inventory (BCI)

This measure reflects beliefs about self and others in relation to experiences of bullying. Participants who have experienced bullying rated items on a 7-point Likert scale, from 1 (*totally disagree*) to 7 (*totally agree*) over the last month.

5.4.1 Item reduction

Responses across all items spanned the full range of the scale. Of the initial 23 items, five items were removed in the first step, due to extreme skewness (item 1, "*I deserve to be treated the way they treated me*"), low correlation with main outcomes (item 7, "*If someone is more important than me then they have the right to pick on me*"), repetitive wording risking multicollinearity whereby the clearest item was retained (item 10, "*If people knew I was picked on they would find me less attractive*"), overlap with retained item 13, "*If people knew I was picked on they would think less of me*") and unclear concept (item 18, "*I wish I had physical scars so people could see how bad it was*", and item 3, "*I am the classic example of someone who is easy to pick on*").

Factor analysis was confirmed to be appropriate for the remaining items ($n = 18$), such that the Kaiser-Meyer-Olkin test of sampling adequacy was high ($KMO = 0.96$) and Bartlett's test of sphericity was significant ($\chi^2 = 6,334.33$, $df = 171$, $p < .001$). These were entered into an EFA among the first random half of the sample ($n = 449$) using maximum likelihood estimation that is robust to non-normality and appropriate for continuous data including scales of more than four or five scale points with oblimin rotation to account for expected correlations between factors.

5.4.2 Exploratory Factor Analysis

Suggested number of factors varied according to method used. Eigenvalues suggested a 2-factor solution (10.68, 1.24, 0.84) and the scree plot suggested up to three factors. Parallel analysis suggested 4 factors. However, fit statistics indicated poor fit for the two factor

solution (TLI = 0.90, RMSEA = 0.09, $\chi^2 = 628.24$ on $df = 134$, $\chi^2:df = 4.69$), acceptable fit for the three factor solution on all but one of the fit indices (TLI = 0.93, RMSEA = 0.07, $\chi^2 = 390.84$ on $df = 117$, $\chi^2:df = 3.34$), and excellent fit for the four factor solution (TLI = 0.96, RMSEA = 0.06, $\chi^2 = 245.48$ on $df = 101$, $\chi^2:df = 2.43$).

Therefore, model fit and factor loadings in the EFA were evaluated for two, three and four factor solutions to establish a well-fitting and conceptually coherent model. Items with relatively low factor loadings (< 0.4) and/or high complexity indicated by high cross-loadings (within 0.2) were considered for deletion. These features were evident across all factor solutions for item 2 (*"If I fail at anything it means the person or people who picked on me were right"*) which was therefore removed. Model fit for the three-factor solution remained poor but the four-factor model fit improved, with good conceptual fit supported by a two-item factor of item 8 (*"I have been totally degraded"*) and item 17 (*"I have been totally humiliated"*). Although factors can be indicated by two items in EFA, particularly if highly correlated as the items are here, this would produce an unidentified model in subsequent CFA. Factors must include three or more items to produce a stable scale. Therefore, despite relatively low loading and high cross loading onto this factor, item 5 (*"If I hadn't been picked on maybe I would be a better person than I am now"*) was retained to support the overall stability of the measure. Two further items were removed to simplify the scale without reducing model fit, item 6 (*"I still believe the things that other people told me about myself"*) and item 9 (*"If people knew I was picked on they would reject me"*).

Among the remaining 15 items, fit statistics indicated poor fit for the two-factor solution (TLI = 0.89, RMSEA = 0.10, $\chi^2 = 403.55$ on $df = 76$, $\chi^2:df = 5.31$). The three factor solution had acceptable fit on all but one of the indicators (TLI = 0.92, RMSEA = 0.08, $\chi^2 = 258.11$ on $df = 63$, $\chi^2:df = 4.10$) but the four factor solution had a much closer fit to the data

(TLI = 0.97, RMSEA = 0.05, $\chi^2 = 111.36$ on $df = 51$, $\chi^2:df = 2.18$) and produced coherent and interpretable factors. Of note, removing item 5 which was retained to stabilise the four-factor solution did not improve model fit for the three-factor solution (TLI = 0.911, RMSEA = 0.092, $\chi^2 = 250.47$ on $df = 52$, $\chi^2:df = 4.82$).

Therefore, the four-factor model with 15 items was chosen. This model explained 52.5% of the variance and had adequate factor loadings for all factors. It had good conceptual fit with the concepts being described. Factors were labelled as “*Negative interpretations of reactions to bullying*” (6 items, 18.6%), “*Recognisable as a bullying victim*” (3 items, 12.3%), “*Degraded in the eyes of others*” (3 items, 12.0%), and “*Social defeat*” (3 items, 9.4%).

5.4.3 Confirmatory Factor Analysis

I ran a CFA to evaluate the fit of the four-factor structure in the validation sample ($n = 405$) again using a robust maximum likelihood estimator (MLR) and oblimin rotation. The highest loading item was the reference item.

The final four factor model had acceptable fit for the data on two indices (CFI = 0.94, TLI = 0.92, RMSEA = 0.08 (CI: 0.07 - 0.09), $\chi^2 = 299.11$ on $df = 84$, $\chi^2:df = 3.56$), but RMSEA and chi-square ratio were slightly outside the acceptable range. Modification indices suggested that adding a correlated residual between item 8 and 17 (56.832) would improve model fit (CFI = 0.95, TLI = 0.94, RMSEA = 0.07 (CI: 0.06 - 0.08), $\chi^2 = 244.59$ on $df = 83$, $\chi^2:df = 2.95$). However, this adds extra complexity to the model which was marginally acceptable without the modification. Therefore, ultimately the modification was not included.

Superior fit for the four-factor model was confirmed by chi-square comparison with the three-factor model ($\Delta\chi^2 = 76.06$, $\Delta df = 3$, $p = < .001$).

Given that the factors are all positively correlated, I tested a combined second-order factor that included all four factor loadings. All four factors loaded significantly onto the second-order factor with acceptable fit on three indices (CFI = 0.94, TLI = 0.92, RMSEA = 0.08 (CI: 0.07 - 0.09) although chi-square ratio was slightly above the acceptable range ($\chi^2 = 303.94$ on $df = 86$, $\chi^2:df = 3.53$). Model fit was not significantly different from the four-factor model ($\Delta\chi^2 = 3.146$, $\Delta df = 3$, $p = .207$). This suggests that a combined total score is meaningful alongside the individual factor scores. Factor loadings are shown in Table 5.2.

Table 5.2 Bullied Cognitions Inventory (BCI) factor loadings for exploratory and confirmatory factor analyses, and reliability and validity statistics

Item	Factors								
	1		2		3		4		
	EFA	CFA	EFA	CFA	EFA	CFA	EFA	CFA	
11	0.937	0.868							
12	0.540	0.687							
13	0.725	0.900							
23			0.783	0.673					
15			0.689	0.672					
16			0.561	0.785					
19			0.686	0.630					
20			0.665	0.781					
22			0.631	0.772					
4					0.900	0.815			
14					0.718	0.771			
21					0.679	0.774			
8							0.877	0.714	
17							0.704	0.693	
5							0.166	0.746	
Inter Factor correlations									
Factor 1: "Degraded in the eyes of others"	-	-							
Factor 2: "Negative interpretations of reactions to bullying"	0.731	0.811	-	-					
Factor 3: "Recognisable as a bullying victim"	0.732	0.766	0.669	0.771	-	-			
Factor 4: "Social defeat"	0.711	0.796	0.704	0.898	0.662	0.856	-	-	
Second-Order Factor loadings	-	0.876	-	0.911	-	0.868	-	0.843	
Outcome correlations									
Social Anxiety	0.483	0.452	0.499	0.515	0.492	0.538	0.504	0.479	
PTSD	0.558	0.518	0.607	0.580	0.557	0.505	0.643	0.601	
Depression	0.500	0.438	0.526	0.553	0.471	0.479	0.555	0.537	
Anxiety	0.522	0.471	0.541	0.532	0.531	0.497	0.587	0.541	

Note. EFA = Exploratory factor analysis, CFA = Confirmatory factor analysis

5.4.4 Reliability and validity

Reliability assessments within the CFA sample showed that internal consistency was very good for factors (Cronbach's $\alpha = 0.82 - 0.85$) and full scale ($\alpha = 0.93$). Test-retest reliability was good for the total scale ($r = 0.88$) and good across three factors (Factor 1: $r = 0.76$, Factor 2: $r = 0.84$, Factor 3: $r = 0.80$) but slightly lower for Factor 4 ($r = 0.68$). Item deletion statistics based on alpha did not support dropping any items. Convergent validity was partially confirmed such that percent variance explained by extracted factors was above 0.5 for items other than item 12 ($r^2 = 0.472$), item 15 ($r^2 = 0.451$), item 19 ($r^2 = 0.397$), item 22 ($r^2 = 0.419$), item 23 ($r^2 = 0.453$). Discriminant validity was marginally acceptable with factor correlations between 0.766 - 0.898. Criterion validity was established by significant medium-large Pearson correlations with symptoms of social anxiety ($r = 0.57$) and PTSD ($r = 0.65$). The total score also had a large positive correlation with the Posttraumatic Cognitions Inventory (PTCI; $r = 0.78$) and a large negative correlation with the Social Attitudes Questionnaire (SAQ; $r = -0.72$), which was completed by the retest subsample and limited to those who were bullied ($n = 143$). Negative correlation was expected here as higher scores on the SAQ indicate better functioning. Factor correlations and outcome correlations are in Table 5.2. Additional correlations are shown in Appendix 6; total score with background and victimisation characteristics in Table 1 and factors with PTCI and SAQ in Table 2.

I conducted a multiple linear regression analysis using total scores to evaluate the relative contribution of the BCI measure and the existing PTCI and SAQ (alongside power imbalance) in explaining variance in PTSD and social anxiety symptoms respectively. Results indicated that the models explained 59.8% of the variance in PTSD symptoms ($R^2 = .598$, $R^2_{\text{Adjusted}} = .596$, $F(3, 768) = 380.220$, $p < .001$) and 41.7% of the variance in social anxiety symptoms ($R^2 = .417$, $R^2_{\text{Adjusted}} = .403$, $F(3, 125) = 29.835$, $p < .001$). The BCI explained a small but significant amount of additional variance in PTSD symptoms over the

PTCI but the contribution to explaining social anxiety symptoms over the SAQ was not significant. See Table 5.3.

Table 5.3 Multiple regressions of Bullied Cognitions Inventory with PTCI on PTSD symptoms and SAQ on social anxiety symptoms.

	Social anxiety				PTSD			
	B	SE	β	p	B	SE	β	p
Constant	46.822	12.375		< .001	-11.608	3.521		.001
Power imbalance	3.220	4.892	.046	.512	2.440	1.789	.031	.173
SAQ	-6.748	1.355	-.493	< .001	-	-	-	-
PTCI	-	-	-	-	.533	.029	.663	< .001
BCI	.137	.075	.182	.071	.116	.033	.130	< .001

Note. Social anxiety symptoms measured using SPIN. PTSD symptoms to worst bullying experience measured using PCL-5. PTCI = Posttraumatic Cognitions Inventory. SAQ = Social Attitudes Questionnaire. BCI = Bullied Cognitions Inventory.

5.4.5 Discussion

The 15-item four-factor model identified in the EFA was confirmed by adequate model fit in the CFA, with similar or higher factor loadings on all items. Factors were described as, “*Degraded in the eyes of others*” (3 items), “*negative interpretations of reactions to bullying*” (6 items), “*Recognisable as a bullying victim*” (3 items), and “*Social defeat*” (3 items). See final scale in Appendix 7. Internal consistency was very good and test-retest reliability good for the total scale and acceptable or good for the factors individually. Convergent validity was partially confirmed, with some items below the threshold for variance explained but retained for content spread without compromising model fit. Discriminant validity between factors was marginally acceptable but above the acceptable threshold between the “*negative interpretations of reactions to bullying*” and “*social defeat*” factors. Criterion validity was supported by large correlations with symptoms and similar measures.

When tested for its ability to predict symptoms alongside existing scales (PTCI, SAQ), the current measure explained a small but significant additional proportion of the variance in PTSD and a small non-significant proportion of the variance in social anxiety. Given that these items were rated specifically in relation to bullying experiences (i.e., past potentially socially traumatic experiences) the significant additional contribution to explaining variance in PTSD symptoms is unsurprising. However, the effect size is small for both outcomes.

There is scope for further refinement of this scale, particularly within the final “*social defeat*” factor. Item 5 (“*If I hadn’t been picked on maybe I would be a better person*”) had low factor loadings in the EFA that would ordinarily meant it was removed but it was ultimately retained due its relative position in the model structure, loading partially onto a factor with items 8 and 17 which otherwise would have constituted a factor of just two items. One possibility to test this factor may be to re-survey a subset of participants using reworded item(s), for example “*being picked on made me an inferior person*”, to assess whether more direct wording improves the ability of the item to explain variance in the factor while also retaining a consistent structure for the measure as a whole. Alternatively, entirely new items that may reflect the concept of social defeat could be created, piloted, and tested. The factor loading for item 5 in the CFA was high (0.746) and comparable with other items in the measure, indicating that it is sufficiently appropriate to justify retention. However, with a low factor loading in the EFA (0.166) the basis for this item being included in the measure from a bottom-up perspective is statistically weak.

Concepts reflected in this measure have overlaps with generic measures of cognitions related to PTSD and SAD as well as unique elements related to the impact of being bullied. Specific factor correlations are notable (see Appendix 6, Table 2) namely between all BCI factors and the PTCI “*negative appraisals*” factor, and between the BCI “*degraded in the*

eyes of others” factor and the “*self-blame*” factor in the PTCI. This suggests shared beliefs in this bullied sample with survivors of other traumatic events particularly interpersonal traumas. The concept of “*social defeat*” was derived from themes generated in the qualitative analysis in Chapter 4 (“*I am worth less than others*”) and refers to a sense of being defective and therefore inevitably at the bottom of a perceived social hierarchy. This echoes sentiments of brokenness or being less than human reflected in the concept of *mental defeat* that has been shown to predict PTSD among survivors of political imprisonment (Ehlers et al., 2000) and sexual assault (Ehlers et al., 1998). “*Self-criticism*” is well-documented in the context of social anxiety, and has been highlighted among adolescents who have experienced peer victimisation (Kopala-Sibley et al., 2013). Here, it was evident particularly with regards to negative interpretations of one’s own reactions to bullying. Of note, not all anticipated bullying-related themes were supported. Beliefs related to high social threat and high likelihood of being targeted again were included, but the related concept that being targeted is acceptable, as suggested by the theme, “*I deserve to be targeted*” in the qualitative analysis in Chapter 4, was not clearly supported in this larger sample and related items were removed (e.g., “*I deserve to be treated the way they treated me*”, “*If someone is more important than me then they have the right to pick on me*”).

Overall, factors in this measure suggest unhelpful beliefs related to bullying experiences that may be mutually reinforcing. The relatively high inter-factor correlations reflect the strong potential links between the concepts. Shame around being picked on in the past is entwined with beliefs that if others found out about what happened then current social wellbeing (which is constantly under threat) could be damaged. In addition, somewhat paradoxically, beliefs of being permanently marked out as a target and socially damaged are held alongside self-critical thoughts that the events were not actually serious enough (particularly compared to other bad things that can happen) to warrant a reaction. Holding

both beliefs at once may further increase perceived social threat. Overall, scores on this measure were more strongly associated with PTSD than SAD, reflecting its basis in reactions to bullying experiences.

5.5 Bullied Social Attitudes Inventory (BSAI)

This measure describes beliefs about self and others in social interactions, relationships, and friendships. Participants rate their agreement with each item on a 7-point scale, from 1 (*totally disagree*) to 7 (*totally agree*) over the last month.

5.5.1 Item reduction

Responses across all items spanned the full range of the scale. Of the initial 60 items, 18 were removed in the first step. This was due to low outcome correlations (six items, 11, 31, 36, 37, 41, 42), unclear wording or ambiguous concept (six items, 7, 29, 35, 39, 55, 48), for not being understood as a cognition (two items, 5, 57), for repetitive meaning that risked multicollinearity whereby the clearest item was retained (item 12 removed due to overlap with item 33), and being considered too situation specific for this measure (three items, 38, 43, 44). This included items that represented themes of being marked out as deserving maltreatment (“I deserve to be targeted”) and therefore unable to recognise when others are treating them poorly (item 36, “*I don’t realise when someone is being rude to me*”, and item 37, “*It takes me a while to recognise when I am being treated badly*”) and putting up with bad treatment in relationships (item 41, “*It’s worth putting up with bad treatment to be friends with someone*”, and item 42, “*It’s worth putting up with bad treatment to be in a relationship with someone*”) that had been anticipated from the qualitative analysis (Chapter 4) and initial phase of item generation.

5.5.2 Exploratory Factor Analysis

Sampling adequacy was met for all suitable items ($n = 42$), such that KMO = 0.98 and Bartlett’s test of sphericity was significant ($\chi^2 = 16,660.31$, $df = 861$, $p < .001$). Therefore,

these items were entered into an EFA using maximum likelihood robust estimation and oblimin rotation among the first random half of the sample ($n = 464$). Eigenvalues suggested four factors (24.11, 1.41, 1.29, 1.01, 0.92) which was supported by examination of the scree plot. Fit statistics indicated acceptable fit for a two-factor solution (TLI = 0.91, RMSEA = 0.06, $\chi^2 = 2,107.48$ on $df = 778$, $\chi^2:df = 2.71$), with increasingly good fit for a three-factor solution (TLI = 0.93, RMSEA = 0.05, $\chi^2 = 1,713.50$ on $df = 738$, $\chi^2:df = 2.32$) and four-factor solution (TLI = 0.95, RMSEA = 0.05, $\chi^2 = 1,383.80$ on $df = 699$, $\chi^2:df = 1.98$). However, all solutions included substantial cross-loadings, with most items in the two-factor solution loading onto the first factor, and most items in the three-factor solution loading onto the first two factors. Furthermore, this initial analysis included a large number of items, suggesting scope for removing some items and retaining those that are distinct and reflect concepts that are as clear as possible. A more parsimonious model comprising fewer items would improve model stability and be more clinically useful.

Item loadings and cross loadings were inspected. Items were removed sequentially due to relatively low factor loadings (< 0.4) and high complexity indicated by cross-loadings (within 0.2), particularly focusing on reducing very similar items from the dominant first factor and removing items that performed badly across multiple factor solutions. Then, removing additional items loading primarily onto larger factors with high cross-loadings. Good model fit and conceptual clarity of the factors was prioritised throughout. Ultimately, the four-factor solution was most interpretable and had excellent model fit (TLI = 0.96, RMSEA = 0.05, $\chi^2 = 239.75$ on $df = 101$, $\chi^2:df = 2.37$). Fit statistics indicated unacceptable fit for the two-factor solution (TLI = 0.88, RMSEA = 0.10, $\chi^2 = 718.42$ on $df = 134$, $\chi^2:df = 5.36$) and marginally acceptable fit for the three-factor solution (TLI = 0.92, RMSEA = 0.08, $\chi^2 = 460.40$ on $df = 117$, $\chi^2:df = 3.94$).

Therefore, the four-factor solution with 19 items was chosen. This model explained 47.6% of the variance, had adequate factor loadings for all items and good conceptual fit. Factors were labelled as follows with percent variance explained by each, “*Rejection*” (7 items, 17.3%), “*Mistrust*” (5 items, 10.7%), “*Need to manage self-presentation*” (5 items, 11.7%), and “*Social vulnerability*” (3 items, 7.9%).

5.5.3 Confirmatory Factor Analysis

I ran a CFA to evaluate the fit of the four-factor structure in the second sample (N = 422) again using a robust maximum likelihood (MLR) estimator with oblimin rotation. The highest loading item was the reference item. The final four-factor model estimated using MLR had good fit for the data (CFI = 0.96, TLI = 0.95, RMSEA = 0.06 (CI: 0.05 - 0.07), $\chi^2 = 362.49$ on $df = 146$, $\chi^2:df = 2.48$). Superior fit for the four-factor model was confirmed by chi-square comparison with the three-factor model ($\Delta\chi^2 = 69.99$, $\Delta df = 3$, $p < .001$). No model constraints were applied on residual correlations.

I tested a single second order factor including all four factor loadings, given that all factors in the four-factor model are positively correlated. All four factors loaded significantly onto the second-order factor, and although there was a significant difference in the chi-square fit ($\Delta\chi^2 = 11.558$, $\Delta df = 2$, $p < .05$), good model fit was retained (CFI = 0.96, TLI = 0.95, RMSEA = 0.06 (CI: 0.05 - 0.07), $\chi^2 = 376.46$ on $df = 148$, $\chi^2:df = 3$). This suggests that a combined total score is meaningful alongside the individual factor scores. Factor loadings are shown in Table 5.4.

Table 5.4 Bullied Social Attitudes Inventory (BSAI) factor loadings for exploratory and confirmatory factor analyses, and reliability and validity statistics

Item		Factors							
		1		2		3		4	
		EFA	CFA	EFA	CFA	EFA	CFA	EFA	CFA
2	Everybody hates me when they get to know me	0.800	0.825						
3	Deep down my friends don't really like me	0.817	0.814						
8	There's no point in me trying to make friends	0.694	0.740						
13	Other people don't like spending time with me	0.736	0.881						
49	People who are kind to me are faking it	0.712	0.826						
10	I am at the bottom of the pile socially	0.469	0.761						
15	I need to handle everything on my own			0.621	0.657				
16	If I show vulnerability other people will exploit it			0.668	0.785				
17	Most people will exploit each other if they can			0.642	0.725				
22	Shutting people out keeps me safe from harm			0.586	0.805				
59	I can't trust that people will look out for me			0.536	0.785				
24	I judge myself based on how others perceive me					0.755	0.776		
50	I need to impress people to make them like me					0.696	0.759		
51	People will ignore me if I'm not immediately likeable					0.564	0.838		
52	People will ignore me if I'm not super confident					0.599	0.760		
20	I rank myself below other people					0.511	0.715		
30	I am easy to victimise							0.559	0.775
54	I am more likely to be bullied than other people							0.870	0.781
56	There is something wrong with me that makes people pick on me							0.482	0.809
Inter Factor Correlations									
	Factor 1: "Rejection"	-	-						
	Factor 2: "Mistrust"	0.638	0.886	-	-				
	Factor 3: "Need to manage self-presentation"	0.705	0.896	0.523	0.835	-	-		
	Factor 4: "Social vulnerability"	0.701	0.842	0.493	0.761	0.600	0.870	-	-
	Second-Order Factor Loadings	-	0.963	-	0.900	-	0.939	-	0.885
Outcome correlations									
	Social Anxiety	0.629	0.589	0.557	0.516	0.655	0.590	0.498	0.549
	PTSD	0.610	0.548	0.570	0.556	0.556	0.483	0.507	0.502
	Depression	0.659	0.607	0.632	0.573	0.566	0.534	0.485	0.494
	Anxiety	0.634	0.530	0.635	0.492	0.573	0.511	0.521	0.491

Note. EFA = Exploratory factor analysis, CFA = Confirmatory factor analysis

5.5.4 Validity and reliability

Reliability assessments within the CFA sample showed that internal consistency was very good for factors (Cronbach's $\alpha = 0.83 - 0.92$) and full scale ($\alpha = 0.96$), and test-retest reliability was good for the total scale ($r = 0.89$) and good for each factor (Factor 1: $r = 0.87$, Factor 2: $r = 0.82$, Factor 3: $r = 0.82$) although it was lower for Factor 4 ($r = 0.62$). Item deletion statistics did not suggest that internal consistency could be improved by deleting any individual items.

Convergent validity was partially confirmed such that percent variance explained by extracted factors was above 0.5 for all items other than item 15 ($r^2 = 0.431$). Discriminant validity was not achieved in the CFA sample with factor correlations between 0.76 - 0.896. Criterion validity was established by significant Pearson correlations with symptoms of social anxiety and PTSD. The total score also had a large positive correlation with the Posttraumatic Cognitions Inventory (PTCI; $r = 0.74$) and a large negative correlation with the Social Attitudes Questionnaire (SAQ; $r = -0.80$) in which higher scores reflect better functioning. SAQ was completed by the retest subsample only. Factor correlations and outcome correlations are in Table 5.4. Additional correlations are shown in Appendix 6; total score with background and victimisation characteristics in Table 1 and factors with PTCI and SAQ in Table 2.

I conducted a multiple linear regression analysis using total scores to evaluate the relative contribution of the BSAI measure and the existing PTCI and SAQ (alongside power imbalance) in explaining variance in PTSD and social anxiety symptoms respectively. Results indicated that the models explained 44.3% of the variance in social anxiety symptoms ($R^2 = .443$, $R^2_{\text{Adjusted}} = .429$, $F(3, 126) = 33.354$, $p < .001$) and 59.6% of the variance in PTSD symptoms ($R^2 = .596$, $R^2_{\text{Adjusted}} = .595$, $F(3, 813) = 399.889$, $p < .001$). The BSAI explained

significant additional variance in social anxiety symptoms over the SAQ and made a small but significant contribution to explaining PTSD symptoms over the PTCI. See Table 5.5.

Table 5.5 Multiple regressions of Bullied Social Attitudes Inventory with PTCI on PTSD symptoms and SAQ on social anxiety symptoms.

	Social anxiety				PTSD			
	B	SE	β	p	B	SE	β	p
Constant	31.791	13.747		.022	-10.836	3.457		.002
Power imbalance	3.405	4.782	.048	.478	1.994	1.750	.026	.255
SAQ	-4.897	1.542	-.355	.002	-	-	-	-
PTCI	-	-	-	-	.565	.027	.703	< .001
BSAI	.205	.068	.337	.003	.060	.024	.085	.010

Note. Social anxiety symptoms measured using SPIN. PTSD symptoms to worst bullying experience measured using PCL-5. PTCI = Posttraumatic Cognitions Inventory. SAQ = Social Attitudes Questionnaire. BCI = Bullied Cognitions Inventory.

5.5.5 Discussion

The 19-item four-factor model identified in the EFA was confirmed by excellent model fit in the CFA, with similar or higher factor loadings on all items. Factors were labelled as, 1. “*Rejection*” (7 items), 2. “*Mistrust*” (5 items), 3. “*Need to manage self-presentation*” (5 items), and 4. “*Social vulnerability*” (3 items). See final scale in Appendix 8. Internal consistency was very good and test-retest reliability good overall and for all but one factor individually. Convergent validity was confirmed, except for one item, which did not reduce model fit and was retained to maintain diversity of content. Inter-factor correlations were high in the CFA sample meaning discriminant validity between factors was not achieved. Criterion validity was supported by large correlations with symptoms and similar measures.

When tested for its ability to predict symptoms alongside existing scales of social attitudes associated with social anxiety (Social Attitudes Questionnaire) and PTSD (Posttraumatic Cognitions Inventory), the current measure explained a small but significant

additional proportion of the variance in PTSD and a higher proportion of the variance in social anxiety. This suggests that it predicts social anxiety more strongly than PTSD symptoms in this group.

“*Rejection*” includes beliefs about being at the bottom of a perceived social hierarchy and being disliked, even by friends, and disregarding evidence to the contrary as unreliable. This corresponds in part to the theme developed in the qualitative analysis in Chapter 4 that “*friendships are unsafe*”, referring to insecurity about friendships because it is not possible to be completely certain of other peoples’ motives and intentions as to whether they wish to maintain or end the relationship. “*Mistrust*” includes beliefs that fundamentally people tend to harm each other and there is a need to protect oneself from others. This corresponds to themes developed in Chapter 4 that the social world is dangerous, including beliefs that “*people cannot be trusted*” suggesting wariness of other people due to them being essentially unreliable and untrustworthy, and that social acceptance is fragile, including beliefs that “*rejection is inevitable*” suggesting that rejection by friends is inevitable, highly likely to happen, uncontrollable, and remains a risk even in the context of positive interpersonal experiences. “*Need to manage self-presentation*” includes beliefs that one’s own intrinsic qualities are not sufficient and being exceptional is required to be accepted. This is aligned with the theme about “*social acceptance is fragile*” that was described in Chapter 4, where young people described wishing to be accepted by others and making considerable efforts to achieve acceptance while also believing that acceptance can be lost at any moment. Referring to factor correlations (see Appendix 6, Table 2) this is consistent with the particularly high correlation between SAQ and BSAI “*need to manage self-presentation*” factor. Of note, while the BSAI factors were highly correlated with the general “*negative appraisals*” factor in the PTCI, they were less strongly associated with the other PTCI factors of self-blame,

preoccupation with unfairness, and overgeneralised danger compared with other social anxiety related cognitions.

5.6 Bullied Social Behaviours Scale (BSBS)

This measure describes covert behaviours in social situations and relationships. Participants rate how often they engaged in each of the behaviours when in social situations, on a 5-point Likert scale, from 0 (*never*) to 4 (*always*) over the last month.

5.6.1 Item reduction

Responses across all items spanned the full range of the scale. Of the initial 40 items, four items were removed in the first step due to unclear wording or concept following feedback from participants (items 2, 3, 4, 14). In addition, ten items were removed due to low correlations with main outcomes PTSD and SAD (items 11, 16, 29, 33, 40), including all five items from a theme anticipated from the initial phase of item generation, “*lashing out at others to avoid being hurt by them*” (items 7, 15, 26, 27, 28).

5.6.2 Exploratory Factor Analysis

Factor analysis was confirmed to be appropriate for the remaining items ($n = 26$), such that the Kaiser-Meyer-Olkin test of sampling adequacy was high ($KMO = 0.96$) and Bartlett’s test of sphericity was significant ($\chi^2 = 7,882.36$, $df = 325$, $p < .001$). Therefore, these items were entered into an exploratory factor analysis using maximum likelihood estimation and oblimin rotation among the first random half of the sample ($n = 478$). Eigenvalues suggested a three-factor solution, with values close to one for up to five factors (12.45, 1.63, 1.24, 0.93, 0.93, 0.79). This ambiguity was supported by examination of the scree plot where up to five factors could be justified, and parallel analysis which recommended 5 factors. Fit statistics indicated poor to acceptable fit for the three-factor solution ($TLI = 0.90$, $RMSEA = 0.07$, $\chi^2 = 851.51$ on $df = 250$, $\chi^2:df = 3.41$). However, the

four-factor solution had acceptable fit (TLI = 0.92, RMSEA = 0.06, $\chi^2 = 630.23$ on $df = 227$, $\chi^2:df = 2.78$), with increasingly good fit for the five-factor (TLI = 0.96, RMSEA = 0.05, $\chi^2 = 419.42$ on $df = 205$, $\chi^2:df = 2.05$), and six-factor solutions (TLI = 0.97, RMSEA = 0.04, $\chi^2 = 302.54$ on $df = 184$, $\chi^2:df = 1.64$). Given the large number items there was scope for simplifying the measure by removing additional items while retaining good model fit and factor structure.

Six further items were removed sequentially due to low factor loadings and high complexity indicated by cross-loadings (items 37, 31, 24, 20, 13, 30). Additionally, item 38 was removed as it had the lowest loading within its factor and removing it allowed for three items in each of the small factors in the measure. Item reduction did not negatively impact on model fit. This created a parsimonious solution with at least three indicators per factor as recommended for a stable structure.

For the final 19 items, fit statistics continued to indicate poor fit for the three-factor solution (TLI = 0.89, RMSEA = 0.08, $\chi^2 = 518.00$ on $df = 117$, $\chi^2:df = 4.43$) and four-factor solution (TLI = 0.93, RMSEA = 0.07, $\chi^2 = 339.80$ on $df = 101$, $\chi^2:df = 3.36$) but excellent fit across all indices for the five-factor solution (TLI = 0.97, RMSEA = 0.04, $\chi^2 = 163.97$ on $df = 86$, $\chi^2:df = 1.91$) and six-factor solution (TLI = 0.99, RMSEA = 0.02, $\chi^2 = 90.12$ on $df = 72$, $\chi^2:df = 1.25$). Although the six-factor solution had apparently excellent model fit, one factor was comprised of just two items (items 9 and 18) when a minimum of three items is recommended to produce a stable factor and there was no conceptual basis for separating these items from the Factor 1 cluster, where they loaded comfortably in the five-factor solution.

Therefore, the five-factor model with 19 items was chosen. In total, the extracted factors explain 50.5% of the variance in items, had adequate factor loadings for all items and

good conceptual fit. Factors were labelled as follows with percent variance explained by each, “*Masking*” (7 items, 13.0%), “*Reassurance seeking*” (3 items, 8.5%), “*Acting*” (3 items, 9.7%), “*People pleasing*” (3 items, 8.7%), and “*Self-diminishing*” (10.6%, 3 items).

5.6.3 Confirmatory Factor Analysis

I tested this five-factor structure with a CFA in the validation sample ($n = 439$) again using a robust maximum likelihood (MLR) estimator that is robust to non-normality and appropriate for continuous data including scales with more than four or five scale points (Finney & DiStefano, 2006). As described previously, for scales with four or fewer response options, weighted least squares (WLSMV) is more appropriate. Since this scale has five scale points MLR was more appropriate.

The final five-factor model had excellent or good fit for the data across the indices (CFI = 0.96, TLI = 0.95, RMSEA = 0.06 (CI: 0.05 - 0.07), $\chi^2 = 349.52$ on $df = 142$, $\chi^2:df = 2.46$). Chi-square comparison indicated superior fit of the five-factor model over the four-factor model ($\Delta\chi^2 = 102.59$, $\Delta df = 4$, $p < .001$) and although statistically a better fit could be achieved using a six-factor model ($\Delta\chi^2 = 32.44$, $\Delta df = 5$, $p < .001$), the six-factor model has poor conceptual fit and is a less parsimonious model solution compared with the five-factor model which produces good model fit as well as good conceptual fit. Change in RMSEA model fit was also less than the 0.015 recommended threshold for meaningful difference (Finch, 2019). Therefore, the five-factor model was supported. No model constraints were applied on residual correlations.

I tested a single second-order factor including all five factor loadings, given that all factors in the five-factor model are positively correlated. All five factors loaded significantly onto the second-order factor, and although there was a significant difference in the chi-square fit ($\Delta\chi^2 = 31.78$, $\Delta df = 5$, $p < .001$), good model fit was retained (CFI = 0.95, TLI = 0.94,

RMSEA = 0.06 (CI: 0.05 - 0.07), $\chi^2 = 385.43$ on $df = 147$, $\chi^2:df = 2.62$). This suggests that a combined total score is meaningful alongside the individual factor scores. Factor loadings are shown in Table 5.6.

Table 5.6 Bullied Social Behaviours Scale (BSBS) factor loadings for exploratory and confirmatory factor analyses, and reliability and validity statistics

Item		Factors									
		1		2		3		4		5	
		EFA	CFA	EFA	CFA	EFA	CFA	EFA	CFA	EFA	CFA
1	I did not say what was on my mind	0.787	0.671								
8	I avoided talking about myself	0.534	0.598								
9	I avoided asking for help or favours	0.532	0.755								
10	I put on a neutral mask to avoid confrontation	0.488	0.649								
12	I hid aspects of myself from friends	0.525	0.724								
18	I did not ask for help even when I was struggling	0.526	0.746								
19	I hid my true feelings	0.679	0.730								
17	I asked for reassurance from other people that they like me			0.805	0.864						
23	I asked people to reassure me that they want me around			0.854	0.873						
25	I looked for signs that people still liked me			0.416	0.753						
32	I changed the way I talked or acted or looked to try to fit in					0.589	0.756				
34	I put on a different persona so that people would like me					0.840	0.862				
35	I pretended to be someone else so that people would like me					0.772	0.815				
21	I tried very hard to please other people							0.850	0.856		
36	I did too much to please other people							0.687	0.765		
22	I tried to be perfect and get everything right							0.496	0.673		
5	I was horrible to myself before someone else could be									0.705	0.768
6	I put myself down									0.885	0.836
39	I was hard on myself for being less than other people									0.753	0.838
Inter-factor correlations											
	Factor 1: "Masking"	-	-								
	Factor 2: "Reassurance seeking"	0.363	0.580	-	-						
	Factor 3: "Acting"	0.531	0.694	0.448	0.550	-	-				
	Factor 4: "People pleasing"	0.577	0.759	0.526	0.715	0.578	0.669	-	-		
	Factor 5: "Self-diminishing"	0.671	0.838	0.601	0.732	0.576	0.644	0.660	0.793	-	-
	Second-Order Factor Loadings	-	0.875	-	0.757	-	0.738	-	0.877	-	0.929
Outcome correlations											
	Social Anxiety	0.635	0.621	0.492	0.492	0.483	0.471	0.544	0.508	0.628	0.571
	PTSD	0.553	0.548	0.490	0.540	0.454	0.445	0.515	0.469	0.614	0.579
	Depression	0.644	0.593	0.468	0.535	0.487	0.471	0.503	0.468	0.681	0.624
	Anxiety	0.635	0.557	0.516	0.569	0.484	0.422	0.578	0.548	0.690	0.612

Note. EFA = Exploratory factor analysis, CFA = Confirmatory factor analysis.

5.6.4 Reliability and Validity

Reliability assessments showed that internal consistency was very good for factors (Cronbach's $\alpha = 0.80 - 0.87$) and full scale ($\alpha = 0.94$), and test-retest reliability was good for the total scale ($r = 0.82$) and acceptable for three factors (Factor 1: $r = 0.77$, Factor 2: $r = 0.75$, Factor 4: $r = 0.77$) but slightly lower for two factors (Factor 3: $r = 0.68$, Factor 5: $r = 0.62$).

Convergent validity was partially confirmed such that percent variance explained by extracted factors was above 0.5 for items apart from item 1 ($r^2 = 0.450$), item 8 ($r^2 = 0.357$), item 10 ($r^2 = 0.421$) and item 22 ($r^2 = 0.453$). Discriminant validity was supported by acceptable factor correlations between 0.55 - 0.838. Criterion validity was established by significant Pearson correlations with symptoms of social anxiety ($r = 0.65$), PTSD ($r = 0.63$), as well as scores on the Social Behaviour Questionnaire (SBQ; $r = 0.69$) and PTSD-Safety Behaviours Questionnaire (PTSD-SBQ; $r = 0.57$). The SBQ and PTSD-SBQ were completed by the retest subsample and these analyses include only those who were bullied, $n = 138$. Factor correlations and outcome correlations are in Table 5.6. Additional total score correlations with background and victimisation characteristics are in Appendix 6, Table 1.

I conducted a multiple linear regression analysis using total scores to evaluate the relative contributions of this measure and the SBQ and PTSD- SBQ in explaining variance in PTSD and social anxiety symptoms. Results indicated that together these measures of behaviours explained 52.8% of the variance in PTSD symptoms ($R^2 = .539$, $R^2_{\text{Adjusted}} = .525$, $F(4, 128) = 37.453$, $p < .001$), with the largest contribution from the PTSD-SBQ and a significant additional contribution from the new Bullied Social Behaviours Scale but not the SBQ. The measures explained 53.9% of the variance in social anxiety symptoms ($R^2 = .546$, $R^2_{\text{Adjusted}} = .531$, $F(4, 128) = 38.421$, $p < .001$), with significant contributions from the SBQ and the new Behaviours Scale but not the PTSD-SBQ. See Table 5.7.

Table 5.7 Multiple regressions of Bullied Social Behaviours Scale (BSBS) with SBQ and PTSD-SBQ on Social Anxiety and PTSD symptoms

	Social anxiety				PTSD			
	B	SE	β	p	B	SE	β	p
Constant	-1.959	8.511		.818	-18.604	10.567		.081
Power imbalance	.287	4.395	.004	.948	4.981	5.457	.056	.363
PTSD-SBQ	.949	2.170	.039	.662	9.952	2.694	.335	< .001
SBQ	16.976	3.680	.469	< .001	-.377	4.569	-.008	.934
BSBS	.284	.079	.298	< .001	.570	.098	.485	< .001

Note. Social anxiety symptoms measured using SPIN. PTSD symptoms to worst bullying experience measured using PCL-5. PTSD-SBQ = PTSD Safety Behaviours Questionnaire. SBQ = Social Behaviours Questionnaire. BSBS = Bullied Social Behaviours Scale.

5.6.5 Discussion

The 19-item five-factor model identified in the EFA was confirmed by adequate model fit in the CFA, with similar or higher factor loadings on all items. Factors were described as, 1. “*Masking*” (7 items), 2. “*Reassurance seeking*” (3 items), 3. “*Acting*” (3 items), 4. “*Self-diminishing*” (3 items), and 5. “*People pleasing*” (3 items). See final scale in Appendix 9. Internal consistency was very good and test-retest reliability good for the total scale. Convergent validity was confirmed for most items and exceptions were close to the threshold. Discriminant validity was achieved with acceptable inter-factor correlations. Criterion validity was supported by large correlations with symptoms and similar measures.

When tested for its ability to predict symptoms alongside existing scales of safety behaviours related to social anxiety (SBQ) and PTSD (PTSD-SBQ), the current measure explained large significant additional proportion of the variance in PTSD symptoms and a moderate proportion of the variance in social anxiety. This is also reflected in correlations (see Appendix 6, Table 1), such that SBQ is more strongly correlated with social anxiety than PTSD symptoms, PTSD-SBQ is more strongly correlated with PTSD than social anxiety symptoms, and BSBS is highly correlated with both. The scale is less disorder specific than the existing scales which strongly predicted disorder specific symptoms but did not explain

additional variance across both. This suggests that this measure may identify additional behaviours relevant to people who have been bullied alongside behaviours identified in more generic measures of coping associated with SAD and PTSD.

5.7 Discussion

Bullying is associated with social anxiety disorder and can produce symptoms of posttraumatic stress disorder. Cognitions and coping behaviours maintain these symptoms but there are no scales specifically designed to measure cognitions and behaviours related to bullying. I developed three new scales to fill this gap and presented the factor structure and psychometric validation statistics for each. All items were rated over the past month. All newly developed scales demonstrated acceptable or good fit for the data. Reliability and validity criteria were acceptable or good, and exceptions were noted. Second-order factor models for each of the scales demonstrated good fit suggesting that total scores can be used as a meaningful index of magnitude for the underlying constructs of each measure. These measures advance the field in that they invite a direct clinical focus onto experiences of bullying as they relate to social anxiety and PTSD.

The Bullied Cognitions Inventory (BCI) includes 15 items which load onto four factors that reflect concepts of 1. *“Degraded in the eyes of others”*, 2. *“Negative interpretations of reactions to bullying”*, 3. *“Recognisable as a bullying victim”*, and 4. *“Social defeat”*. The Bullied Social Attitudes Inventory (BSAI) includes 19 items which load onto four factors that reflect concepts of 1. *“Rejection”*, 2. *“Mistrust”*, 3. *“Need to manage self-presentation”*, and 4. *“Social vulnerability”*. The Behaviours in Social Situations Scale (BSBS) includes 19 items which load onto five factors that reflect concepts of 1. *“Masking”*, 2. *“Reassurance seeking”*, 3. *“Acting”*, 4. *“Self-diminishing”*, and 5. *“People pleasing”*. Individual discussions for each measure are shown above.

These measures may be helpful guides for clinicians working with people who have been bullied. Of note, these measures provide total scores that refer to the frequency of cognitions or behaviours over the past month but they do not distinguish between several thoughts or behaviours happening infrequently versus fewer thoughts or behaviours happening more frequently. Therefore, in a clinical context additional investigation would be important to ascertain the pattern of experiences for the individual. Despite notable divergences, significant correlations across PTSD and social anxiety symptoms suggest taking a transdiagnostic lens for individuals with a history of bullying. It is also possible that the non-clinical nature of the sample is masking disorder specific effects.

5.7.1 Limitations

The sampling method, contacting via a student app mailing list, allowed for contact with a large national sample that included participants with diverse characteristics, notably in terms of sexual orientation and ethnicity. However, students may differ from the wider population, including in terms of socio-economic background, limiting generalisability. In addition, women were overrepresented in this sample compared with national statistics (75% compared with 64% of undergraduates nationally; Higher Education Statistics Agency, 2020) meaning that additional verification of findings in a more gender-balanced sample may be useful. In terms of data collection, data were self-reported and collected online which implies loss of oversight on the way that measures are completed. Although checks were employed to provide basic assurance that questionnaires were completed properly, uncertainty remains. Of note, an online error meant that some participants who reported having experienced an “other” type of bullying were not shown follow-up questions about the nature of their experience in terms of frequency, duration, distress meaning that these data were missing for these participants. A large proportion of the study sample reported having been bullied and mean symptom scores were high, possibly due to self-selection in terms of who was

interested in participating in a study about mental health. Due to administrative constraints all participants were over 18, therefore those who were aged just below the cut-off were not included despite the relevance to them. The sample was prospective students with a mean age of 19 years and maximum age 29 years. Therefore, this study was focused on emerging adults and may not be generalisable to younger or older people, or people with very different circumstances. Items were developed with input from multiple sources including existing research, clinical experience, and first-hand accounts from young people who were bullied. However, it is possible that important behaviours and cognitions may have been missed from the item pool as they were not recognised or inadequately represented in the items that were produced. Items directly related to locus of control that was found to be important earlier were also not explicitly included and may be a fruitful avenue for future research.

5.7.2 Conclusions

This chapter provides initial support for three newly developed scales of cognitions, attitudes, and coping related to bullying. The content of items and structure of measures developed in this chapter were guided by clinical experience, related literature, qualitative interviews, and statistical analysis. They correlate with social anxiety and PTSD and explain additional variance in symptoms beyond existing commonly used measures of cognitions and behaviours in this group. However, the questions remains whether they distinguish PTSD and social anxiety at a group level, and the extent to which they can predict symptoms over time. These issues will be addressed in the following two chapters.

6

Cognitive and behavioural factors distinguishing social anxiety and PTSD among young people who have been bullied

6.1 Introduction

New measures of cognitions and behaviours related to bullying were developed and psychometric properties were assessed in the previous chapters. Although there are several clinically useful measures of cognitions and coping strategies associated with social anxiety (Clark, 2005) and PTSD (Dunmore et al., 2001; Foa et al., 1999) that are integrated within cognitive therapy process, bespoke measures may be particularly relevant for people who have been bullied. As described previously, bullying is associated with higher likelihood of mental health problems including social anxiety (SAD; Siegel et al., 2009; Storch et al., 2005) and can produce symptoms of posttraumatic stress disorder (PTSD; Idsoe et al., 2021; Nielsen et al., 2015) and cognitive models show that maladaptive beliefs and coping strategies maintain symptoms of social anxiety (Clark & Wells, 1995) and PTSD (Ehlers & Clark, 2000). In this chapter, the newly developed measures are tested for their ability to predict and distinguish individuals with and without high symptoms of SAD, PTSD alone or in combination.

Cognitive therapy guidelines for social anxiety (Warnock-Parkes et al., 2020) and PTSD (Wild et al., 2020) recommend using process measures repeatedly throughout

treatment to monitor progress and plan sessions. For social anxiety, in addition to assessing negative automatic thoughts in social situations using the Social Cognitions Questionnaire (Clark, 2005), clinicians assess common beliefs about the self and others using the Social Attitudes Questionnaire (Clark, 2005), and safety behaviours in social situations using the Social Behaviours Questionnaire (Clark, 2005). For PTSD, clinicians assess trauma-related cognitions using Posttraumatic Cognitions Inventory (PTCI; Foa et al., 1999) and excessive safety seeking behaviours using Safety Behaviours Questionnaire (SBQ; e.g., Dunmore et al., 2001). Bespoke measures developed among people who have been bullied may provide additional specificity for assessment and intervention.

The extent of bullying experienced (number of types, severity, power imbalance) and individual characteristics (gender, sexual orientation) may also predict symptoms. Research regarding possible predictors of PTSD symptoms after bullying suggest that elevated symptoms are associated with experiencing more types of bullying, with more discomfort, for a longer duration (Pegolo de Albuquerque & Williams, 2015) and higher frequency (Obrdalj et al., 2013). Perceived severity of bullying may also be associated with psychological symptoms. Recent research in Iceland investigated the impact of severity of social trauma and perceived social threat on PTSD symptoms and social anxiety disorder (Bjornsson et al., 2020). The sample also included a group of people with primary diagnosis of obsessive-compulsive disorder and a group with no clinical disorder. Experience of social trauma involving humiliation or rejection was assessed by clinical interview and traumas were independently rated for severity. Most participants had experienced at least one socially traumatic event (63% in the control group up to 82% in the SAD group). Among participants who met criteria for social anxiety disorder a third also had clinically significant PTSD symptoms in relation to their most significant social trauma, and experiences in the comorbid PTSD subgroup were more severe. The authors suggest that some individuals experience an

ongoing sense of current social threat following social trauma that is associated with symptoms consistent with PTSD (intrusive memories, vigilance, avoidance of social situations) and these may create a distinct pathway to development of social anxiety symptoms.

Power imbalance is integrated into the definition of bullying to distinguish it from other forms of peer victimisation (Olweus, 1993). Explicit evaluation of the impact of this component on subsequent symptoms is potentially clinically important, reflecting personal perspective of being less powerful alongside objective existence of unequal power at the time of the event. Isolating the power imbalance component may be of particular importance for PTSD symptoms and may distinguish also between individuals with more severe PTSD compared with SAD.

Sexual minority individuals including lesbian, gay, or bisexual sexual orientation, are more likely to experience mood and anxiety disorders compared with heterosexual individuals (Bostwick et al., 2020, Luassen et al., 2017) and some of this difference may be explained by bullying victimisation (Baams et al., 2021; Martin-Storey & Fish, 2019; Zou & Andersen, 2015) which is unfortunately more common among this group (Pantalone et al., 2020). Of note, across multiple studies bisexual/unsure individuals in particular have reported relatively higher levels of social anxiety compared with other sexual minorities (Mahon et al., 2022). A UK study of over a hundred lesbian, gay and bisexual victims of homophobic bullying in school (Rivers, 2006) found that 26% continued to be distressed regularly by recollections of the bullying they experienced, including intrusive memories and psychological distress when reminded about what happened.

6.1.1 Aims

To evaluate the extent to which new measures of cognitions and coping strategies related to bullying predict and distinguish SAD and PTSD among young people who have been bullied.

6.1.2 Hypotheses

1. Cognitions and coping scores will distinguish those with symptoms of social anxiety and PTSD in the non-clinical range from those with symptoms suggesting probable diagnosis of SAD, PTSD, or SAD+PTSD.
2. Cognitions and coping scores will distinguish between groups with PTSD, SAD, and PTSD+SAD.
3. Cognitions and coping scores will predict group membership after controlling for relevant victimisation and background characteristics

6.2 Methods and materials

6.2.1 Procedure

Young people completed an online survey about their experiences of bullying, their background, and mental health as well as newly developed measures of cognitions and coping thought to be related to experiences of bullying and relevant to social anxiety and PTSD. The survey design is described in detail in Chapter 5. The study received ethical approval from University of Oxford Medical Sciences Interdivisional Research Ethics Committee (R58149/RE001) [Appendix 4].

6.2.2 Inclusion and exclusion criteria

Participants were young people aged 18 to 29 expecting to begin university in the UK in Autumn 2018. Prospective students aged under 18 at the time of the first assessment in August 2018 were excluded due to being legal minors at that assessment point.

6.2.3 Power analysis for group sizes

Power analysis was carried out using G*Power 3 software (version 3.1.9.6; Faul et al., 2007) to estimate the smallest sample size required to detect PTSD and social anxiety group differences in cognitive variables. Previous research reported medium to large correlations ($r = .36 - .71$) of trauma-related cognitions with PTSD and anxiety symptoms among traumatised individuals (Beck et al., 2004), and a medium correlation ($r = .51$) of relevant cognitions with symptom severity among people with SAD (Norton & Abbott, 2017a). Calculations were based on $\alpha = .05$, medium effect size ($F = 0.25$), and power ($1 - \beta$) = .95, with four groups (No likely diagnosis, likely SAD/PTSD/SAD+PTSD) and three covariates. This suggested a minimum sample size of 279 (70 per group).

6.2.4 Measures

Demographic characteristics and bullying experiences

Participants provided their age, gender, sexual orientation, and ethnicity. They reported their exposure to bullying using an adapted version of the California Bullying Victimization Scale (Felix, Sharkey, Green, Furlong, & Tanigawa, 2011) adapted for adults retrospective self-report (Reid, Holt, Bowman, Espelage, & Green, 2016) including number of types, frequency, power imbalance, and also rated the severity of their worst experience. Participants were also offered a definition of bullying and asked whether they had been a victim of bullying, yes/no (Hamburger, 2011; Swearer & Cary, 2003).

Social anxiety and PTSD symptoms

Participants reported symptoms of PTSD related to bullying and social anxiety over the last month. Social anxiety symptoms were assessed using the 17-item Social Phobia Inventory (SPIN; Connor et al., 2000) in which higher scores reflect more severe social anxiety symptoms (range 0 – 68) and likely diagnosis was inferred from sum score 19 or above (Connor et al., 2000). Internal consistency in this sample was excellent ($\alpha = 0.94$).

PTSD symptoms were assessed using the 20-item PTSD checklist for DSM-5 (PCL-5; Weathers et al., 2013) in which higher scores reflect more severe PTSD symptoms (range 0 – 80) and likely diagnosis was inferred from sum score 31 or above (Weathers et al., 2013). Internal consistency in this sample was excellent ($\alpha = 0.95$).

New measures of Cognitions and Coping Strategies

Bullied Cognitions Inventory (BCI)

Participants are asked to rate their agreement with 15 items describing thoughts about self and others in relation to experiences of bullying. Items are rated on a 7-point likert scale, from 1 (*totally disagree*) to 7 (*totally agree*) over the last month. A sum score is calculated (range 15 - 105). Higher scores indicate more maladaptive appraisals, so lower scores indicate better outcomes. Factors represent 4 domains “*negative interpretations of reactions to bullying*”, “*recognisable as a bullying victim*”, “*degraded in the eyes of others*”, “*social defeat*”. Internal consistency was excellent ($\alpha = .936$).

Bullied Social Attitudes Inventory (BSAI)

Participants are asked to rate their agreement with 19 items describing beliefs about self and others in social interactions, relationships, and friendships. Items are rated on a 7-point scale, from 1 (*totally disagree*) to 7 (*totally agree*) over the last month. A sum score is calculated (range 19 - 133). Higher scores indicate more maladaptive appraisals, so lower scores indicate better outcomes. Factors represent 4 domains, “*rejection*”, “*mistrust*”, “*need to manage self-presentation*”, “*social vulnerability*”. Internal consistency in this sample was excellent ($\alpha = .956$).

Bullied Social Behaviours Scale (BSBS)

Participants are asked to rate 19 items that describe coping behaviours in social situations. Participants rated how often each happened in the last month, from 0 (*never*) to 4 (*always*). A sum score is calculated (range 0 - 76). Higher scores indicate less helpful strategies, so lower scores indicate better outcomes. Factors represent 5 domains, “*masking*”, “*reassurance seeking*”, “*acting*”, “*people pleasing*”, “*self-diminishing*”. Internal consistency in this sample was good ($\alpha = .942$).

6.2.5 Data analysis

Data preparation

Data reliability checks are described in Chapter 5.

Analytic approach

Individual characteristics (age, gender, sexual orientation, ethnicity) and the extent of bullying experienced (number of types, severity, power imbalance) were tested for associations with continuous measures of PTSD and SAD symptoms to decide whether they should be included in subsequent analyses. Continuous variables were evaluated using bivariate correlations. Logistic regressions were used for binary variables (power imbalance) and, to isolate specific relevant categories, multinomial logistic regressions (MNLR) were used for variables with more categories (sexual orientation, gender, ethnicity).

Participants were categorised into four groups: no likely diagnosis of either PTSD or SAD (BPCL < 31, SPIN < 19), likely diagnosis of SAD only (SPIN \geq 19), likely diagnosis of PTSD only (PCL to bullying experience \geq 31), and likely diagnosis of both SAD and PTSD (SPIN \geq 19, BPCL \geq 31). Group comparisons were conducted using multinomial logistic regressions (MNLR) with likely diagnostic status as the dependent variable. Overall model statistics were reviewed for goodness of fit with the data and then comparisons were

calculated between each of the four outcome categories (None, SAD, PTSD, SAD+PTSD) by setting each in turn as the reference group.

Three univariate analyses were conducted first to assess the contribution of each of the cognitive and coping measures on diagnostic outcome, without accounting for other factors. Bonferroni adjustment was applied due to multiple comparisons, such that adjusted $\alpha = \alpha / 3$ and significance level for each univariate comparison is $p < .017$.

Then, all three measures were entered together into a multivariate analysis alongside background or victimisation characteristics that were associated with outcome variables in the initial step. The new cognitive and coping measures were forced into the model as main effects and the other variables were entered using a backwards elimination method to minimise suppression effects, where terms are removed from the model if they do not significantly improve model fit. The log-likelihood thresholds for entry and removal from the model were set at $p < .05$. Overdispersion was corrected using the Pearson statistic (Field, 2013).

6.3 Results

6.3.1 Participants

Of the original 1879 young people who participated in this study, 1279 were categorised as having been bullied. In this sample, 938 participants had sufficient data for probable diagnostic classification across both SAD and PTSD. If one of the two outcome measures was missing, then the participant was not classified as their status on the other variable was unknown.

Overall, 20.1% of participants were below the symptoms threshold for probable diagnosis of either SAD or PTSD, 36.2% met the threshold for SAD only, 5.5% for PTSD only, and 38.1% for both SAD and PTSD combined. The overall sample was large but the

PTSD only group was slightly smaller than the estimated number required per group in the power analysis. Participant characteristics are shown in Table 6.1.

Table 6.1 Background variables, victimisation characteristics, symptoms, cognitions and coping measures across participants who were not bullied and probable SAD and PTSD diagnostic groups among those who were bullied

	Not bullied (<i>n</i> = 600)	Probable diagnostic group ^d			
		None (<i>n</i> = 189)	SAD (<i>n</i> = 340)	PTSD (<i>n</i> = 52)	SAD+PTSD (<i>n</i> = 357)
Age in years <i>M</i> (<i>SD</i>)	18.79 (1.73)	19.59 (0.19)	19.36 (0.13)	19.50 (0.37)	19.24 (0.11)
Gender <i>n</i> (%)					
Female	444 (74.0)	125 (66.1)	263 (77.4)	37 (71.2)	276 (77.3)
Male	147 (24.5)	63 (33.3)	71 (20.9)	14 (26.9)	63 (17.6)
Other	5 (0.8)	0 (0.0)	3 (0.9)	1 (1.9)	16 (4.5)
Prefer not to say	4 (0.7)	1 (0.5)	3 (0.9)	0 (0.0)	2 (0.6)
Sexual Orientation <i>n</i> (%)					
Heterosexual	482 (80.3)	145 (76.7)	238 (70.0)	33 (63.5)	217 (60.8)
Bisexual	40 (6.7)	15 (7.9)	55 (16.2)	9 (17.3)	87 (24.4)
Homosexual	21 (3.5)	9 (4.8)	19 (5.6)	5 (9.6)	17 (4.8)
Other	13 (2.2)	7 (3.7)	8 (2.4)	2 (3.8)	14 (3.9)
Unsure	35 (5.8)	9 (4.8)	17 (5.0)	2 (3.8)	21 (5.9)
Prefer not to say	9 (1.5)	4 (2.1)	3 (0.9)	1 (1.9)	1 (0.3)
Ethnicity ^a <i>n</i> (%)					
White British/Other	407 (67.8)	148 (78.7)	283 (83.5)	41 (80.4)	289 (81.4)
Black Brit/Afr/Carib	44 (7.3)	15 (8.0)	11 (3.2)	5 (9.8)	9 (2.5)
Asian	92 (15.3)	15 (8.0)	23 (6.8)	3 (5.9)	29 (8.2)
Other	51 (8.5)	10 (5.3)	22 (6.5)	2 (3.9)	28 (7.9)
Prefer not to say	6 (1.0)	1 (0.5)	1 (0.3)	1 (1.9)	2 (0.6)
Victimisation					
Number of types <i>M</i> (<i>SD</i>)	1.73 (1.53)	5.21 (0.13)	5.04 (0.10)	6.25 (0.25)	6.21 (0.09)
Worst type <i>n</i> (%)					
Teasing	79 (21.8)	39 (21.9)	49 (15.1)	4 (8.3)	38 (12.2)
Gossiped about	65 (18.0)	27 (15.2)	38 (11.7)	10 (20.8)	44 (14.1)
Ignored	115 (31.8)	52 (29.2)	134 (41.4)	18 (37.5)	101 (32.4)
Hit	19 (5.2)	13 (7.3)	26 (8.0)	4 (8.3)	33 (10.6)
Sexual comments	45 (12.4)	23 (12.9)	28 (8.6)	6 (12.5)	44 (14.1)
Threatened	9 (2.5)	10 (5.6)	19 (5.9)	1 (2.1)	21 (6.7)
Belongings stolen	16 (4.4)	4 (2.2)	10 (3.1)	1 (2.1)	6 (1.9)
Online	12 (3.3)	10 (5.6)	20 (6.2)	4 (8.3)	19 (6.1)
Other	2 (0.6)	0 (0.0)	0 (0.0)	0 (0.0)	6 (1.9)
Worst severity ^b <i>M</i> (<i>SD</i>)	3.61 (2.73)	5.77 (0.18)	6.27 (0.12)	7.20 (0.28)	7.37 (0.11)
Symptoms ^c <i>M</i> (<i>SD</i>)					
Social Anxiety	23.22 (14.6)	9.89 (0.42)	34.26 (0.59)	12.40 (0.69)	42.83 (0.64)
PTSD	13.49 (16.1)	10.13 (0.64)	15.98 (0.49)	41.94 (1.17)	48.06 (0.61)
Depression	7.10 (5.73)	5.28 (0.33)	9.42 (0.30)	11.46 (0.91)	16.63 (0.32)
General Anxiety	5.32 (4.73)	3.48 (0.26)	7.64 (0.27)	8.73 (0.69)	13.36 (0.27)
Cognitive and Coping					
Bullied Cognitions	35.96 (17.4)	30.48 (1.20)	46.24 (1.04)	49.40 (2.68)	65.74 (0.95)
Bullied Social Attitudes	50.43 (23.6)	42.22 (1.60)	67.35 (1.25)	65.83 (3.32)	88.65 (1.15)
Bullied Social Behaviours	25.09 (15.8)	17.67 (1.02)	34.84 (0.79)	34.69 (2.45)	49.83 (0.65)

Note.

^a Categories defined as: Asian = Pakistani, Indian, Bangladeshi, Chinese, Other; Other = Middle Eastern, Mixed, Other. ^b Worst severity range 0-10. ^c Social anxiety measured using the SPIN (range 0 – 68). PTSD to worst bullying experience measured using the PTSD Checklist for DSM-5 (range 0-80). General anxiety measured using GAD-7 (range 0-21). Depression measured using PHQ-9 (range 0-27). ^d Group membership: None (PCL < 31, SPIN < 19), SAD only (SPIN ≥ 19), PTSD only (PCL ≥ 31), SAD+PTSD (SPIN ≥ 19, BPCL ≥ 31).

6.3.2 Associations with outcomes

Background and victimisation variables

Number of types of bullying experienced was significantly correlated with both social anxiety ($r = .095, p < .01$) and PTSD symptoms ($r = .356, p < .001$), and worst severity of bullying was also significantly correlated with social anxiety ($r = .118, p < .001$) and PTSD symptoms ($r = .332, p < .001$). Regarding power imbalance, the model was statistically significant ($\chi^2 (2) = 11.050, p = .004$) and those who had experienced a power imbalance were slightly more likely (OR = 1.03) to have higher PTSD symptoms but there was no significant association with social anxiety. Age was not correlated with SAD or PTSD symptoms. When considering gender, both SAD ($\chi^2 (2) = 19.905, p < .001$) and PTSD symptoms ($\chi^2 (2) = 7.293, p < .05$) contributed significantly to model fit. Compared with people who defined as male, those who defined as female (OR = 1.02) or other (OR = 1.05) were slightly more likely to have higher social anxiety symptoms. Those who defined their gender as other were also slightly more likely to have higher PTSD symptoms (OR = 1.04). For the main analysis, given the small group size of those who self-defined as another gender, the variable was dichotomised to male or female/other. When considering multiple categories representing sexual orientation (heterosexual, bisexual, homosexual, other, unsure), PTSD symptoms ($\chi^2 (4) = 14.252, p < .05$) but not social anxiety symptoms ($\chi^2 (4) = 7.031, p = .134$) contributed significantly to the model fit. Compared to people who defined as heterosexual, those who defined as bisexual specifically were slightly more likely to have higher PTSD symptoms (OR = 1.02) and higher social anxiety symptoms (OR = 1.01). Although there was a trend for higher scores in the bisexual group compared with other sexual minority groups, these were not significant. Therefore, sexual orientation was ultimately dichotomised as heterosexual or a single variable for bisexual, homosexual, other, unsure combined (LGB) in order simplify the model. Regarding ethnicity, SAD contributed

significantly to model fit, ($\chi^2 (3) = 13.083, p < .01$) but not PTSD ($\chi^2 (3) = 2.650, p = .449$). Compared with other ethnic groups, those who defined as black (British, African, Caribbean) were less likely to report higher social anxiety symptoms (OR = 0.96).

Therefore, number of types of bullying experienced, severity of worst event, power imbalance, gender, ethnicity, and sexual orientation were potentially associated with either social anxiety and PTSD symptoms and were retained in the multivariate analyses, subject to backward elimination depending on overall contribution to the model.

Cognitive and coping measures

The cognitive and coping measures were significantly correlated with social anxiety symptoms (bullied cognitions: $r = .565, p < .001$; bullied social attitudes: $r = .646, p < .001$; behaviours: $r = .659, p < .001$) and PTSD symptoms (bullied cognitions: $r = .653, p < .001$; bullied social attitudes: $r = .610, p < .001$; behaviours: $r = .629, p < .001$).

Table 6.2 Cognitive and coping predictors of diagnostic categories using univariate logistic regressions

	Predictor	Reference group None		SAD		PTSD	
		B (SE)	OR (95%CI)	B (SE)	OR (95%CI)	B (SE)	OR (95%CI)
SAD	BCI	.06 (.01)	1.06 (1.04, 1.07) ***				
	BSAI	.05 (.01)	1.05 (1.04, 1.06) ***				
	BSBS	.08 (.01)	1.08 (1.07, 1.10) ***				
PTSD	BCI	.06 (.01)	1.07 (1.05, 1.09) ***	.01 (.01)	1.01 (.99, 1.03)		
	BSAI	.05 (.01)	1.05 (1.03, 1.06) ***	.00 (.01)	1.00 (.98, 1.01)		
	BSBS	.08 (.01)	1.08 (1.06, 1.11) ***	.00 (.01)	1.00 (.98, 1.02)		
SAD+PTSD	BCI	.12 (.01)	1.12 (1.10, 1.14) ***	.06 (.01)	1.06 (1.05, 1.07) ***	.05 (.01)	1.05 (1.03, 1.07) ***
	BSAI	.09 (.01)	1.10 (1.08, 1.11) ***	.04 (.00)	1.05 (1.04, 1.05) ***	.05 (.01)	1.05 (1.03, 1.06) ***
	BSBS	.16 (.01)	1.18 (1.15, 1.20) ***	.08 (.01)	1.08 (1.07, 1.10) ***	.08 (.01)	1.08 (1.06, 1.11) ***

Note. BCI = Bullied Cognitions Inventory. BSAI = Bullied Social Attitudes Inventory. BSBS = Bullied Social Behaviours Scale. Bullied sample with sufficient data for probable diagnostic classification (n = 938). Group membership: None (BPCL < 31, SPIN < 19), SAD only (SPIN ≥ 19), PTSD only (PCL ≥ 31), SAD+PTSD (SPIN ≥ 19, BPCL ≥ 31).

*** $p < .001$.

6.3.3 Group comparisons

Univariate analyses

Individually, each of the new scales predicted diagnostic group membership (bullied cognitions, $\chi^2(3, N = 835) = 377.58$, Nagelkerke $R^2 = .40$, $p < .001$; bullied social attitudes, $\chi^2(3, N = 877) = 405.82$, Nagelkerke $R^2 = .41$, $p < .001$; behaviours, $\chi^2(3, N = 912) = 488.40$, Nagelkerke $R^2 = .46$, $p < .001$). Group comparisons are presented in Table 6.2.

All the new scales distinguished between the non-clinical and other groups, such that higher scores were associated with membership of one of the clinical groups. Of the three comparison groups, the combined SAD+PTSD group had the largest odds ratios indicating the highest scores compared with the non-clinical group.

Within the clinical groups, an increase in any of the measures significantly increased the likelihood of being in the SAD+PTSD group compared with SAD alone or PTSD alone. However, there was no difference on any of the measures between the SAD alone and PTSD alone groups.

Multivariate analyses including background and victimisation characteristics

In addition to perceived power imbalance, background characteristics (gender, sexual orientation, ethnicity) and victimisation characteristics (number of types of bullying, severity of worst event) that were identified earlier to be associated with outcome variables were included in a combined MNL model. Sexual orientation, ethnicity, gender, and power imbalance did not contribute to the model and were removed, but number of types of bullying ($\chi^2(3) = 20.02$, $p < .001$) and severity of worst event ($\chi^2(3) = 15.99$, $p < .001$) did contribute to model fit and were retained. All three of the new scales contributed to model fit (bullied cognitions, $\chi^2(3) = 27.33$, $p < .001$; bullied social attitudes, $\chi^2(3) = 9.85$, $p = .013$; behaviours, $\chi^2(3) = 79.20$, $p < .001$). The final model was significant, $\chi^2(15) = 513.81$, Nagelkerke $R^2 = .54$, $p < .001$. Full model group comparisons are presented in Table 6.3.

Table 6.3 Cognitive and coping predictors of diagnostic categories using multinomial logistic regressions

	Predictor	Reference group		SAD		PTSD	
		None		B (SE)	OR (95%CI)	B (SE)	OR (95%CI)
SAD	BCI	.00 (.01)	1.00 (.98, 1.03)				
	BSAI	.03 (.01)	1.03 (1.01, 1.05) *				
	BSBS	.06 (.01)	1.06 (1.03, 1.09) ***				
	# Bully types	-.08 (.08)	.93 (.80, 1.08)				
	Severity	.08 (.06)	1.08 (.96, 1.22)				
PTSD	BCI	.02 (.02)	1.02 (.98, 1.06)	.02 (.02)	1.02 (.99, 1.05)		
	BSAI	.01 (.02)	1.01 (.98, 1.04)	-.02 (.01)	.98 (.95, 1.01)		
	BSBS	.07 (.02)	1.07 (1.03, 1.12) ***	.01 (.02)	1.01 (.98, 1.05)		
	# Bully types	.32 (.15)	1.38 (1.05, 1.82) *	.40 (.13)	1.50 (1.16, 1.92) **		
	Severity	.21 (.12)	1.23 (.99, 1.53)	.13 (.10)	1.14 (.93, 1.40)		
SAD+PTSD	BCI	.04 (.02)	1.04 (1.01, 1.07) **	.04 (.01)	1.04 (1.02, 1.06) ***	.02 (.02)	1.02 (.99, 1.06)
	BSAI	.02 (.01)	1.02 (1.00, 1.05)	-.01 (.01)	1.00 (.98, 1.01)	.01 (.02)	1.02 (.99, 1.04)
	BSBS	.11 (.02)	1.12 (1.09, 1.15) ***	.06 (.01)	1.06 (1.03, 1.08) ***	.04 (.02)	1.04 (1.00, 1.08) *
	# Bully types	.12 (.10)	1.12 (.93, 1.35)	.19 (.07)	1.21 (1.06, 1.39) **	-.21 (.13)	.81 (.63, 1.05)
	Severity	.25 (.08)	1.28 (1.10, 1.50) **	.17 (.06)	1.20 (1.06, 1.33) **	.04 (.11)	1.04 (.84, 1.29)

Note. BCI = Bullied Cognitions Inventory. BSAI = Bullied Social Attitudes Inventory. BSBS = Bullied Social Behaviours Scale. Bullied sample with sufficient data for probable diagnostic classification (n = 938). Group membership: None (BPCL < 31, SPIN < 19), SAD only (SPIN ≥ 19), PTSD only (PCL ≥ 31), SAD+PTSD (SPIN ≥ 19, BPCL ≥ 31).

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

6.4 Discussion

Findings in this chapter, from a diverse national sample of prospective university and college students who reported a history of bullying, suggest that specific cognitions and behaviours related to bullying are associated with PTSD and SAD, and distinguish individuals with combined diagnosis compared with SAD alone. There were high levels of clinically relevant symptoms of SAD and comorbidity with PTSD symptoms was common. This speaks to the clinical utility of routine assessment of bullying experiences. Results suggest that the newly developed measures Bullied Cognitions Inventory (cognitions) and Bullied Social Behaviours Scale (behaviours) measures assess features particularly relevant to PTSD symptoms after bullying and may be helpful for guiding interventions among young adults who have been bullied.

Social anxiety symptoms were high in this sample of young adults with a history of bullying and, of those with clinically relevant social anxiety symptoms, just over half (51.2%) also had clinically relevant PTSD symptoms to their worst bullying experience. The extent of clinically relevant PTSD symptoms was therefore even higher in this sample than in another sample of adults with experiences of social trauma (Bjornsson et al., 2020) in which just under a third (32.7%) of individuals with SAD also reported clinically significant symptoms of posttraumatic stress. In the current study, only one in five participants did not reach the threshold for likely clinical diagnosis of SAD or PTSD. The PTSD alone group was by far the smallest group, with nearly seven times fewer participants than in each of the other clinical groups, SAD alone and SAD+PTSD. The temporal associations between SAD and PTSD are unclear (Collimore et al., 2010). However, consistent with other research (Bjornsson et al., 2020) comorbidity in this sample was high, suggesting that mechanisms and pathways to symptoms may overlap among people who have experienced the social trauma of bullying. As anticipated, number of types of bullying experienced and severity of

events contributed to model fit. Individuals who experienced more types of bullying were more likely to be in the PTSD alone group compared with the non-clinical group or the SAD group, and more likely to be in the PTSD+SAD group compared with the SAD alone group. Individuals who rated their experiences as more severe were more likely to be in the SAD+PTSD group compared with the non-clinical or SAD alone groups. As noted in similar previous work (Bjornsson et al., 2020) severity rating was retrospective and self-reported rather than objectively determined by an external reading of the event and therefore represents the individual's own perspective of their experience. Therefore, as expected, on both measures experiencing more bullying was associated with PTSD symptoms.

Taken in isolation, each of the three new measures of bullying-related cognitions and behaviours predicted probable clinical group membership compared with the non-clinical group. They also distinguished SAD alone and PTSD alone vs. SAD+PTSD combined. As expected, this suggests more maladaptive cognitions among those with combined diagnosis compared with single diagnosis or no diagnosis. The measures did not distinguish PTSD alone from SAD alone, although the small size of the PTSD alone group means comparisons to this group were underpowered. Distinctions between measures emerged when they were entered alongside background and victimisation variables in a logistic regression model. Gender, ethnicity, and sexual orientation were associated with symptoms but did not contribute to overall model fit so they were eliminated from the final model. Of note, power imbalance did not reach the $p < .05$ significance threshold for being retained in the model. However, it was close to the threshold ($p = .058$) and the effect may have been impacted by small group size due to the small number of participants who did not report power imbalance (6.8%). In an exploratory comparison of social anxiety and PTSD symptom severity between those who did and did not report power imbalance (PI), there was a group difference for PTSD (PI: mean = 28.24, SD = 0.68; no-PI mean = 19.86, SD = 2.37) but not for social

anxiety (PI: mean = 31.47, SD = 0.58; no-PI mean = 27.63, SD = 2.35). Experiences where there was a perceived power imbalance may more closely mirror other types of interpersonal trauma and abuse that can produce PTSD symptoms. Of note, historically “helplessness” during a trauma was included as a diagnostic component of Criterion A. This may imply that victimisation experiences without a power imbalance are just as likely to be associated with social anxiety, but power imbalance may present an additional risk for PTSD. Of note, power imbalance was significantly associated with perceived severity ($r = .113, p < .01$) supporting the role of this component in making an event more impactful.

Scores on the Bullied Cognitions Inventory (BCI), which includes beliefs about self and others in relation to experiences of bullying aligned with the factors of “*negative interpretations of reactions to bullying*”, “*recognisable as a bullying victim*”, “*degraded in the eyes of others*”, and “*social defeat*”, were associated with PTSD symptoms. Specifically, those with higher scores on the BCI were more likely to be in the SAD+PTSD group compared with the non-clinical group or the SAD only group. Although BCI scores did not distinguish PTSD only from any of the other groups (SAD+PTSD, SAD only, non-clinical), these comparisons were underpowered due to smaller sample size in the PTSD only group. It is long established that trauma-related cognitions predict PTSD symptoms in trauma survivors (e.g., Ehring et al., 2008; Kleim et al., 2013) and in this study bullying related cognitions were associated with cooccurring PTSD symptoms related to bullying experiences among young adults with social anxiety. In contrast, individuals with higher scores on the Bullied Social Attitudes Inventory (BSAI), which includes beliefs about self and others in social interactions, relationships, and friendships, aligned with factors of “*rejection*”, “*mistrust*”, “*need to manage self-presentation*”, and “*social vulnerability*”, were more likely to be in the SAD alone group compared with the non-clinical group, but no other group differences emerged. In univariate analyses, the BCI and BSAI produced comparable odds

ratios distinguishing non-clinical and clinical groups, and distinguishing likely combined diagnosis versus SAD or PTSD only. However, in the combined model it is possible that variance in PTSD symptoms explained by the BSAI was accounted for by the correlated BCI measure and masked effects for those with PTSD in addition to SAD symptoms.

Individuals who scored higher on the Bullied Social Behaviours Scale (BSBS), which includes coping behaviours in social situations, aligned with factors of “*masking*”, “*reassurance seeking*”, “*acting*”, “*people pleasing*”, and “*self-diminishing*”, were more likely to be in one of the clinical groups compared with the non-clinical group, and higher scores were associated with combined SAD+PTSD compared with SAD or PTSD only. However, this behaviours scale did not distinguish between the SAD and PTSD only groups. These results suggest that individuals who were bullied and are suffering with both SAD and PTSD symptoms are engaging in more unhelpful behaviours compared to those with either disorder alone. While previous work compared behaviours between SAD and PTSD only groups to determine disorder specific behaviours (Clark, 2005; Dunmore et al., 2001) findings in this study suggest that among young adults who were bullied, there is additional benefit in assessing PTSD symptoms and bullying related behaviours alongside SAD, so that these symptoms and behaviours are not missed in this group.

Sexual orientation and gender were associated with outcome variables in this sample and may warrant particular attention in future studies. In this sample, 32.5% of participants defined as lesbian, gay, bisexual, other, or unsure (LGB). Although LGB status did not significantly contribute to the variance in the final model, young people who did not define as heterosexual were more likely to have higher social anxiety and PTSD symptoms. This is in line with previous research (Cohen et al., 2016; Mahon et al., 2022) and implies that this group may be particularly vulnerable. It is possible that specific victimisation characteristics and cognitions, coping strategies are important for these young people and should be

investigated further. Young people who defined as non-binary gender were also more likely to have higher symptoms than people who defined as male or female. Due to the small number in this sample, this group was ultimately combined with the female group who had the next highest symptoms, so that they could be included in the analyses. However, this overall grouping may disguise specific effects. Of note, although ethnicity did not contribute significantly to variance in the model, specific questions regarding ethnicity were not included in the measures and it is possible that relevant themes may not have been uncovered.

6.4.1 Limitations

The sample is diverse in terms of including non-white ethnicities in line with national statistics and a range of reported sexual orientation, but people who identified as female were overrepresented. Therefore, findings require additional verification in a gender-balanced sample. In addition, generalisability of this sample may be limited by their status as higher education applicants, which may be a selected group in terms of socio-economic background. Number of bully types is restricted to five or more as this was included in the definition of bullying. It is possible that effects for each measure were suppressed due to overlap between predictor variables, particularly the BCI (cognitions) and BSAI (attitudes). Finally, diagnostic status was inferred from symptom severity on self-report measures which may compromise specificity. Of note also, group comparisons for the PTSD only group were underpowered.

6.4.2 Conclusions

In this sample of young adults with a history of bullying, levels of social anxiety were high and additional PTSD symptoms to bullying experiences were common. Scores on the Bullied Cognitions Inventory and Bullied Social Behaviours Scale explained additional variance in PTSD symptoms among young people who were bullied and distinguished them from those with social anxiety symptoms only. This suggests that that assessment of PTSD

symptoms and specific cognitions and behaviours related to bullying could provide useful clinical information, for example indicating a need for addressing upsetting memories of bullying.

Predictors of social anxiety and PTSD symptoms related to past experiences of bullying over the first year of university

7.1 Introduction

Young people who have been bullied are more likely to suffer with mental health problems including social anxiety and PTSD symptoms related to their experiences. However, not all people who were bullied suffer in this way and severity of symptoms varies considerably between individuals. Starting university can be stressful, characterised by unfamiliar social and physical environments and increased academic pressure. Although the transition may represent a new opportunity to “move on” from negative past experiences including bullying it may present a challenge for those with unhelpful thinking and behaviours related to their experiences. This chapter investigates changes in social anxiety and PTSD symptoms related to past experiences of bullying during the first year at university and explores factors that may be associated with different trajectories of change over time. The question is posed whether measures of cognitions and behaviours related to bullying that were developed and tested in Chapters 3-5 predict following a particular trajectory over and above background and bullying characteristics and additional exposure to bullying during university.

Previous research has investigated the impact of prior trauma on various aspects of adjustment in university (Banyard & Cantor, 2004) with fewer studies investigating the impact of bullying. To our knowledge, no previous study has mapped PTSD symptoms related to bullying during the first year at university. Studies with first year students suggest that prior bullying victimisation is associated with poorer mental health (Holt et al., 2014; Jantzer & Cashel, 2017) although interestingly not with perceived quality of social life (Holt et al., 2014) suggesting that the new environment may indeed provide opportunities for new supportive relationships and adjustment at least for some individuals. Holt and colleagues (2017) conducted a latent class analysis of first year students in American universities, grouping them according to the types of victimisation they had experienced prior to starting university. Four victimisation groups were identified, labelled as minimal exposure, peer victims, poly victims who experienced multiple types of victimisation, and poly sexual victims who also experienced dating violence or rape. They measured anxiety and depression in Autumn and evaluated differences in symptoms in Spring according to victimisation class. Of note, they did not find differences in symptoms between the peer victim and minimal exposure groups but found that those who had experienced multiple forms of victimisation before college had higher distress at the start of the year and the later assessment point. They suggested that findings linking peer victimisation with symptoms at university may have conflated other types of victimisation history. To account for the impact of additional trauma types, trauma exposure prior to university was included as a covariate in the current study.

The current study defines trajectories of social anxiety and PTSD symptoms related to past bullying experiences during the first year at university and investigates potential predictors. This differs from research evaluating adjustment to college across broader academic, social and emotional domains, which explores broad challenges faced by students to inform policy and interventions from a pastoral perspective (e.g., O'Donnell et al., 2018).

As described in previous chapters, cognitive models of social anxiety and PTSD suggest that appraisals and coping strategies contribute to ongoing symptoms. Among participants with past experiences of bullying we hoped to investigate whether typical trajectories of symptom changes exist in the first year at university and whether scores on measures of cognitions and behaviours influence the likelihood of following a particular trajectory.

7.1.1 Aims

The aim of this study is to assess whether factors including behaviours and negative beliefs about self and others related to previous bullying experiences predict PTSD and social anxiety symptom trajectories throughout the first year of university.

7.1.2 Hypotheses

1. Mean symptoms of PTSD and social anxiety will decline over the first year
2. There will be significant individual variability in symptom intercepts (initial severity) and slopes (rate and direction of change over time)
3. Subgroups with distinct trajectories of symptoms will exist defined by baseline severity and rate and direction of change over time
4. Group membership will be predicted by cognitions and behaviours scores (BSAI, BCI, BSBS) accounting for variance explained by:
 - a. Background and victimisation characteristics (gender, sexual orientation, ethnicity, prior trauma, number of types and severity of past bullying, exposure to bullying since baseline)
 - b. Perceived power imbalance in past bullying

7.2 Methods and materials

7.2.1 Procedure

As described in Chapter 5, young people aged 18 to 29 who anticipated starting university or college in the UK in September 2018, completed an online survey about

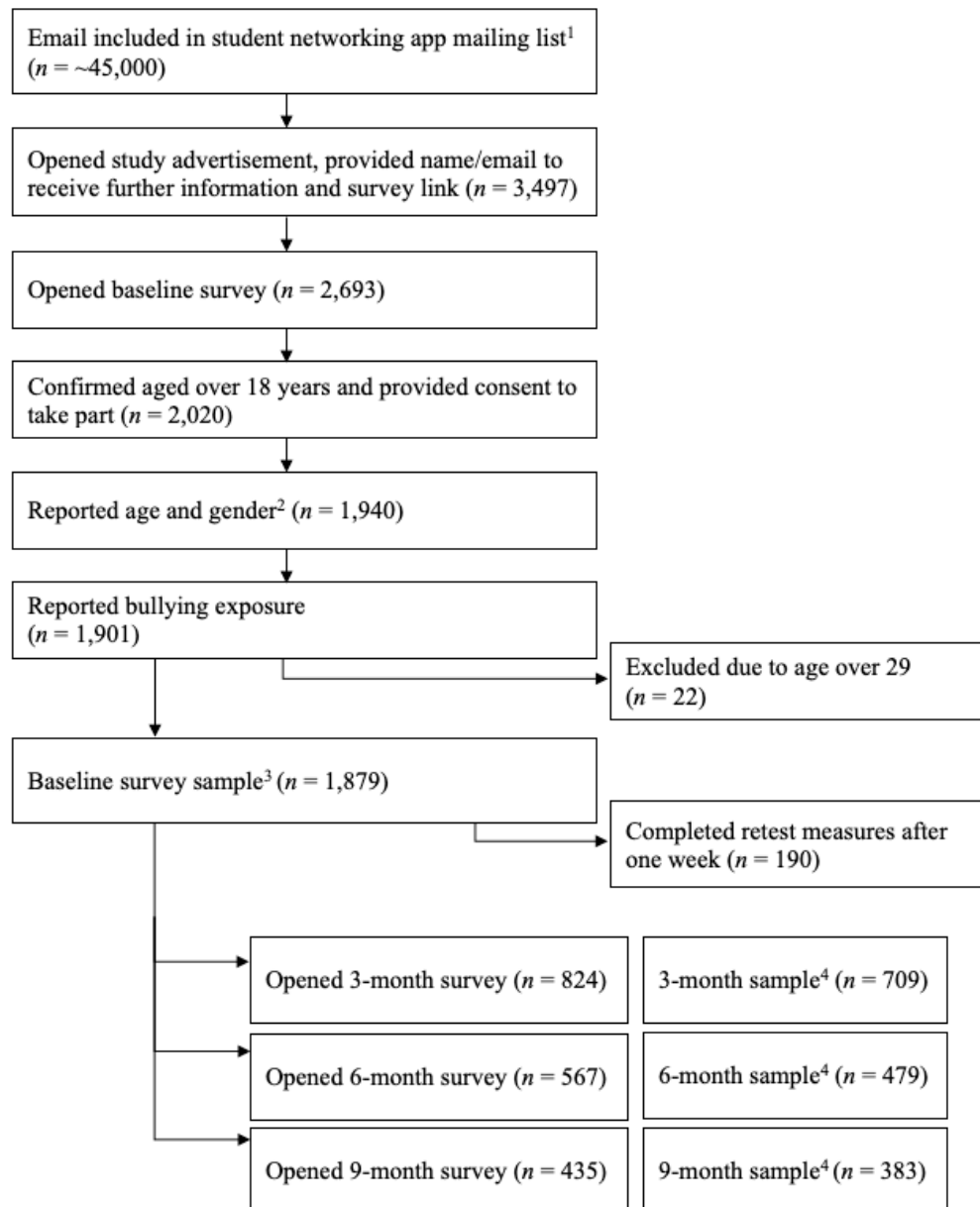
bullying and mental health that was distributed via a student networking app mailing list just before the start of the academic year. People who completed that survey were invited to complete three more surveys at three-monthly intervals during their first year at university. Survey distribution dates and timing of reminders were reviewed with current students and with the app coordinators to optimise response rates and avoid particularly stressful or chaotic periods that might adversely impact either completion rates or anxiety levels (for example, the first survey was sent after exam results were released to reduce the impact of results-anxiety). Therefore, surveys were distributed in the third weeks of August (after A-level exam results), November (before university winter break), February, and May (before university exams). Participants who completed the first survey were invited to complete all follow-up surveys, regardless of completion beyond baseline. Of note, all four surveys were distributed prior to the COVID-19 pandemic. For each survey, participants were entered into a prize draw for shopping vouchers. The study received ethical approval from University of Oxford Medical Sciences Interdivisional Research Ethics Committee (R58149/RE001) [Appendix 4].

7.2.2 Inclusion and exclusion criteria

Participants were young people expecting to begin university in the UK in Autumn 2018, aged 18 to 29. Prospective students aged under 18 when the first survey was distributed in August 2018 were not permitted to take part. Participants included in these analyses reported experiences of bullying at least 2/3 times per month, or 5 or more types.

Participant flow diagram

Figure 7.1 Participant Flow Diagram



Note.

¹Total estimated number of emails held in student networking app database for individuals intending to start university or college in the UK in Autumn 2018 (may include emails that are invalid, filtered to spam, etc.).

²Answer options included 'prefer not to say'. ³Invited to complete all subsequent surveys. ⁴Completed one or more survey questions

7.2.3 Measures

Background and victimisation characteristics

At baseline, participants provided their gender, sexual orientation, and ethnicity. They reported exposure to bullying (number of types, frequency of exposure, perceived power imbalance) using an adapted version of the California Bullying Victimization Scale (Felix et al., 2011) intended for adults retrospective self-report (Reid et al., 2016) as described in the previous chapters, and rated the severity of their worst experience from 0 (*not severe*) to 10 (*extremely severe*). In follow-up surveys, participants reported exposure to bullying since the previous survey. Trauma history was assessed at baseline using the trauma screener from the PDS-5 (Foa et al., 2016) indicating whether the participant had experienced any of eight types of traumatic event (including serious illness, physical or sexual assault, war, child abuse, accident, natural disaster).

Symptoms

Symptom measures were completed at each time point as described in the previous chapter to assess presence of current PTSD symptoms related to bullying (PCL-5; Weathers et al., 2013) and social anxiety (SPIN; Connor et al., 2000).

Bullying cognitions and coping strategies

New measures of cognitions and behaviours (Chapter 5) were completed at each time point.

Bullied Cognitions Inventory (BCI)

Scale describing 15 thoughts about self and others in relation to experiences of bullying which are rated on a 7-point Likert scale, from 1 (*totally disagree*) to 7 (*totally agree*) over the last month. A sum score is calculated (range 15 - 105) and higher scores indicate more maladaptive appraisals.

Bullied Social Attitudes Inventory (BSAI)

Scale describing 19 beliefs about self and others in social interactions, relationships, and friendships which are rated on a 7-point scale, from 1 (*totally disagree*) to 7 (*totally agree*) over the last month. A sum score is calculated (range 19 - 133). Higher scores indicate more maladaptive appraisals.

Bullied Social Behaviours Scale (BSBS)

Scale describing coping behaviours in social situations rated from 0 (*never*) to 4 (*always*) over the last month. A sum score is calculated (range 0 - 76) and higher scores indicate less helpful strategies.

7.2.4 Data analysis

Data preparation

Data reliability checks are described in Chapter 5.

Missing data

There was substantial attrition over time. The largest drop in participation was after the first survey, such that PTSD symptom scores (PCL-5) were available for 90.8% of individuals at baseline followed by 37.1%, 25.1%, and 19.4% of the original sample after 3, 6, and 9 months. Social anxiety symptom scores (SPIN) were available for 73.3% of individuals at baseline followed by 32.2%, 19.6%, and 16.8%. These rates are similar to another large longitudinal study of mental health in first year university students in which 36% of those who completed a baseline survey in Autumn completed a second survey the following Spring (Holt et al., 2017). Minimum covariance coverage across the four time points was 14.3% for PTSD and 14.7% for social anxiety, which is above the minimum 10% threshold required for model estimation. Missing data was handled statistically by using the robust full information maximum likelihood (MLR) estimation method. Only participants

who reported having been bullied were included in this study and cases were excluded if symptom data was missing at all time points. Cases missing all predictors data (background and victimisation variables, power imbalance, cognitive and behavioural measures) were also excluded. I used chi-square and t-test analyses to evaluate whether background, symptoms, and cognitive behavioural variables were associated with participation at each time point. See Table 7.1.

Analytic approach

Analysis was in three steps: 1. modelled the shape of the data over time, 2. identified subgroups, and 3. evaluated predictors of group membership. Models were estimated with Mplus Version 7.4 (Muthén & Muthén, 2012). R packages were used to collate models (MplusAutomation; Hallquist & Wiley, 2018) and inspect graphs (BiocManager; Morgan, 2021).

1. I defined latent growth curve models (LGCM) measuring overall trajectories of PTSD related to bullying and social anxiety symptoms. Model fit for linear and quadratic solutions was evaluated across multiple fit indices (there were insufficient timepoints to evaluate a piecewise model). Adequate/good fit were indicated respectively as Comparative Fit Index (CFI) > .90/.95, Tucker-Lewis Index (TLI) > .95/.90, Root Mean Square Error of Approximation (RMSEA) < .06/.08, Standardised Root Mean Square Residual (SRMR) < .08.
2. I conducted a latent class growth analysis (LCGA) to identify subgroups with similar symptom trajectories over time. In LCGA variance and covariance estimates for the growth factors are fixed to zero and within group homogeneity is assumed, i.e., a mean growth curve is estimated for each class and individual variation is not permitted. In latent growth mixture modelling (LGMM) variances are freed and predictors of within-class variation can be assessed. Therefore, LCGA was favoured

in this analysis to achieve the goal of identifying predictors of class membership rather than within class differences.

- i. Solutions were specified for 1, 2, 3, 4, 5 and 6 classes and the most appropriate number of classes was determined by comparing the models according to the following well-established fit indices. Better fit for k compared with $k - 1$ classes was indicated by lower values of Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC) and Sample Size Adjusted BIC (SSABIC), higher Entropy (0.6 suggests average separability of classes and 0.8 good separability), higher classification accuracy, and significant Lo, Mendell & Rubin Likelihood Ratio Test (LRT) and Parametric Bootstrapped Likelihood Ratio Test (BLRT).
 - ii. Theory and previous research were taken into consideration to avoid interpreting sample-specific artefacts from the data. Minimum class membership was 1% and a class containing very few individuals (<5%) was only retained if its existence was strongly justified by theory. Visual inspection of sample and estimated means graphs confirmed goodness of fit for the data and uniqueness of trajectories.
 - iii. Models were estimated using the robust full information maximum likelihood method (MLR) to account for skewed data and missing values, assuming they are missing at random (MAR). This allows for cases to be included if they have at least one data point. Models were optimised using a large number of iterations to confirm that the global maximum loglikelihood value was achieved and replicated. The BLRT used 100 bootstrap draws.
3. I evaluated whether background, victimisation, and cognitive behavioural variables predicted expected class membership using multinomial logistic regressions.

Cognitive and behavioural measures were included in the model, but other variables were subjected to backward elimination, such that those that did not contribute significantly to model fit were excluded from the final model. Expected class membership was modelled as the dependent variable and predictors as the independent variables (rather than including predictors in the original model defining class structure) so that the predictors did not influence the class structure.

7.3 Results

7.3.1 Participants

1879 young people took part in the first survey, of whom 1279 (68%) reported lifetime exposure to bullying that met the threshold for inclusion in this analysis. Cases were excluded due to missing data as described above. In the PTSD symptoms analysis, the sample size was 1,188 in the latent growth model and 663 in the trajectories predictors analysis. In the social anxiety symptoms analysis, the sample size was 995. The overall sample was diverse in terms of background variables and psychological variables. Ongoing participation after the first survey was associated with female gender and being from a sexual minority group, with slightly higher participation in the final survey among people identifying with white ethnicity compared with other groups. Higher baseline social anxiety was associated with participation in the second survey, but the mean difference in social anxiety score between the two time points was less than 2 points out of a possible total score of 68 points. Similarly, retention was significantly associated with mean number of types of bullying experienced, but the actual difference was small and not practically meaningful. See Table 7.1.

Table 7.1 Baseline data on background variables, victimisation characteristics, and scores on measures of symptoms, cognitions, and behaviours for survey completers at each time point

	Time Point			
	Baseline	3 months	6 months	9 months
Total n (% of baseline sample)	1879	709 (37.7)	479 (25.5)	383 (20.4)
Background variables				
n (% within time point)				
Bullied ^a	1279 (68.1)	490 (69.1)	345 (72.0)	263 (68.9)
Age M (sd)	19.33 (2.31)	19.30 (2.24)	19.37 (2.34)	19.30 (2.26)
Female gender	958 (74.9)	387 (79.0) *	276 (80.0) *	214 (81.1) *
LGB	393 (30.7)	182 (37.1) **	140 (40.6) **	116 (43.9) **
White ethnicity	1020 (79.7)	396 (80.8)	285 (82.6)	222 (84.1) *
Live at family home ^b	249 (19.5)	89 (18.2)	56 (16.2)	47 (17.8)
Other trauma experience ^c	442 (34.6)	207 (42.2)	150 (43.5)	120 (45.5)
Victimisation characteristics				
Number of types M (sd)	5.61 (1.83)	5.23 (1.77) **	5.18 (1.85) **	5.23 (1.82) **
Worst type n (%)				
Teasing	170 (13.3)	70 (14.3)	51 (14.8)	43 (16.3)
Gossiped about	157 (12.3)	59 (12.0)	32 (9.3)	32 (12.1)
Ignored	390 (30.5)	188 (38.4)	126 (36.5)	88 (33.3)
Hit	92 (7.2)	33 (6.7)	22 (6.4)	22 (8.3)
Sexual comments	63 (4.9)	25 (5.1)	15 (4.3)	14 (5.3)
Threatened	137 (10.7)	48 (9.8)	35 (10.1)	26 (9.8)
Belongings stolen	30 (2.3)	10 (2.0)	14 (4.1)	7 (2.7)
Online	66 (5.2)	29 (5.9)	22 (6.4)	17 (6.4)
Other	10 (0.8)	4 (0.8)	4 (1.2)	2 (0.8)
Severity of worst event	6.50 (2.27)	6.46 (2.26)	6.60 (2.21)	6.65 (2.18)
Symptoms, cognitions, behaviours M (sd)				
PTSD to bullying (0-80)	28.26 (19.56)	28.02 (19.65)	27.71 (19.44)	27.2 (18.96)
Social anxiety (0-68)	31.40 (16.53)	32.71 (16.07) *	32.46 (16.24)	32.69 (16.24)
Depression (0-27)	11.42 (7.09)	11.45 (6.91)	11.17 (7.22)	11.11 (7.03)
General anxiety (0-21)	9.02 (6.03)	8.95 (5.81)	8.74 (6.00)	8.59 (5.78)
BCI (Cognitions)	50.61 (21.68)	50.94 (21.23)	49.92 (21.87)	49.48 (21.88)
BSAI (Social Attitudes)	70.21 (27.52)	71.17 (26.64)	69.22 (26.90)	69.55 (26.52)
BSBS (Behaviours)	37.07 (18.03)	37.10 (17.18)	36.65 (17.60)	36.15 (17.33)

Note. Total n = participants who started the survey at each time point, defined as providing minimum bullying data, age, gender at Baseline and answering first bullying question in subsequent time points. Values for bullied sample only, defined as five or more types of bullying or at least one type 2/3 times per month before baseline survey. LGB = homosexual, bisexual, other, unsure. ^a Bullied % of full sample, other values % of bullied sample at each time point. ^b Other = independent or university college accommodation. ^c Other traumatic experience measured by PDS (life threatening illness, physical assault, sexual assault, military, child abuse, serious accident, natural disaster, other trauma). PTSD to bullying experience (PCL-5). Social Anxiety (SPIN). Depression (PHQ-9). General Anxiety (GAD-7). Significant difference compared with non-completers at each time point, * $p < .05$, ** $p < .001$.

7.3.2 PTSD symptoms during the first year at university

Overall latent growth curve model of PTSD symptoms

A linear model fit the data well CFI = .963, TLI = .956, RMSEA = .047 [CI: 0.025 - 0.071], SRMR = .053. The quadratic model could not be accurately estimated and was

rejected. The mean trajectory had a significant negative slope ($M = -2.554, SE = .317, p < .001$), indicating mean improvement in symptoms and supporting hypothesis 1 (that there will be a mean decrease in PTSD symptoms). There was significant variation around the mean intercept ($p < .001$) but variation in slope did not reach significance ($p < .081$). Therefore, hypothesis 2 (that there will be significant variation in intercept and slope) was only partially supported, due to minimal variation from the mean slope across the sample. However, classes were investigated within the linear model to identify potential subsets of individuals with similar trajectories over time.

Latent class growth analysis (LCGA) defining trajectories of PTSD symptoms

Fit statistics did not conclusively support any single class solution (see Table 7.2) so relative merits of each class solution are discussed below. Ultimately, a four-class solution was chosen.

Table 7.2 Fit statistics for PTSD LCGA (1 – 6 classes)

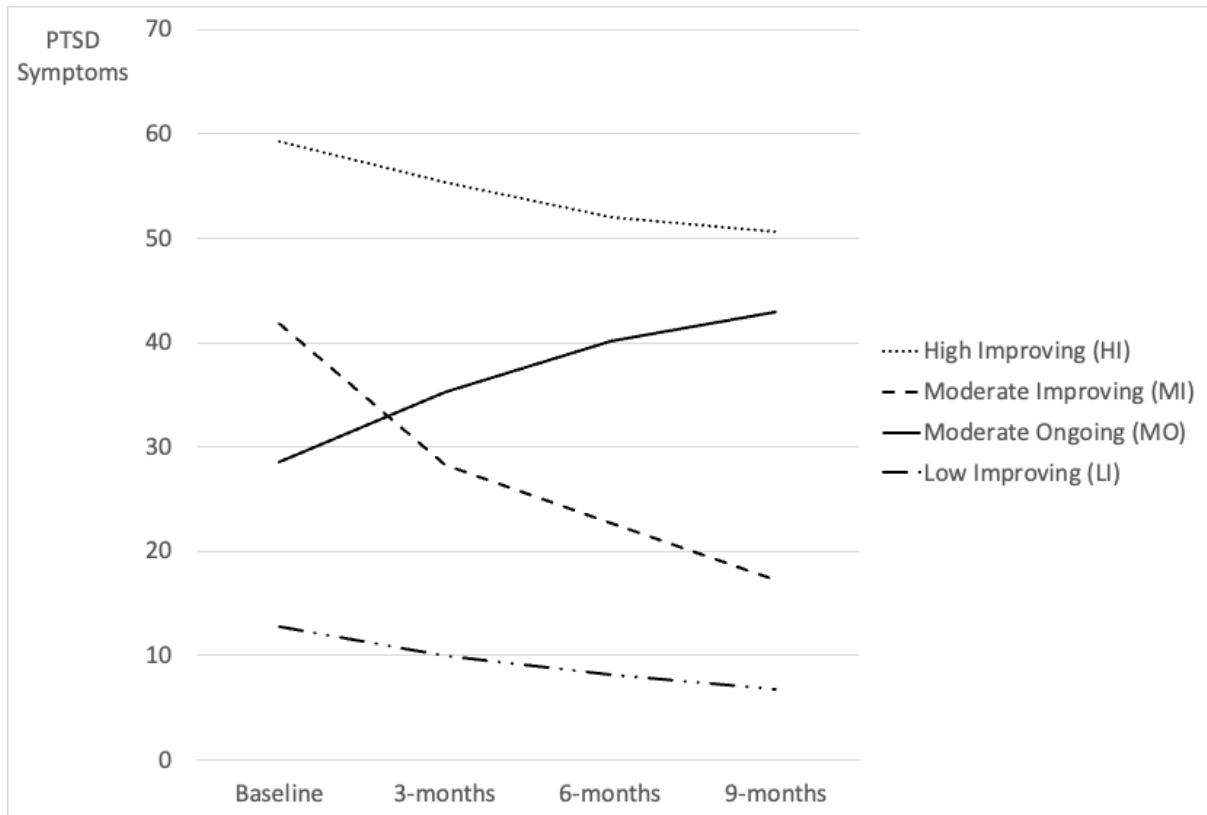
	1 class	2 classes	3 classes	4 classes	5 classes	6 classes
AIC	19327.470	18703.421	18568.696	18505.846	18477.040	18455.715
BIC	19357.950	18749.141	18629.656	18582.046	18568.480	18562.395
SSABIC	19338.892	18720.554	18591.540	18534.401	18511.306	18495.691
Entropy	-	0.670	0.654	0.649	0.664	0.635
Proportion per class (%)	-	65, 34	51, 34, 14	50, 27, 13, 8	51, 29, 15, 3, 3	49, 24, 12, 7, 3, 2
Classification accuracy	-	.846 -.931	.740 -.912	.373 -.944	.275 -.951	.295 -.952
LRT p-value	-	< .001	< .001	Non-sig	Non-sig	< .05
BLRT p-value	-	< .001	< .001	< .001	< .001	< .001
Shape of trajectories	-	Similar	Similar	Distinct	Distinct	Distinct

Note. PTSD measured with PCL-5 to worst bullying experience at four time points (baseline, 3-, 6-, 9-months). AIC = Akaike Information Criterion, BIC = Bayesian Information Criterion, SSABIC = sample size adjusted BIC (lower value indicates better fit for k compared with k-1 classes). Higher entropy indicates higher separability (> 0.6 acceptable, > 0.8 good). Classification accuracy range 0-1 (higher is better). BLRT = Bootstrap Likelihood Ratio Test, LMRT = Lo-Mendell-Rubin Likelihood Ratio Test (significant result indicates better fit for k compared with k-1 classes). Shape of trajectories inferred from visual inspection of graphs and described as similar or distinct. Sample included individuals who met the threshold for having been bullied before the baseline survey.

The AIC, BIC and SSABIC reduced with each additional class which suggests increasingly good fit for more classes, a trend which is not uncommon even when resulting classes have similar attributes. The LRT test favoured the 3-class model as it turns to being non-significant after three classes. The BLRT continues to be significant with each additional class, indicating incrementally improved fit for the data with each additional class. Entropy is highest for the 2-class and 5-class solutions. Classification accuracy was relatively low for solutions with more than three classes, with higher accuracy for the classes representing low or high symptoms that are stable over time compared with the classes with moderate intercepts.

Model selection is also guided by visual inspection of the graphs and theoretical considerations, which is important in this case given the mixed interpretation of the fit indices. The 3-class solution showed parallel lines, indicating differing baseline levels and equivalent significant negative slopes. The 4-class solution showed three approximately parallel lines with differing baseline levels and equivalent significant negative slopes, and one line with a flatter slope. The classes were named according to symptom levels as, **High Improving** ($n = 160, 13.4\%$), **Moderate Improving** ($n = 324, 27.2\%$), **Moderate Ongoing** ($n = 99, 8\%$) and **Low Improving** ($n = 605, 50.9\%$). The “*Moderate Ongoing*” class is relatively small but of interest since it includes almost one-in-ten of the sample whose symptoms did not improve over time when others did. Although the increase in symptoms did not produce a significant positive slope in this class, there was over ten points increase in estimated mean score from baseline to 9-months. Notwithstanding the marginal variations in slopes, hypothesis 3 was supported (that there will be distinct trajectories of symptoms over time).

Figure 7.2 Graph showing sample means for PTSD trajectories 4 class solution



Note. Estimated PTSD symptoms measured using PCL-5 to worst bullying experience (Range 0-80)

Table 7.3 Univariate multinomial logistic regressions with odds ratios for each measure as a predictor of PTSD class membership

Class	Predictor	Reference class LI		HI		MO	
		B (SE)	OR (95%CI)	B (SE)	OR (95%CI)	B (SE)	OR (95%CI)
HI	BSAI	0.09 (0.01) ***	1.09 (1.08 – 1.11)				
	BCI	0.12 (0.01) ***	1.12 (1.10 - 1.14)				
	BSBS	0.15 (0.01) ***	1.16 (1.13 – 1.19)				
MO	BSAI	0.04 (0.01) ***	1.05 (1.03 – 1.06)	-0.05 (0.01) ***	0.96 (0.94 – 0.97)		
	BCI	0.56 (0.01) ***	1.06 (1.04 – 1.07)	-0.06 (0.01) ***	0.94 (0.94 – 0.96)		
	BSBS	0.06 (0.01) ***	1.06 (1.04 – 1.08)	-0.91 (0.12) **	0.91 (0.89 – 0.94)		
MI	BSAI	0.05 (0.00) ***	1.05 (1.04 – 1.06)	-0.04 (0.01) ***	0.96 (0.95 - 0.97)	0.00 (0.1) ns	1.00 (0.99 – 1.02)
	BCI	0.06 (0.01) ***	1.07 (1.06 – 1.08)	-0.5 (0.08) ***	0.95 (0.94 – 0.97)	0.01 (0.01) ns	1.01 (1.00 – 1.03)
	BSBS	0.08 (0.01) ***	1.08 (1.07 – 1.10)	-0.07 (0.01) ***	0.94 (0.92 – 0.96)	0.03 (0.01) *	1.03 (1.01 – 1.04)

Note. LI = Low improving, HI = High improving, MO = Moderate ongoing, MI = Moderate improving. LCGA sample ($n = 1188$) with non-missing baseline covariate data (BSAI, $n = 886$; BCI, $n = 854$; BSBS, $n = 917$).

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

Table 7.4 Multivariate multinomial logistic regressions with odds ratios for each measure as a predictor of PTSD class membership including covariates (background and victimisation characteristics and baseline symptoms)

Class	Predictor	Reference class		HI	MO	MI
		LI	OR (95%CI)			
HI	BSAI	0.02 (0.01)	1.02 (1.00 – 1.05)			
	BCI	0.07 (0.01) ***	1.07 (1.04 – 1.10)			
	BSBS	0.08 (0.02) ***	1.08 (1.05 – 1.12)			
	Since	-0.83 (0.42) *	0.44 (0.19 – 0.99)			
	Types	0.49 (0.10) ***	1.63 (1.34 – 1.99)			
	Severity	0.22 (0.09) *	1.24 (1.05 – 1.47)			
MO	BSAI	0.03 (0.01) *	1.03 (1.00 – 1.05)	0.00 (0.01)	1.00 (0.97 – 1.03)	
	BCI	0.03 (0.01) *	1.03 (1.01 – 1.06)	-0.03 (0.02) *	0.97 (0.94 – 1.00)	
	BSBS	0.01 (0.01)	1.01 (0.98 – 1.04)	-0.07 (0.02) ***	0.93 (0.90 – 0.97)	
	Since	-1.83 (0.33) ***	0.16 (0.08 – 0.31)	-1.00 (0.42) *	0.37 (0.16 – 0.83)	
	Types	0.25 (0.09) **	1.28 (1.07 – 1.53)	-0.24 (0.11) *	0.78 (0.63 – 0.98)	
	Severity	0.19 (0.08) *	1.21 (1.04 – 1.41)	-0.03 (0.10)	0.97 (0.80 – 1.18)	
MI	BSAI	0.00 (0.01)	1.00 (0.99 – 1.02)	-0.02 (0.01)	0.98 (0.96 – 1.00)	-0.02 (0.01)
	BCI	0.04 (0.01) ***	1.04 (1.02 – 1.06)	-0.03 (0.01) *	0.97 (0.95 – 1.00)	0.01 (0.01)
	BSBS	0.05 (0.01) ***	1.06 (1.03 – 1.08)	-0.02 (0.02)	0.98 (0.95 – 1.01)	0.04 (0.01) **
	Since	-0.22 (0.31)	1.81 (0.44 – 1.47)	0.62 (0.39)	1.85 (0.87 – 3.96)	1.62 (0.34) ***
	Types	0.19 (0.07) **	1.21 (1.06 – 1.38)	-0.30 (0.09) **	0.74 (0.62 – 0.89)	-0.06 (0.09)
	Severity	0.25 (0.06) ***	1.29 (1.15 – 1.45)	0.03 (0.08)	1.03 (0.88 – 1.21)	0.06 (0.08)

Note. LI = Low improving, HI = High improving, MO = Moderate ongoing, MI = Moderate improving. LCGA sample ($n = 1188$) with non-missing baseline covariate data (BSAI, $n = 886$; BCI, $n = 854$; BSBS, $n = 917$). Since = bullied since baseline. Severity = severity of worst event (0 – 10). Types = number of types of bullying experienced. Other predictors (background and victimisation characteristics, power imbalance) did not contribute significantly to final model fit and were excluded.

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

Predictors of PTSD trajectory class membership

Univariate analyses including cognitive and behavioural measures (Table 7.3) indicated that each of the three measures distinguished between the low, moderate, and high improving groups in the expected directions, such that higher scores were associated with trajectories with higher intercept. However, the measures did not distinguish between the moderate ongoing and moderate improving groups and in fact the behaviours scale had a small effect in the opposite direction from expected such that higher behaviours scores predicted membership of the class with improving symptoms rather than the class with ongoing symptoms, as would have been expected. This was a very small effect and was likely driven by the higher intercept in that group, rather than predicting slope. Indeed, there is no significant difference in the mean slope between the two trajectories, further supporting this suggestion.

Multivariate analyses (Table 7.4) included background characteristics (gender, sexual orientation, ethnicity, prior trauma), victimisation characteristics (number of types and severity of past bullying, exposure to bullying since baseline), perceived power imbalance in past bullying and cognitive and behavioural measures. Of these, bullying variables (severity and number of past experiences and ongoing bullying since baseline), BCI and BSBS contributed to model fit. Other background variables and victimisation characteristics did not significantly contribute to model fit and were excluded from the model. However, so that the contribution of the scale could be explored, the BSAI was entered into a subsequent final model despite its contribution not reaching statistical significance ($p = .072$). The results had a similar pattern to the univariate analyses. Of note, experience of bullying since baseline was associated with being in the “*Moderate Ongoing*” class and explained some of the diversion between the two moderate trajectories. Higher number of types of bullying and

severity were associated with the classes with higher intercepts. The BCI continued to distinguish all but the moderate groups, the BSAI reached significance only between the low reducing and moderate ongoing classes, and the BSBS distinguished between the low group and the moderate and high reducing groups (but not the moderate ongoing group), and between the high group and the moderate ongoing group (but not the moderate reducing group). Again, higher scores on the BSBS predicted membership of the moderate reducing but not moderate ongoing group. Taken together, these results indicate mixed support for hypothesis 4 (that class membership will be predicted by the new measures over and above background and victimisation variables) such that the measures predicted class membership according to level of the intercepts rather than rate of change over time. This speaks to the lack of variation in slope overall, such that trajectories could be identified but with limited differences in slope.

7.3.3 Social anxiety symptoms during the first year at university

Overall latent growth curve model of social anxiety symptoms

A linear model fit the data well CFI = .982, TLI = .978, RMSEA = .035 [CI: 0.002 - 0.063], SRMR = .053. The quadratic model had an even closer fit, CFI = 1.00, TLI = 1.017, RMSEA = .000 [CI: 0.000 - 0.054], SRMR = .003. The mean trajectory had a significant negative slope ($M = -3.876$, $SE = .728$, $p < .001$) and a significant quadratic term ($M = 0.740$, $SE = .253$, $p < .01$), indicating mean improvement in symptoms with the sharpest fall in symptoms after the baseline measurement and relatively more stable scores in the later time points. Symptom improvement supported hypothesis 1 (that there will be a mean decrease in social anxiety symptoms). There was significant variation around the mean intercept ($p < .001$) but variation in slope and in the quadratic term was not significant ($p = 0.315$). In the

linear model there was also no variation in slope ($p = 0.117$). Therefore, hypothesis 2 (that there will be significant variation in intercept and slope) was not supported, suggesting variation in baseline scores but not rate of change over time. Given lack of variation in slope, hypothesis 3 (that there will be distinct trajectories of symptoms over time) was not supported and sub-classes within the data were not specified.

7.3.4 Additional analyses

Cognitions and behaviours over time

Descriptive statistics of raw data were collated to show the mean level of each of the new measures (BCI, BSAI, BSBS) over the four time points for all available data. Results shown in Table 7.5 suggest scores on each may have reduced over time, with large standard deviations for each measure at each time point indicating substantial variability in scores across participants. Baseline scores were not associated with study retention over time (see Table 7.5) so it is possible that scores reflect a true drop rather than a selection effect. Fluctuations in scores cannot be interpreted due to high levels of missingness.

Table 7.5 Mean total scores for each of the cognitive (BCI, BSAI) and behavioural (BSBS) measures at each time point

	Mean (<i>SD</i>)			
	Baseline	3-months	6-months	9-months
BCI	50.60 (21.68) <i>n</i> = 835	55.05 (22.25) <i>n</i> = 132	42.82 (23.20) <i>n</i> = 233	43.44 (23.57) <i>n</i> = 194
BSAI	70.21 (27.52) <i>n</i> = 877	65.69 (29.06) <i>n</i> = 386	61.80 (31.39) <i>n</i> = 238	62.43 (31.20) <i>n</i> = 201
BSBS	37.07 (18.03) <i>n</i> = 912	32.83 (17.81) <i>n</i> = 402	29.57 (18.69) <i>n</i> = 245	29.00 (19.01) <i>n</i> = 208

Note. Range BCI = Bullied Cognitions Inventory, 15 – 105 (15 items, 1-7), BSAI = Bullied Social Attitudes Inventory, 19 – 133 (19 items, 1-7), BSBS = Bullied Social Behaviours Scale, 0 – 76 (19 items, 0-4).

7.4 Discussion

For PTSD symptoms to previous bullying experiences in the first year at college or university, a linear growth curve was modelled, with significant variance in intercept across the sample and marginal variance in slope that did not reach significance but was probed for existence of classes following distinct trajectories. A four-class solution was chosen, three of which indicated reducing mean severity from low, moderate, or high initial levels, and one which indicated ongoing symptoms. Membership of the class with ongoing symptoms was predicted primarily by ongoing experiences of bullying after the baseline measurement. Cognitive and behavioural measures predicted group membership according to baseline level and not slope, and notably did not distinguish the moderate groups. Results were limited by low classification accuracy and limited variation in slopes across individuals. Social anxiety symptoms varied widely at baseline and on average reduced over time, but subgroups were not defined due to lack of variability in slope.

The results suggested that cognitive and behavioural measures predicted PTSD class according to baseline severity. That is, they explained some of the baseline variance in symptoms but not subsequent rate of symptom change. This reflects relative lack of variation in slope overall and may suggest that by the time young people who were bullied reach university or college, in this sample on average 19 years old, PTSD symptoms related to bullying are already on a largely chronic trajectory. As such, those who were experiencing high symptoms at the start continued to do so, albeit with modest reductions over time. Symptom reductions were less than one might hope for these individuals (not to a non-clinical level) even in a new context that is probably separate from previous bullies (though not necessarily so, particularly due to the internet). Most notably, symptoms did not

improve for those who experienced more bullying. Taken together, these results suggest an ongoing relationship between new bullying experiences and PTSD symptoms among first year university students, and a need for early intervention among people with high symptoms at the start of university to subvert their largely chronic course. Interventions may include strategies to enable young people to capitalise on the potential growth opportunities at university. The overall reduction in symptoms of PTSD (excluding those experiencing ongoing bullying) and social anxiety was mirrored by exploratory analyses related to changes in cognitions and behaviours over time.

The process of identifying trajectories within data has been described as “the art of unscrambling eggs” (Oberski, 2016), relying on assumptions applied to the data to identify subgroups and determine the probability of each individual belonging to one or other of the groups. It is possible that critical ingredients were not included (i.e., unmeasured variables) that would have accounted for variations within and between trajectories. Possible examples could be specific subtypes of past bullying (e.g., direct, relational, online), additional mental health factors (e.g., depression), or other factors related to context (e.g., proximity to family home, friendships). Finally, it is possible that the high level of missingness in the data masked actual differences and changes over time. Excessive missingness may have limited the ability of the models to estimate data so that estimates tended towards sample means and spuriously suggested uniformity across the sample. Large levels of error in the models introduced by missing data will have also limited classification accuracy and reduced the capacity for (potentially meaningful) baseline variables to accurately predict membership.

7.4.1 Limitations

The online recruitment strategy targeted young people across all higher education within the UK application system and benefitted from broad geographical reach and low barriers to access to produce a cohort with diversity in gender, ethnicity, and sexual orientation. However, women were overrepresented meaning that additional verification of findings may be warranted. Additionally, the student demographic may not be generalisable, and it is possible that individuals who experienced particularly distressing victimisation were less likely to apply for ongoing education at all. Ability to interpret findings is limited in this study due to being based on the same sample as the measure validation analyses. Despite a large original sample size, a large proportion of participants did not complete subsequent surveys, perhaps reflecting busy student schedules or new priorities after enrollment. Although attrition was in line with similar studies (Holt et al., 2017) and missing data was accounted for statistically, this limits the accuracy of estimated data.

7.4.2 Conclusions

The current study found that cognitive and behavioural measures predicted intercept but not slope of symptom trajectories during the first year of university. Future research could measure symptoms directly following socially traumatic or bullying events to explore differences in adjustment more proximally to the event, but this is difficult due to the persistent and repeated nature of these experiences. Aside from those who reported ongoing bullying and experienced an increase in symptoms, mean symptoms reduced gradually but did not improve drastically, meaning that initial severity is the best predictor of severity at the end of the year. Identifying young people with high symptoms early on could potentially improve this prognosis, using newly defined measures to help define targets for intervention.

8

Discussion

This thesis explored cognitions and behaviours related to past experiences of bullying that contribute to ongoing emotional distress in young adults, specifically posttraumatic stress disorder (PTSD) and social anxiety disorder (SAD) symptoms. Despite high prevalence of bullying (historically common enough to have been considered a rite of passage for children) and known long-term detrimental effects across multiple psychosocial domains, not all young people suffer negative consequences and there is a lack of research on specific modifiable factors that predict ongoing emotional distress. Cognitive theories suggest that even in the absence of an ongoing stressor, unhelpful beliefs and coping strategies related to past experiences can produce an ongoing sense of threat that maintains symptoms (Clark & Wells, 1995; Ehlers & Clark, 2000). Therefore, the studies included in this thesis explored these factors in detail, developing bespoke measures of bullying-related cognitions and behaviours and testing their associations with PTSD and SAD among young adults. Following a general introduction (Chapter 1) the structure of the research was as described below:

Part A. The first four studies (Chapters 2-5) explored factors associated with adjustment after bullying and described psychometric validation of new measures of related cognitions and behaviours.

Part B. The next two studies (Chapters 6-7) tested the extent to which the new measures predict PTSD and social anxiety symptoms in young people who were bullied.

In this chapter, I will briefly outline the key findings for each study, and then discuss three main topics that are relevant across the full body of work. These are the social trauma of bullying, transdiagnostic considerations, and clinical implications. I will also discuss limitations and directions for future research.

8.1 Key findings

Part A. Exploration of factors associated with adjustment after bullying and psychometric validation of scales

Chapter 2 presented longitudinal analysis of trajectories of social anxiety among children aged 8 to 13 in the established ALSPAC dataset. Children who were severely bullied before age 8 were at higher risk of increasing social anxiety, and those with more external locus of control were particularly more likely to experience steeper increases to age 13 compared with their peers who were less frequently bullied or not bullied at all. Chapter 3 reported a pilot study with a small sample of young people who reported a history of bullying. Other than positive item scales, items reflecting cognitions and behaviours thought to be relevant to adjustment after bullying differentiated participants with low versus high symptoms of social anxiety and PTSD. The format of the study as an online survey was acceptable and opportunities for further improving content and format were discussed. Chapter 4 described qualitative analyses of semi-structured interviews with a subset of young people who took part in the pilot study. Topics included experiences of bullying, related beliefs and reactions, behaviours, and ongoing psychological wellbeing. Suggested themes relevant to cognitions and coping were: 1. “personal deficiency”

(subthemes: I shouldn't be liked, I am worth less than others, I deserve to be targeted, I lack social skills, people cannot be trusted), 2. "social world is dangerous" (subthemes: friendships are unsafe, people cannot be trusted), 3. "social acceptance is fragile" (subthemes: rejection is inevitable, I need to try hard to blend in, I need to be perfect to be acceptable), and 4. "minimising" (I should be over it, it wasn't bad enough to warrant a reaction) in relation to thoughts and coping strategies. These concepts were integrated into measures and evaluated statistically in the next chapter. Chapter 5 reported psychometric evaluations of three proposed measures of bullying-related cognitions and behaviours in a large UK national sample of young adults prior to starting university. The final scales included content domains that were reflected in the factor structures and replicated in confirmatory factor analyses. All had acceptable psychometric properties. The Bullied Cognitions Inventory (BCI) is a 15-item scale describing beliefs about self and others specifically in relation to experiences of bullying. A four-factor model had the best fit for the data and the resulting factors suggested cognitions related to 1. **degraded in the eyes of others** (e.g., "It is shameful to have been picked on"), 2. **negative interpretations of reactions to bullying** (e.g., "My reaction to being picked on is overdramatic"), 3. **recognisable as a bullying victim** (e.g., "People see me as the type of person who gets picked on"), 4. **social defeat** (e.g., "I have been totally degraded"). The Bullied Social Attitudes Inventory (BSAI) is a 19-item scale describing beliefs about self and others in social interactions, relationships, and friendships. A four-factor model had the best fit for the data and the resulting factors suggested themes of, 1. **rejection** (e.g., "Everybody hates me when they get to know me"), 2. **mistrust** (e.g., "If I show vulnerability other people will exploit it"), 3. **need to manage self-presentation** (e.g., "I need to impress people to make them like me"), and 4. **social vulnerability** (e.g., "I am easy to

victimise”). The Bullied Social Behaviours Scale (BSBS) is a 19-item scale describing behaviours in social situations. A five-factor model had the best fit for the data and the resulting factors suggested behavioural themes of, 1. **masking** (e.g., “I hid aspects of myself from friends”), 2. **reassurance seeking** (e.g., “I looked for signs that people still liked me”), 3. **acting** (e.g., “I put on a different persona so that people would like me”), 4. **people pleasing** (e.g., “I tried very hard to please other people”), 5. **self-diminishing** (e.g., “I was horrible to myself before someone else could be”).

Part B. Testing ability of new measures to predict social anxiety and PTSD symptoms and changes in these symptoms over the first year of university.

Chapter 6 described the ability of newly developed measures to distinguish individuals who had been bullied and have a likely diagnosis of SAD or PTSD from those with both types of symptoms, or neither. Each of the new measures distinguished probable non-clinical from clinical groups, and higher scores predicted likely combined diagnosis compared with either SAD or PTSD alone. Of note, the PTSD only group was relatively small which may have reduced the potential to detect group differences. The Bullied Cognitions Inventory, measuring cognitions related to bullying, was significantly more highly correlated with PTSD symptoms compared with social anxiety symptoms and scores distinguished between groups with social anxiety alone or in combination with PTSD. The Bullied Social Attitudes Inventory, measuring social attitudes among this bullied sample, had a slightly higher correlation with social anxiety compared with PTSD but the difference was not statistically significant and scores did not distinguish between diagnostic groups. The Bullied Social Behaviours Scale also had a slightly higher correlation with social anxiety compared with PTSD but the difference was not significant and, while scores were highest among the cooccurring group, there were no group distinctions between social

anxiety and PTSD. Results highlight overlapping cognitive features and behaviours related to both SAD and PTSD among young people experiencing emotional distress related to bullying. Chapter 7 described changes in PTSD and social anxiety symptoms among students with a history of bullying during their first year at university. Symptoms trajectories were distinguished primarily by their differing intercepts, with similar rate of change across the sample. In the PTSD analysis, additional experiences of bullying since starting university (not cognitive or behavioural factors, or other background variables) predicted ongoing symptoms rather than symptom improvements in line with peers. Findings were limited by high attrition beyond the first time point.

8.2 Main themes and implications

8.2.1 Social trauma of bullying

Data in this thesis support previous evidence that bullying is associated with long-term negative psychological outcomes (Arseneault, 2018) with people who had been bullied reporting higher symptoms across multiple indices than those who were not bullied. Levels of social anxiety, depression, and general anxiety were high, but the extent of reported trauma-related symptoms is particularly notable. Among the participants in Chapters 5-7, comprising young people (mean age 19 years) starting university or college with a history of bullying, just under half (43.6%) were experiencing symptoms related to their bullying experiences that were severe enough to suggest likely diagnosis of PTSD. This is a strikingly high proportion of the sample and highlights the potentially traumatic nature of bullying and peer victimisation experiences that is increasingly recognised in related research (Bjornsson et al., 2020; Idsoe et al., 2021; Jenkins et al., 2022). Given the extent of PTSD symptoms related to bullying in this non-selected sample, it is notable that associated beliefs reflected a

lack of recognition of the seriousness of bullying. For example, the Bullied Cognitions Inventory includes beliefs particularly within the “negative interpretations of reactions to bullying” factor that bullying is not severe enough to warrant a negative reaction (although in fact it was very distressing) and that it is unreasonable to feel adversely affected because bullying is less severe than other types of trauma (although the impact is indeed deeply felt). It is possible that the belief that emotional reactions are unwarranted and unacceptable may inadvertently exacerbate related symptoms. Despite the expanding literature on the negative impact of bullying including verbal and relational events, and public campaigns highlighting the problem, perhaps deep-rooted cultural tropes about relatively higher severity of other types of traumas create a particular vulnerability to self-criticism regarding responses to bullying. Indeed, many cultural interpretations of bullying have historically downplayed the severity of socially traumatic experiences and the legitimacy of experiencing emotional reactions to them. This was reflected in the “minimising” themes from the qualitative analysis in Chapter 4, including beliefs that negative experiences growing up should not impact you as an adult (“*I should be over it*”) and that bullying is not serious enough to lead to adverse consequences provided you are an adequate kind of person (“*It wasn’t bad enough to warrant a reaction*”). As stated neatly by one participant, “It felt worse... you weren’t really kind of legitimate to be upset about it”.

8.2.2 Transdiagnostic factors?

The newly developed measures were moderately to highly correlated with social anxiety and PTSD symptoms, where there was also substantial co-occurrence. Of note, there were also significant correlations with depression and general anxiety, so it is possible that the measures may represent cognitions and behaviours related to

bullying that drive symptoms of a range of disorders. There are some features of the study that may have led to underestimations of specificity. First, the similarly high correlations may be in part attributable to the non-clinical nature of the sample that was not selected according to symptom levels. The sample included participants with low and high scores across all symptom domains so it was possible that the high correlations could be partly due to the wide range of symptoms, obscuring smaller but potentially clinically interesting differential patterns for different clinical symptoms. However, when the sample was restricted to include only individuals whose symptoms suggested likely diagnosis of either SAD or PTSD (see Appendix 6, Table 3) correlations of total scores on the new measures with depression and general anxiety persisted, albeit slightly attenuated. Of note, within the restricted sample, the associations with presence of a power imbalance were no longer significant but associations with sexual minority status remained similar. For future research, it would be interesting to explore with network analyses whether certain subgroups of symptoms (rather than total scores for social anxiety, PTSD, anxiety, and depression) show stronger associations to subgroups of cognitions and behaviours.

Symptom severity across the student sample in Chapters 5-7 was high (79.9% likely diagnosis of either SAD or PTSD) with a relatively small group experiencing symptoms consistent with likely PTSD only (5.5%), compared with large groups experiencing SAD only (36.2%) and co-occurring PTSD with SAD (38.1%). The high symptom severity and co-occurrence are perhaps less surprising given the nature of the sample as all having experienced bullying and theoretical likelihood that both types of symptoms were precipitated or exacerbated by shared experiences of socially traumatic events. As described previously, it is possible that rather than suffering with two distinct disorders, people who have been bullied and are experiencing SAD and

PTSD related to their experiences may be best understood as experiencing a stress response to traumatic social experiences that involves an ongoing sense of social threat. Alongside maladaptive cognitions and behaviours this ongoing sense of threat maintains symptoms including intrusive memories, hypervigilance, and avoidance.

The longitudinal study presented in Chapter 7 was designed to separate unique effects of the new measures on SAD and PTSD symptoms over time. However, given high co-occurrence of SAD/PTSD and large levels of error in the models introduced by high missingness, it is possible that more meaningful results could have been derived from combined scores, integrating social anxiety and PTSD symptoms to produce an overall metric of bullying related psychopathology over time. This is a possible avenue for future research. Of note, alternative practical strategies may also help retain participants for repeated questionnaires over time (e.g., contact via social media handle rather than email) to enable better model estimation in longitudinal analyses.

8.2.3 Clinical implications

There are clinical implications for the assessment of bullying experiences and related cognitions and behaviours. The high rate of symptoms of both social anxiety and PTSD in this sample certainly supports ongoing focus on bullying experiences as psychologically impactful events. Clinicians who work with bullied people should be aware of the potential for PTSD-like symptoms related to their experiences. Of note, diagnostic group comparisons (Chapter 6) may be relevant in clinical environments requiring categorisation of individuals along these lines, and serve to increase clarity of the message, but particularly given the reliance on self-report of symptoms in these studies rather than interview assessment, can also be considered a proxy of lower or greater symptom severity without the need for diagnostic classification.

The novel measures developed in this thesis have utility in distinguishing SAD and PTSD and informing how to intervene. During social anxiety treatment, a high score on the Bullied Cognitions Inventory (BCI) could indicate that techniques associated with processing negative past experiences could be useful, such as imagery rescripting and updating memories related to the bullying experiences to challenge unhelpful beliefs connected to (the worst parts of) the experience (Wild & Clark, 2011). This also speaks to the utility of routine assessment of bullying, given themes identified in this measure that may lead young people to avoid disclosing past bullying experiences. These include shame regarding disclosure (e.g., *“If I told someone I was picked on they would think I am weak”*) and self-criticism particularly regarding being affected by past experiences which are perceived as not serious enough to justify this impact (e.g., *“It is unreasonable to feel bad as much worse things can happen”*). If such experiences were not discussed, clinicians could miss a powerful opportunity for intervention. Further, if a person has high scores on the BCI this would indicate that they are likely to have symptoms of PTSD related to their bullying experience, and the specific items endorsed on the measure could inform treatment targets.

Working with aversive memories is a key component of assessment and cognitive therapy for PTSD (see Wild et al., 2020) in terms of understanding the meanings of the worst experiences and updating meanings with more realistic and adaptive interpretations. Cognitive therapy for SAD (see Warnock-Parkes et al., 2020) includes multiple core components such as experiential exercises and behavioural experiments to recognise and update unhelpful beliefs and safety behaviours. Particularly if negative imagery and symptoms persist with the use of present-focused techniques, techniques based on imagery rescripting (Wild et al., 2007; Wild & Clark,

2011) are used to address past experiences underlying the problem. These update distorted images of the self as an object of scrutiny and negative judgment (Hackmann et al., 1998) that are often related to specific socially traumatic past experiences and may also have contributed to the onset or worsening of symptoms originally (Hackmann et al., 2000). Like traumatic memories in PTSD, social trauma memories may be avoided and remain resistant to normal updating, meaning that negative impressions formed at the time of the event remain unchanged and problematic. Given the overlap in symptoms among young people with a history of bullying, these approaches that share theoretical grounding across social anxiety and PTSD models are particularly important. A questionnaire focusing on characteristics of memories specifically would be a valuable next step.

A very recent clinical trial has tested the effectiveness of a psychological treatment on reducing psychological distress associated with bullying among individuals with a history of bullying (Thorisdottir & Asmundson, 2022). The trial with 52 participants used an internet-delivered form of cognitive processing therapy (CPT) which is intended to change maladaptive appraisals associated with PTSD (Resick et al., 2002, 2014) was adapted for this study to refer to social trauma and bullying. CPT reduced symptoms of PTSD but not social anxiety symptoms compared to the stress-management and waitlist groups and, for people who reported just one bullying experience, but not multiple, also reduced maladaptive appraisals related to bullying victimisation, measured using the posttraumatic cognitions inventory (PTCI; Foa et al., 1999). While possibly due to statistical suppressor effects, there was no effect of CPT on self-blame appraisals, and stress-management outperformed CPT in reducing symptoms of depression, anxiety, and stress. This study is important because it suggests that PTSD symptoms produced by bullying are treatable but that directly

transferring PTSD treatment that focuses on pre-specified cognitive themes such as CPT to this population may miss critical components of their presentation, namely social anxiety symptoms and specific bullying-related cognitions and behaviours that may not be addressed in existing PTSD assessments and treatments. In contrast, the individually tailored formulation of cognitive therapy for PTSD (Ehlers & Clark, 2000) focusing on idiosyncratic appraisals can address both types of appraisals in an integrated fashion. Overall, an integrated approach that recognises the high level of comorbidity, highlighted in Chapter 6, and shared underlying precipitating factors and maintaining mechanisms appears the most promising approach to address the long-term psychological effects of bullying.

8.3 Limitations and future directions

Alongside the strengths, there were limitations in the studies including regarding sampling and measurement. Although the samples were diverse in terms of ethnicity and sexual orientation, women were overrepresented. In addition, sampling was opportunistic and the self-selected participants may have shared certain characteristics, such as higher perceived centrality of bullying experiences or higher perceived negative impact. Given that participants were students, generalisability to the wider population is also limited and results require replication. Of note, the validation and longitudinal studies (Chapters 5-7) were drawn from the same baseline sample. This means that generalisability of these results beyond the current sample is limited and must be tested. Therefore, in addition to testing the measures in clinical samples, future work should also test the robustness of the measures and their associations with social anxiety symptoms and PTSD symptoms within a separate non-clinical sample. In terms of measurement, additional aspects of victimisation may be relevant that were not included within the definition of bullying used in these

studies. For example, potential perpetration of bullying alongside victimisation (i.e., bully/victims) was not considered, although one might expect different outcomes among these individuals (e.g., additional externalising disorders) which might suggest different interventions regardless. In addition, although the final study did control for alternative experiences of *Criterion A* trauma, including alternative victimisation experiences more explicitly may have produced different theoretical interpretations and highlighted potential overlapping aetiology of symptoms. However, clinically the presence of symptoms related to bullying experiences broadly is important regardless of additional potential precipitating factors. Finally, measures of bullying were retrospective and all measures were self-reported. While this creates some potential limitations to reliability it also suggests possible opportunities for future studies, for example additional use of the behaviours scale to evaluate whether self-reported behaviours map onto actual behaviours or others' perceptions of behaviours. It also highlights the need clinically to disentangle real and perceived threat when interpreting scores on the measures.

In the longitudinal study (Chapter 7) the threshold of starting university was hypothesised to be a moment of additional social stress that would precipitate symptom change, positively and negatively, and be impacted by cognitive and behavioural factors related to past bullying experiences. However, over time the divergence in slopes across PTSD and social anxiety symptom trajectories within the sample did not emerge as expected. This meant that factors predicting differences in slope over time could not be meaningfully identified. Starting university was chosen as a time of assessment as it represents a universal time of transition among people within the target age range of young adults. However, as noted by Holt and colleagues (2014) young people with a history bullying might feel hopeful about starting

university and have more control than they had at school over what they do and who they do it with. Alternatively, those most severely impacted by bullying may not continue to university. Therefore, despite being a transition for all students the meaning of it may be too disparate to produce comparable effects. Idiosyncratic measurement of change over time following individual experiences of bullying may be a future direction for research.

One opportunity for future work building on this thesis includes investigating further the meaning and implications of power imbalance for victims of bullying. Previous research has indicated that a stronger belief in control lying with powerful others predicts more symptoms of PTSD (Mynard et al., 2000) and external locus of control is a risk factor for developing PTSD after exposure to a traumatic event (Bisson, 2007). Of note, perceived control over specific stressful events is associated with lower distress (Frazier et al., 2011) and students involved in bullying have a more external locus of control compared to those who are not involved in bullying (Radliff et al., 2016). It is possible that beliefs associated with external locus of control overlap in meaning with perceptions of power imbalance at the time of bullying. In Chapter 2, childhood victims of severe bullying with external locus of control were shown to be at greater risk of increasing social anxiety. However, PTSD symptoms were not tracked in that study and this theme was not explicitly incorporated into content domains for scale development. Therefore, relevant related cognitions and behaviours may be missing from the measures and further investigation of these concepts is a potentially fruitful direction for future studies. Increasing focus on adaptive cognitions may also be useful. Potentially protective cognitions were not included and may have indicated pathways to resilience, for

example, “I am acceptable the way I am”, “I don’t believe the bad things that bullies say”.

Finally, sexual orientation emerged as a potentially important factor associated with social anxiety and PTSD symptoms, alongside reported severity and number of types of bullying experienced (Chapter 6). Previous research has shown that lesbian, gay and bisexual groups report higher rates of peer victimisation than heterosexual peers (e.g., Berlan et al., 2010) and data in this thesis suggested that overall among young people who were bullied, and within a restricted sample that only included individuals with a likely diagnosis of either SAD or PTSD, sexual minority status was associated with higher reported symptoms. Of note, participants who self-defined as bisexual reported particularly high symptoms. These findings may reflect unique risk factors that need to be considered in related clinical work and research.

8.4 Conclusions

Acknowledging the limitations above, this thesis makes multiple contributions to the literature. It contains studies that used multiple methodologies including qualitative analysis, measurement design and longitudinal analyses of secondary data. It has a clinical focus that highlights the utility of characterising bullying experiences as potentially socially traumatic, associated with symptoms consistent with PTSD alongside social anxiety among young adults. The thesis shows that potentially modifiable cognitive and behavioural factors are associated with higher symptoms and isolates cognitive themes that appear to be more strongly associated with trauma-related symptoms. It describes the systematic development and evaluation of psychometrically validated measures of these factors. The results support a transdiagnostic lens when addressing the impact of bullying and suggest specific

cognitive themes that may be usefully targeted in therapy with individuals who have been bullied

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Appendix 1. Pilot and qualitative study (Chapters 3 and 4) ethics approvals and online & in-person information sheets and consent forms

MEDICAL SCIENCES INTER-DIVISIONAL RESEARCH ETHICS COMMITTEE

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CONFIDENTIAL

Ref: R51437/RE001

Dr Belinda Graham
OxCADAT
The Old Rectory
Paradise Square
Oxford

19th July 2017

Dear Dr Graham

Research Ethics Approval - CUREC 2

Study Title: The Oxford Peer Impact Study

The above application has been considered on behalf of the Medical Sciences Inter-divisional Research Ethics Committee (IDREC) in accordance with the procedures laid down by the University for Ethical Approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to the IDREC, the proposed research has been judged as meeting appropriate ethical standards, and approval has been granted for a period of **3 years**, commencing on **19th July 2017**. The reference number for this study is **R51437/RE001**.

This is **subject to**:

- a) **your following the BPS guidelines for online research**
- b) **it is your responsibility to comply with the requirements for administering any tests or questionnaires and if in doubt to contact the publisher of those tests or questionnaires.**
- c) **if new research staff are engaged, the PI is responsible for ensuring they are suitably qualified by training and/or experience**

I would like to remind you that you will be required to submit an annual progress report on each anniversary of study approval, until the study is completed, and that your study may be selected for review by the MS IDREC during an annual audit.

Amendments

Should there be any subsequent changes to the study, which raise ethical issues not covered in the original application, you should submit details to the IDREC for consideration and approval. If there are significant alterations then the Committee will require a succinct letter explaining these. If your study received University Sponsorship through CTRG, then the amendment will first need to be submitted to CTRG for approval of continued Sponsorship.



Please do not hesitate to contact me if you have any queries.

Yours sincerely

A handwritten signature in cursive script that reads 'H. Barnby-Porritt'.

Dr. Helen Barnby-Porritt
Research Ethics Manager, Medical Sciences

Belinda Graham
Oxford Centre for Anxiety Disorders and Trauma (OxCADAT)
University of Oxford
The Old Rectory
Paradise Square
Oxford, OX1 1TW

17th August 2017

Dear Belinda,

RE: 'The Oxford Peer Impact Study'

I am writing with regard to your recent application for permission from the King's College London Research Ethics Office to undertake the above research study, as per our external research request procedure.

I can confirm that your application for permission has been accepted and that you now have permission to undertake external research using King's College London staff or students. Your permission has been granted by the Chair of the College Research Ethics Committee. Please note that the external research request procedure does not constitute ethical review, rather it is a permission procedure put in place to ensure that only ethically acceptable studies are carried out by King's College London staff/students and premises.

Please do not hesitate to contact the Research Ethics Office should you have any queries regarding the above.

Kind regards

Laura Stackpoole

Senior Research Ethics Officer
King's College London



Dr Belinda Graham

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The Oxford Peer Impact Study: INFORMATION SHEET

Ethics Approval Reference R51437/RE001

1. Background and aims of the study

This study is exploring how experiences like being called names, threatened, teased, physically hurt, gossiped about or excluded may affect how young adults think about themselves and others. It includes questions about upsetting experiences you may have had at home and with peers as well as your reactions and mood. This University of Oxford study is funded by the Wellcome Trust and aims to improve support for people who are struggling to adjust after experiences like these.

2. Why have I been invited to take part?

You are welcome to take part if you are 18 – 29 years old and you have been picked on by peers.

3. Do I have to take part?

No. You can ask questions about the study before deciding whether or not to participate. If you do agree to participate, you may withdraw yourself from the study at any time, without giving a reason and without penalty, by advising the researchers of this decision.

4. What will happen in the study?

- The online study includes questions about your background, your experiences at home and with peers, your reactions, coping strategies, and your current mood. It will take around 40 minutes to complete and your answers will be kept private. You'll be offered a £10 Amazon voucher and results will aim to help improve support for people who could benefit.
- After completing this survey, you have the option to meet with Belinda to talk more about your experiences and receive another £20 in Amazon vouchers. This will include talking about your experiences with peers and discussing your reactions and coping strategies. The meeting will last 90-120 minutes and will take place in our central Oxford office or Kings College London in south London. Aside from briefly checking in with you shortly after the study, there will be no additional meetings or contact related to this research. However, you may decide to provide contact details for future studies.

5. Are there any potential risks in taking part?

You will be asked questions about your memories of being picked on and how these experiences affect you now. It is possible that this might be upsetting. However, in previous studies of this kind we have found that distress is manageable and temporary. If you do find that you continue to be upset do not hesitate to contact the researcher, Belinda Graham on the details provided below. Note that no background preparation is required to participate in this study.

6. Are there any benefits in taking part?

There will be no direct benefit to you from taking part in this research. However, by participating you will be contributing to advancing psychological interventions for others who are struggling after going through upsetting interpersonal experiences.

7. Expenses and payments

You will receive a £10 Amazon voucher for completing the online study and up to £20 for the additional in person meeting. We are not able to provide or reimburse for child care, or reimburse travel expenses.

8. What happens to the data provided?

All reasonable endeavours will be taken to keep your answers confidential. The only situation in which confidentiality would not be maintained is if your answers indicated that there was a significant risk to you or someone else which required the information you provided to be passed on. Your participation is completely voluntary and you may withdraw at any point for any reason.

During the online survey, simply press the 'Exit' button or close the browser to end participation. Note, only participants who continue to the end of the survey are eligible for compensation. All questions are optional or include a 'Prefer not to say' option if you prefer not to answer a particular question. The online questionnaires will be completed using Qualtrics.

If you choose to attend an additional meeting, it will be audio-recorded in order to maintain a complete record of what was discussed. The recording may be accessed by a transcriber and direct quotes may be anonymised and used in transcribed form for research or clinical reasons related to the aims of the project. Transcriptions will not include names or clearly identifying features. Your answers will be analysed together with those of other participants and where individual responses are used they will be altered sufficiently in order that they cannot be identified.

Data will be accessible by the researcher and supervisor, and may be shared in anonymised form within the OxCADAT research team and with collaborators as appropriate for scientific research purposes. The lead researcher, Dr Belinda Graham is a clinical psychologist currently completing a DPhil in the Department of Experimental Psychology at the University of Oxford. The University of Oxford is the data controller for the purposes of the Data Protection Act 1998. The research data you provide, including all personal or sensitive information, will be stored carefully. Written consent forms will be locked in a cabinet in the secure OxCADAT building. Audio-files and transcriptions will be kept confidentially using encryption on a secure server. Data will be kept for a minimum retention period of 3 years, and up to 10 years after publication or public release of the research.

9. Will the research be published?

The University of Oxford is committed to the dissemination of its research for the benefit of society and the economy and, in support of this commitment, has established an online archive of research materials. This archive includes digital copies of student theses successfully submitted as part of a University of Oxford postgraduate degree programme. Holding the archive online gives easy access for researchers to the full text of freely available theses, thereby increasing the likely impact and use of that research.

This research will be written up as a thesis. On successful submission of the thesis, it will be deposited both in print and online in the University archives, to facilitate its use in future research. The thesis will be published open access. In addition, the research may be published in peer reviewed academic journals and presented at conferences.

10. Who has reviewed this study?

This study has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee [R51437/RE001].

11. Who do I contact if I have a question or concern about the study, or I wish to complain?

If you have a concern about any aspect of this study, please speak to the relevant researcher [Dr Belinda Graham, Email: belinda.graham@psy.ox.ac.uk, Tel: 01865 285393] or their supervisor [Prof Anke Ehlers, Email: anke.ehlers@psy.ox.ac.uk, Tel: 07979 665403], who will do their best to answer your query. The researcher should acknowledge your concern within 10 working days and give you an indication of how they intend to deal with it. If you remain unhappy or wish to make a formal complaint, please contact the relevant chair of the Research Ethics Committee at the University of Oxford who will seek to resolve the matter in a reasonably expeditious manner: Chair, Medical Sciences Inter-Divisional Research Ethics Committee; Email: ethics@medsci.ox.ac.uk; Address: Research Services, University of Oxford, Wellington Square, Oxford OX1 2JD.



Dr Belinda Graham
 Oxford Centre for Anxiety Disorders and Trauma
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 Phone: 01865 285393
 Email: belinda.graham@psy.ox.ac.uk

The Oxford Peer Impact Study: CONSENT FORM

Ethics Approval Reference: R51437/RE001

This study explores how experiences like being called names, threatened, physically hurt, gossiped about, or excluded may influence wellbeing, and aims to improve support for those who struggle to adjust.

**Please initial
each box**

- | | | |
|---|--|--|
| 1 | I confirm that I have read and understand the information sheet version____dated _____ for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. | <input type="checkbox"/> |
| 2 | I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without penalty. | <input type="checkbox"/> |
| 3 | I understand that research data collected during the study may be looked at by designated individuals from the University of Oxford where it is relevant to my taking part in this study. I give permission for these individuals to have access to this data. | <input type="checkbox"/> |
| 4 | I understand who will have access to personal data provided, how the data will be stored and what will happen to the data at the end of the project. | <input type="checkbox"/> |
| 5 | I understand that all information will be kept strictly confidential except in rare circumstances in which it is judged that I am, or someone else is, at immediate risk of serious harm, or where information is requested by a court of law. | <input type="checkbox"/> |
| 6 | I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee. | <input type="checkbox"/> |
| 7 | I understand how to raise a concern or make a complaint. | <input type="checkbox"/> |
| 8 | I agree that this meeting will be audio-recorded and I understand how audio recordings will be used in research outputs. | <input type="checkbox"/> |
| 9 | I agree to take part in the above study. | <input type="checkbox"/> |
| Optional: <i>I agree for my personal data to be kept in a secure database for the purpose of contacting me about future studies.</i> | | <input style="border: 1px dashed black;" type="checkbox"/> |

Name of participant	Date	Signature
Name of person taking consent	Date	Signature

Accessible online via:
https://oxfordxpsy.az1.qualtrics.com/jfe/form/SV_6gsOAh3rnjMarzv

Please carefully read the terms written here before agreeing to take part.

Do I have to take part?

No. You can ask questions about the study before deciding whether or not to participate. If you do agree to participate, you may withdraw yourself from the study at any time, without giving a reason and without penalty, by advising the researchers of this decision. Aside from briefly checking in with you shortly after the study, no additional meeting or contact is required related to this research. However, there is an option to discuss your experiences more fully in an additional part of this research study and if you indicate you are interested you will be contacted about that research. You may also decide to provide contact details to be contacted for future studies.

- This online study includes questions about your background, your experiences at home and with peers, your reactions, coping strategies, and your current mood. It will take around 40 minutes to complete and your answers will be kept private. You'll be offered £10 and results will aim to help improve support for people who could benefit.

- After completing this survey, you have the option to meet with Belinda to talk more about your experiences and receive another £20. This will include talking about your experiences with peers and discussing your reactions and coping strategies. The meeting will last 90-120 minutes and will take place in our central Oxford office or Kings College London in south London.

What happens to the data provided?

All reasonable endeavours will be taken to keep your answers confidential. The only situation in which confidentiality would not be maintained is if your answers indicated that there was a significant risk to you or someone else which required the information you provided to be passed on. Your participation is completely voluntary and you may withdraw at any point for any reason.

During the survey, simply press the 'Exit' button or close the browser. Note, only participants who continue to the end of the survey are eligible for compensation. All questions are optional or include a 'Prefer not to say' option if you prefer not to answer a particular question. The online questionnaires will be completed using Qualtrics.

If you choose to attend an additional meeting, it will be audio-recorded in order to maintain a complete record of what was discussed. The recording may be accessed by a transcriber and direct quotes may be anonymised and used in transcribed form for research or clinical reasons related to the aims of the project. Transcriptions will not include names or clearly identifying features. Your answers will be analysed together with those of other participants and where individual responses are used they will be altered sufficiently in order that they cannot be identified.

Data will be accessible by the researcher and her supervisor, and may be shared in anonymised form within the research team and with collaborators as appropriate for scientific research purposes. Dr Belinda Graham is a clinical psychologist currently completing a DPhil in the Department of Experimental Psychology at the University of Oxford. The University of Oxford is the data controller for the purposes of the Data

Protection Act 1998. The research data you provide as part of this study, including all personal or sensitive information, will be stored confidentially using encryption on a secure server for a minimum retention period of 3 years, and up to 10 years after publication or public release of the work of the research.

Will the research be published?

The University of Oxford is committed to the dissemination of its research for the benefit of society and the economy and, in support of this commitment, has established an online archive of research materials. This archive includes digital copies of student theses successfully submitted as part of a University of Oxford postgraduate degree programme. Holding the archive online gives easy access for researchers to the full text of freely available theses, thereby increasing the likely impact and use of that research.

This research will be written up as a thesis and will be deposited both in print and online in the University archives, to facilitate its use in future research. The thesis will be published open access. In addition, the research may be published in peer reviewed academic journals and presented at conferences.

Who has reviewed this study?

This study has been reviewed by, and received ethics clearance through, the University of Oxford central University Research Ethics Committee [R51437].

Who do I contact if I have a question or concern about the study, or I wish to complain?

If you have a concern about any aspect of this study, please speak to me, Dr Belinda Graham, email: belinda.graham@psy.ox.ac.uk, tel: 01865 285393 or my supervisor, Prof Anke Ehlers, email: anke.ehlers@psy.ox.ac.uk, tel: 01865 618600, and we will do our best to answer your query. We should acknowledge your concern within 10 working days and give you an indication of how we intend to deal with it. If you remain unhappy or wish to make a formal complaint, please contact the chair of the Research Ethics Committee at the University of Oxford who will seek to resolve the matter in a reasonably expeditious manner: Chair, Medical Sciences Inter-Divisional Research Ethics Committee; Email: ethics@medsci.ox.ac.uk; Address: Research Services, University of Oxford, Wellington Square, Oxford OX1 2JD.

This study is run through Department of Experimental Psychology, University of Oxford, 15 Parks Road, Oxford, OX1 3PH.

If you have read the information above and agree to participate with the understanding that the data (including any personal data) you submit will be processed accordingly, please check the relevant box below to get started.

Yes, I agree to take part

Appendix 2. Pilot study item pools (Chapter 2)

Preliminary cognitions items for pilot study

Please rate how much you agreed with the following statements in the last month from 1 (totally disagree) to 7 (totally agree).

1. Defeated social self (13 items)

Other people always treat me badly
I am totally at the mercy of other people
I will be attacked or humiliated again and won't be able to escape or make it stop
Most other people are basically bad and will exploit each other if they can
There is something about me that makes other people reject me
There is no way I can control what happens in my social life
Other people will always violate me
I have no control over the ways that other people treat me
I definitely rank myself below other people
I am totally at the bottom of the pile socially
I have been totally degraded
I have been completely humiliated
Other people are much more important than I am

2. Appraisals of reactions to experiences (9 items)

I am too weak to be able to stand up for myself
I am thin skinned
Risk taking is more dangerous for me than other people
I am easy to victimize
I'm not very good at judging who is a good or bad person
The way I have reacted to being picked on is over the top
The way others have treated me isn't that bad
I wish I had physical scars so people could see how bad it was
People who are picked on deserve it

3. Surviving social self (8 items)

I need to blend in to avoid being picked on
No one is ever willing to step in to defend me
If I show vulnerability other people will exploit it
I am totally unattractive to other people
If I disagree with somebody they will reject me
I always have to do what others want
My views are not important to other people
I am unacceptable to all other people

4. Safety in solitude (10 items)

Everybody hates me when they get to know me
Other people don't like spending time with me
Deep down, my friends don't really like me
If I get close to someone, I expect that soon they will turn on me
I need to back out of a relationship or reject someone early, before they do it to me
I need to handle everything on my own
I am alone and always will be
There's no point in me trying to make friends
Society has rejected me
I am an outsider

5. Defined by my past (9 items)

I have to be successful to show them they were wrong about me
If I fail at anything it means they were right and they win
The people who picked on me must have been right that I'm weak or I would have been able to cope
If people knew I was picked on they would reject me
If people knew I was picked on they would find me less attractive
The people who picked on me were right that I deserve to be treated poorly
If I told someone I was picked on they would think I am weak
It is shameful to have been picked on
If people knew I was picked on they would think differently about me

6. Positive outcomes (5 items)

Because of what I've been through I am able to quickly and accurately judge other people's character
I can tell straight away if someone is a good or bad person
Being picked on made me a stronger person
I am a kinder person because of my experiences of being picked on
My unique qualities are what make me special and valuable

Preliminary behaviours items for pilot study

Please rate how often each of the following statements applied to you in the last month from 0 (never) to 4 (always).

I tried to be funny and smile all the time to avoid being rejected
I felt very dependent on other people
I asked for reassurance from other people to make sure they felt ok with me
I did not ask for help even when I was struggling because I didnt want to seem weak
I did not take an opportunity even though the option was there
I hid my true feelings to avoid being judged
I did not say what was on my mind because it wouldnt matter anyway
I tried to avoid being intimate because it is too risky
Avoiding leadership roles
Avoiding being assertive
Avoiding working in teams
I was horrible to myself so it wouldnt surprise me if someone else was
I put myself down in a social situation to avoid someone else doing it first
I apologised more than someone else might in the same situation
I was cold to somebody so that they wouldnt have a chance to reject me
I judged somebody very harshly
I was very critical of somebody else, just like others have been critical of me
I did not express empathy for another person even though I knew they were struggling
I helped someone who was vulnerable or in need because I know what it feels like to be picked on
I blogged or chatted about my experiences on social media
I connected with others who had similar experiences on social media
I felt connected with a group that is not mainstream
I connected in person with someone else who had been picked on
I connected online with someone else who had been picked on
I tried very hard to please other people so that they would like me
I took out my negative feelings on other people or someone else
I bullied someone to help cope with my feelings
I avoided talking about my experiences of being picked on
I covered up parts of my body because I felt bad about them
I tried to be perfect and get everything right
Other coping strategy (please describe)

Appendix 3. Semi-structured interview schedule (Chapter 4)

Interview Guide

What happened

Based on the questionnaire you completed previously, I can see that you had negative experiences with peers. Before we get into any details, I thought it would be helpful to have a shared term for this. What word/s or term/s do you use to describe what has happened to you?

- *Agree shared term for *bullying/teasing/being picked on/other*

It would be helpful to get a sense of when your experiences took place and what happened. *Annotate timeline together.*

For each event/period:

What happened?

- *Direct/overt: name-calling, threats, verbal aggression, physical aggression*
- *Indirect/relational: used their status to harm me socially, exclusion, gossip*
- *Online/in person*

What age did it start? How long did it last? Is it ongoing?

- *How severe was it? (0 – 10, least to most severe).*
- *Who was it? Peers, sibling, authority figure, same/other group, someone else.*
- *How frequently did it happen?*
- *Was it intentional?*
- *Were they more popular, stronger, smarter than you?*

Looking over the timeline, what was the worst

- *type of bullying**
- *single event/period of time*

Can you describe it to me?

- *Feel free to describe details including the worst moments. Include what you were feeling and thinking at the time.*
- *This narrative will be audio-recorded.*

Appraisals and impact “then”

Cast your mind back to the worst event or period that you described just now. At that time...

...what emotions did you feel?

- *Fear, shame, anger, sadness, humiliation, embarrassment...*
- *What was worst and what made it so bad?*

...what did you feel in your body, physical problems?

- *Headache, pain, sleep problems, tiredness, lethargy, tingling, restlessness, other.*

Beliefs about self

...what did it mean to you about yourself as a person that you were being bullied*?

- *What did you feel/think about yourself?*
- *What would other people say about you as a person?*

Beliefs about social self

...what did it mean to you about your relationships that you were bullied*?

- *What did you feel/think about your relationships with others?*
- *What would other people say about your relationships?*

Beliefs about others

...what did it mean to you about other people in general that you were being bullied*?

- *What did you feel/think about other people?*
- *What would other people say about your position in society?*
- *What did you feel about your position in society?*
- *How society functions and relationships work?*

Beliefs about blame

...whose fault did you think it was that you were being bullied*?

- *How much was it your fault (0-100)*
- *Why? What about you, your situation, your characteristics?*

...what did you do to cope?

- *Avoidance (e.g., specific types of social situations), alcohol or drugs, online gaming*
- *Social behaviour or ways of interacting, openness, other*

...did you talk about it with others (peers, authorities, family, other important person)?

If so, how did they react? What did they say or do?

If not, why not? What would have happened if you had told someone else?

Appraisals and impact “now”

Do you feel that you are continuing to experience difficulties as a result of being bullied*?

If yes, what difficulties are connected to what happened to you?

- *Anxiety, depression, work, relationships, appearance, other.*

If not, what do you think protected you or help you move on?

Beliefs about self

...NOW what does it mean about you as a person that you were bullied*?

- *...and have recovered from that experience/continue to suffer*

Beliefs about social self

...NOW what did it mean to you about your relationships that you were bullied*?

- *What does it make you feel/think about your relationships with others?*
- *What would other people say about your relationships?*

Beliefs about others

...NOW what does your experience of being bullied* tell you about other people in general

- *What does it make you feel/think about other people?*
- *What would other people say about your position in society?*
- *What do you think about your position in society?*

Beliefs about blame

...NOW whose fault did you think it was that you were bullied*?

- *How much was it your fault (0-100)*

Looking back, what do you think is the reason you were bullied*?

- *Was it something about you? (e.g., race, appearance, sexuality, something 'different')*
- *Was it something about the bully* or context? (e.g., mental health, family, others, etc)*

Does it matter that you were bullied?

Memories*

Do memories of bullying* ever pop into your mind?

- Can you think of a recent time?
- Can you describe what was happening? Was it words, image, video? Whose perspective?
- What triggered it? *An internal feeling (anxiety?), a social situation (someone who reminded you of..., familiar or unfamiliar person, dating or intimate, other), other*

Do you ever find yourself suddenly feeling like when you were bullied*? How do you feel?

- Can you think of a recent time?
- What triggered it?
- As above.

If memory or felt sense happened,

...what emotions did you feel?

- Fear, shame, anger, sadness, humiliation, embarrassment...
- What was the worst feeling you had and what made it so bad?

...what did you feel in your body?

...what did you do?

Coping strategies "then"

In the past, did you do anything to try to cope with effects of bullying* or prevent it from happening again? What kinds of things did you do?

- *Staying quiet, avoidance (conflict or expressing opinions, going where bullies* might be, online interactions, risk-taking in romance, work, social), saying yes to everything, rehearsing for social interactions in advance, being funny or smiling a lot, mental strategies like imagining things, other.*

Did you do things to help you manage situations (like social situations) back then?

Were there things that you did to make yourself feel better when it was especially hard?

- *Avoidance (e.g., specific types of social situations), alcohol or drugs, online gaming, TV, hobbies*
- *Social behaviour or ways of interacting, openness, other*

Were you ever involved in bullying* other people?

- *Yourself, assisting/reinforcing another bully*, witness, or defending others?*
- *In person/online?*

How did this make you feel?

Coping strategies “now”

Is there anything you do now to try to prevent bullying* from happening?
Or prevent feeling like you did when it happened?

Are there things you do to try to manage situations (like social situations) now?

Are there things you do to try to make yourself feel better now?

Rumination

Do you find yourself going round and round in your mind over the *bullying** you experienced? What is mostly in your mind when that happens?

- *How you could have prevented it from happening or made it less bad.*
- *How unfair it is?*
- *How the experiences impacted your life?*
- *What the bully* is doing now?*
- *Is there any justice?*
- *What if...*
- *If only...*

Is there anything you stew on or repeat over and again regarding the bullying*?

When you have the thoughts going round and round in your mind what emotions do you feel?

- *Fear, shame, anger, sadness, relief, shame, embarrassment*

When you are thinking about what happened, what do you feel in your body?

When something goes wrong or you make a mistake, what kinds of things do you say to yourself? For example, if you made a mistake filling out an important form.

What, if anything, would you say to yourself? Criticism, support.

Does the voice remind you of anyone, bully? *Tone, words, experience.*

Appendix 4. Student Adjustment Study (Chapters 5-7) ethics approval, and online information sheet and consent form

MEDICAL SCIENCES INTERDIVISIONAL RESEARCH ETHICS COMMITTEE

Research Services, University of Oxford, Wellington Square, Oxford, OX1 2JD
Tel: +44(0)1865 616577 Fax: +44(0)1865 280467
ethics@medsci.ox.ac.uk



CONFIDENTIAL

Ref: R58149/RE001

Dr Belinda Graham
OxCADAT
The Old Rectory
Paradise Square
Oxford

10th August 2018

Dear Dr Graham

Research Ethics Approval - CUREC 2

Study Title: The Student Adjustment Study: A Longitudinal Evaluation of Psychological Factors in the Transition to University

Short Title: The Student Adjustment Study

The above application has been considered on behalf of the Medical Sciences Interdivisional Research Ethics Committee (IDREC) in accordance with the procedures laid down by the University for Ethical Approval of all research involving human participants.

I am pleased to inform you that, on the basis of the information provided to the IDREC, the proposed research has been judged as meeting appropriate ethical standards, and approval has been granted for a period of **2 years**, commencing on **10th August 2018**. The reference number for this study is **R58149/RE001**.

This is **subject to**:

- a) **your following the BPS guidelines for online research**
- b) **it is your responsibility to comply with the requirements for administering any tests or questionnaires and if in doubt to contact the publisher of those tests or questionnaires.**
- c) **if new research staff are engaged, the PI is responsible for ensuring they are suitably qualified by training and/or experience**

I would like to remind you that you will be required to submit an annual progress report on each anniversary of study approval, until the study is completed, and that your study may be selected for review by the MS IDREC during an annual audit.

Amendments

Should there be any subsequent changes to the study, which raise ethical issues not covered in the original application, you should submit details to the IDREC for consideration and approval. Details of changes must be listed on an amendment form. If your study received University Sponsorship through CTRG, then the amendment will first need to be submitted to CTRG for approval of continued Sponsorship.



Please do not hesitate to contact me if you have any queries.

Yours sincerely

A handwritten signature in cursive script that reads 'H. Barnby-Porritt'.

Dr. Helen Barnby-Porritt
Research Ethics Manager, Medical Sciences

The Student Adjustment Study

The aim of this research is to learn more about mental health during the first year at university and what might impact this transition.

Please note that you may only participate in this survey if you are aged 18 to 29 years.

I certify that I am 18 to 29 years old.

Please carefully read the terms written here before agreeing to take part.

Do I have to take part?

No, your participation is voluntary and you may withdraw at any point during the questionnaire without giving a reason, by closing the browser. In addition, all questions are optional or include a "prefer not to say" option. If you have any questions before taking part, contact the research team on sas@psy.ox.ac.uk.

What will happen if I take part?

You will be asked to complete online questionnaires about your background, mental health, thoughts, attitudes, and past experiences including with friends and peers. **You will be asked to complete the survey four times during your first year (now and November, March, June)**. After completing each survey, you will be entered into a Prize Draw to win a £50 Amazon voucher, which increases to £100 Amazon vouchers after the final survey in June. You can only complete later surveys if you complete the first one. Each survey will take around 30 minutes to complete and your answers will be kept private. By taking part, you are helping us to improve support for people who could benefit.

In total, there are ten £50 vouchers available now, another ten £50 vouchers in November, fifteen £50 vouchers in March, and ten £50 plus five £100 vouchers in June.

You can also choose to complete an additional 10-minute survey in one week's time. If you complete this survey, which is important for research purposes and asks similar questions to the first survey, you will automatically receive a £5 Amazon voucher. Completing this additional short survey does not affect your participation in the rest of the study or your chances of winning.

Are there any potential risks in taking part?

It is possible that answering some of the survey questions may be upsetting, but we have found that discomfort is manageable and temporary. Remember that you are free not to

answer a question if you do not wish to and if you ever have any questions or concerns you are free to contact us on sas@psy.ox.ac.uk

Are there benefits in taking part?

There are no direct benefits in taking part.

How will your data be used?

The information you provide as part of the study is the research data. Any research data from which you can be identified (e.g., your name, email) is known as personal data; this includes more sensitive categories of personal data (sensitive data) such as your racial or ethnic origin or data concerning your health. It does not include data where your identity has been removed (anonymous data).

We will minimise our use of personal and sensitive data in the study as much as possible. We will use all reasonable endeavours to keep your answers confidential. The research data and personal/sensitive data will be stored using password-protected files. Your IP address will not be stored. Once all data has been collected (i.e., after the fourth survey has been completed), identifying information (i.e., name, email) will be deleted. Your contact details will be retained only if you give explicit consent below, in order to let you know about future research opportunities. Research data will be stored for a minimum of three years after publication or public release on a secure server. Our intention is that results will be written up as part of a doctoral thesis and made available in an online archive of research, as well as published and made available through academic, media, and other channels.

Who will have access to your data?

The University of Oxford is the data controller for the purposes of the Data Protection Act 2018. Data will be accessible by the researcher and may be shared within the research team and in anonymised form with competent researchers as appropriate. We would like your permission to use your anonymised data in future studies, and to share data with other researchers (e.g. in online databases). Therefore, data collected in this study may be shared with other researchers, including those working outside the EU, to be used in other research studies. Any personal information that could identify you will be removed or changed before files are shared with other researchers or results are made public. Responsible members of the University of Oxford and funders may be given access to data for monitoring and/or audit of the study to ensure we are complying with guidelines, or as otherwise required by law. Qualtrics will also be a data controller with respect to your personal data and, as such, will determine how your personal data is used. Please see their privacy notice [here](https://www.qualtrics.com/privacy-statement/). [hyperlink <https://www.qualtrics.com/privacy-statement/>]

Who has reviewed this study?

This questionnaire study is part of a DPhil project. The principal researcher is Dr Belinda Graham, who is attached to the Department of Experimental Psychology at the University of Oxford. This project is being completed under the supervision of Prof Anke Ehlers. This study has been reviewed by, and received ethics clearance through, the University of Oxford

Central University Research Ethics Committee [R58149/RE001]. The study is funded by the Wellcome Trust.

What if there is a problem?

If you have a concern about any aspect of this project, please contact the lead researcher, Dr Belinda Graham or their supervisor Prof Anke Ehlers via email on sas@psy.ox.ac.uk, and they will do their best to answer your query. The researcher, or a member of the OxCADAT research group, should acknowledge your concern within 10 working days and give you an indication of how they intend to deal with it. If you remain unhappy or wish to make a formal complaint, please contact the relevant Chair of the Research Ethics Committee at the University of Oxford: Chair, Medical Sciences Inter-Divisional Research Ethics Committee; ethics@medsci.ox.ac.uk; Address: Research Services, University of Oxford, Wellington Square, Oxford OX1 2JD. The Chair will seek to resolve the matter in a reasonably expeditious manner.

All sound ok? Please click the box beside each statement to agree and begin.

- | | | |
|------------------|---|--------------------------|
| 1 | I have read the information provided about this study and had the opportunity to consider the information carefully, ask questions and received satisfactory answers. | <input type="checkbox"/> |
| 2 | I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without any adverse consequences. | <input type="checkbox"/> |
| 3 | I have been advised about the potential risks associated with taking part in this research and have taken these into consideration before consenting to participate. | <input type="checkbox"/> |
| 4 | I understand that data collected during the study may be looked at by designated individuals from the University of Oxford. I give permission for these individuals to access my data. | <input type="checkbox"/> |
| 5 | I understand who will have access to personal data provided, how the data will be stored and what will happen to the data at the end of the project. | <input type="checkbox"/> |
| 6 | I agree for data collected in this study to be shared with other researchers, including those working outside of the EU, to be used in other research studies. I understand that any data shared will be fully anonymised so that I cannot be identified. | <input type="checkbox"/> |
| 7 | I understand how this research will be written up and published. | <input type="checkbox"/> |
| 8 | I understand that this project has been reviewed by, and received ethics clearance through, the University of Oxford Central University Research Ethics Committee. | <input type="checkbox"/> |
| 9 | I understand how to raise a concern or make a complaint. | <input type="checkbox"/> |
| 10 | I agree to take part in the study | <input type="checkbox"/> |
| Optional: | I would like my contact details to be kept in a secure database for the purpose of being contacted about future studies. I understand that agreeing to be contacted does not oblige me to participate in any further studies. | <input type="checkbox"/> |

Appendix 5. New measures item pools (Chapter 5)

Bullied Cognitions Inventory (BCI) item pool

1. I deserve to be treated the way they treated me
2. If I fail at anything it means the person or people who picked on me were right
3. I am the classic example of someone who is easy to pick on
4. People see me as the type of person who gets picked on
5. If I hadn't been picked on maybe I would be a better person than I am now
6. I still believe the things that other people told me about myself
7. If someone is more important than me then they have the right to pick on me
8. I have been totally degraded
9. If people knew I was picked on they would reject me
10. If people knew I was picked on they would find me less attractive
11. If I told someone I was picked on they would think I am weak
12. It is shameful to have been picked on
13. If people knew I was picked on they would think less of me
14. When I meet someone new they can sense that I've been picked on
15. My reaction to being picked on is overdramatic
16. It is embarrassing that I still think about it
17. I have been completely humiliated
18. I wish I had physical scars so people could see how bad it was
19. It is unreasonable to feel bad as much worse things can happen
20. It is my fault that I am not moving on
21. I'm likely to be picked on again
22. I need to succeed to show I'm better than them
23. I need to prove to myself I'm different from what I was then

Bullied Social Attitudes Inventory (BSAI) item pool

1. Other people always treat me badly
2. Everybody hates me when they get to know me
3. Deep down my friends don't really like me
4. I am alone and always will be
5. No one is ever willing to step in to defend me
6. I am totally unattractive to other people
7. There is no way I can control what happens in my social life
8. There's no point in me trying to make friends
9. People see me as unacceptable
10. I am at the bottom of the pile socially
11. People who are picked on deserve it
12. I am an outcast
13. Other people don't like spending time with me
14. If I get close to someone they will turn on me
15. I need to handle everything on my own
16. If I show vulnerability other people will exploit it
17. Most people will exploit each other if they can
18. There is something about me that makes other people reject me
19. If I disagree with somebody they will reject me
20. I rank myself below other people
21. Other people are more important than I am
22. Shutting people out keeps me safe from harm
23. People are always talking about me behind my back
24. I judge myself based on how I think others perceive me

25. I expect people to be nasty to me
26. It surprises me when someone is nice to me
27. I am totally at the mercy of other people
28. I need to blend in to avoid being picked on
29. I am too weak to stand up for myself
30. I am easy to victimize
31. I am not a good judge of character
32. My views are not important to other people
33. Other people intentionally leave me out
34. There's something that marks me out as odd
35. I have to do whatever people I care about want
36. I don't realise when someone is being rude to me
37. It takes me a while to recognise when I am being treated badly
38. When I'm in a group I bring the vibe down
39. Even when I make friends I can't keep them
40. My friendships are pitiful
41. It's worth putting up with bad treatment to be friends with someone
42. It's worth putting up with bad treatment to be in a relationship with someone
43. I am not good enough for my best friend
44. I am not good enough for a romantic relationship
45. People are friends with me out of convenience not because they really like me
46. I can't show people who I really am because they would not accept me
47. I find it hard to believe that others might want to get to know me
48. I cannot imagine trusting someone enough for a real relationship
49. People who are kind to me are faking it
50. I need to impress people to make them like me
51. People will ignore me if I'm not immediately likeable
52. People will ignore me if I'm not super confident
53. Other people think badly of me
54. I am more likely to be bullied than other people
55. I am an easy target
56. There is something wrong with me that makes people pick on me
57. People pick on me all the time
58. I never know when someone might turn against me
59. I can't trust that people will look out for me
60. I can't trust other people to treat me well

Bullied Social Behaviours Scale (BSBS) item pool

1. I did not say what was on my mind
2. I avoided taking a lead
3. I avoided being assertive
4. I avoided working in a team
5. I was horrible to myself before someone else could be
6. I put myself down
7. I was cold to somebody
8. I avoided talking about myself
9. I avoided asking for help or favours
10. I put on a neutral mask to avoid confrontation
11. I avoided social media
12. I hid aspects of myself from friends
13. I didn't bother trying to explain when someone misunderstood me
14. I tried not to think about negative social interactions
15. I rejected someone before they could reject me
16. I tried to be funny and smile all the time
17. I asked for reassurance from other people that they like me
18. I did not ask for help even when I was struggling
19. I hid my true feelings
20. I apologised more than someone else might in the same situation
21. I tried very hard to please other people
22. I tried to be perfect and get everything right
23. I asked people to reassure me that they want me around
24. I checked that my words were not taken in the wrong way
25. I looked for signs that people still liked me
26. I criticised somebody before they could criticise me
27. I was unkind to somebody before they could be unkind to me
28. I was mean to someone to make myself feel better
29. I hung around people who seemed like outsiders to make myself feel better
30. I checked whether someone I met was better than me
31. I checked for signs that others were judging me negatively
32. I changed the way I talked or acted or looked to try to fit in
33. I drank alcohol or took drugs to help me fit in
34. I put on a different persona so that people would like me
35. I pretended to be someone else to make people like me
36. I did too much to please other people
37. I avoided people who seemed confident
38. I compared myself negatively with someone else
39. I was hard on myself for being less than other people
40. I checked my position in the social hierarchy

Appendix 6. Correlations tables (Chapter 5)

Table 1. Correlations of PTSD, social anxiety, depression and general anxiety symptoms with victimisation and background characteristics, and cognitive and behavioural measures

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. PTSD																		
2. SAD	.497**	--																
3. Anxiety	.658**	.578**	--															
4. Dep	.676**	.548**	.792**	--														
5. Age	-.024	-.045	.006	-.012	--													
6. Gender	.044	.120**	.059	.040	.010	--												
7. LGB	.177**	.157**	.124**	.194**	-.068*	.014	--											
8. Ethnicity	-.037	.022	.020	-.032	.038	-.054	.072*	--										
9. Trauma	.221**	.145**	.238**	.222**	.173**	.101**	-.059	.048	--									
10. # Types	.356**	.095**	.275**	.302**	.086**	-.066*	.017	.032	.213**	--								
11. Severity	.332**	.118**	.242**	.233**	.134**	.067*	.065*	.007	.160**	.250**	--							
12. Power	.094**	.058	.091**	.079*	.024	.042	.066*	.001	.096*	-.001	.133**	--						
13. PTCI	.768**	.541**	.639**	.682**	-.046	.003	.182**	-.033	.192**	.269**	.327**	.114**	--					
14. SAQ	-.528**	-.629**	-.627**	-.579**	.076	-.002	-.294**	-.162	-.128	-.075	-.294**	-.119	-.660**	--				
15. PTSD-B	.609**	.547**	.624**	.597**	.139	.072	.154	.043	.178*	.220**	.417**	.236**	.551**	-.472**	--			
16. SBQ	.584**	.692**	.639**	.594**	.064	.079	.318**	.202*	.226**	.162	.327**	.181*	.544**	-.655**	.739**	--		
17. BCI	.653**	.565**	.610**	.588**	-.039	.008	.154**	.020	.156**	.213**	.241**	.114**	.778**	-.723**	.529**	.593**	--	
18. BSAI	.610**	.646**	.622**	.648**	-.082*	-.007	.162**	-.016	.177**	.178**	.204**	.118**	.742**	-.798**	.532**	.630**	.827**	--
19. BSBS	.629**	.668**	.681**	.669**	-.095**	.076*	.118**	.009	.189**	.217**	.203**	.083*	.667**	-.729**	.573**	.688**	.699**	.783**

Note. Sample includes individuals who experienced bullying 2/3 times per month or more, or at least 5 types ($n = 1279$). PTSD = PTSD symptoms to worst bullying experience (PCL-5). SAD = Social Anxiety (SPIN). Anxiety = General Anxiety (GAD-7). Dep = Depression (PHQ-9). Age (years). Gender = Female (1) Male, other, unsure (0). LGB = Lesbian, gay, bisexual, other, unsure (1) heterosexual (0). Ethnic = white (1) other (0). # types = Number of types of bullying experienced. Severity = Severity of worst bullying event. Trauma = Other traumatic experience, yes (1) no (0). Power = Power imbalance, yes (1) no (0). PTCI = Posttraumatic Cognitions Inventory. SAQ = Social Attitudes Questionnaire. PTSD-B = PTSD Safety Behaviours Questionnaire. SBQ = Social Behaviours Questionnaire. BCI = Bullied Cognitions Inventory. BSAI = Bullied Social Attitudes Inventory. BSBS = Bullied Social Behaviours Scale. Pearson correlations, * $p < .05$. ** $p < .01$.

Table 2. Correlations of PTSD, social anxiety, depression and general anxiety symptoms with factor scores of cognitive measures (PTCI, SAQ, BCI, BSAI)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. PTSD	--																	
2. SAD	.497**	--																
3. Anxiety	.658**	.578**	--															
4. Dep	.676**	.548**	.792**	--														
5. PTCI-1	.752**	.539**	.637**	.695**	--													
6. PTCI-2	.633**	.405**	.478**	.505**	.748**	--												
7. PTCI-3	.474**	.298**	.396**	.401**	.559**	.526**	--											
8. PTCI-4	.630**	.456**	.524**	.525**	.715**	.604**	.431**	--										
9. SAQ-1	-.522**	-.578**	-.620**	-.599**	-.695**	-.473**	-.347**	-.524**	--									
10. SAQ-2	-.496**	-.572**	-.570**	-.512**	-.617**	-.440**	-.329**	-.473**	.846**	--								
11. SAQ-3	-.493**	-.581**	-.601**	-.548**	-.647**	-.449**	-.317**	-.500**	.847**	.901**	--							
12. BCI-1	.538**	.469**	.498**	.472**	.644**	.607**	.405**	.513**	-.533**	-.595**	-.602**	--						
13. BCI-2	.593**	.505**	.537**	.538**	.679**	.601**	.419**	.581**	-.605**	-.683**	-.663**	.708**	--					
14. BCI-3	.530**	.513**	.515**	.474**	.633**	.527**	.401**	.479**	-.629**	-.608**	-.608**	.678**	.640**	--				
15. BCI-4	.622**	.492**	.565**	.547**	.718**	.590**	.422**	.565**	-.572**	-.524**	-.540**	.714**	.707**	.681**	--			
16. BSAI-1	.581**	.608**	.585**	.634**	.723**	.541**	.384**	.532**	-.731**	-.681**	-.697**	.646**	.662**	.706**	.657**	--		
17. BSAI-2	.563**	.536**	.567**	.604**	.660**	.511**	.398**	.635**	-.630**	-.619**	-.669**	.609**	.679**	.575**	.607**	.760**	--	
18. BSAI-3	.519**	.626**	.545**	.551**	.645**	.497**	.323**	.489**	-.708**	-.797**	-.748**	.619**	.714**	.633**	.616**	.784**	.711**	--
19. BSAI-4	.504**	.520**	.507**	.489**	.614**	.485**	.337**	.479**	-.564**	-.547**	-.556**	.613**	.615**	.777**	.650**	.746**	.627**	.711**

Note. Sample includes individuals who experienced bullying 2/3 times per month or more, or at least 5 types (maximum $n = 1279$). PTSD = PTSD symptoms to worst bullying experience (PCL-5). SAD = Social Anxiety symptoms (SPIN). Dep = Depression symptoms (PHQ-9). Anxiety = Gender anxiety (GAD-7). Factors numbered for each cognitive measure: PTCI = Posttraumatic Cognitions Inventory, 1. Negative self-appraisals, 2. Self-blame, 3. Preoccupation with unfairness, 4. Overgeneralised danger. SAQ = Social Attitudes Questionnaire, 1. Low self-worth, 2. High expectations with negative consequences, 3. Fear of showing anxiety. BCI = Bullied Cognitions Inventory, 1. Degraded in the eyes of others, 2. Negative interpretations of reactions to bullying, 3. Recognisable as a bullying victim, 4. Social defeat. BSAI = Bullied Social Attitudes Inventory, 1. Rejection, 2. Mistrust, 3. Need to manage self-presentation, 4. Social vulnerability. Pearson correlations, * $p < .05$. ** $p < .01$.

Table 3. Among individuals whose self-reported symptoms suggest likely diagnosis of SAD or PTSD, correlations of PTSD, social anxiety, depression and general anxiety symptoms with victimisation and background characteristics, and cognitive and behavioural measures

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. PTSD	--																	
2. SAD	.288**	--																
3. Anxiety	.578**	.417**	--															
4. Dep	.606**	.400**	.758**	--														
5. Age	.007	-.015	.046	.025	--													
6. Gender	-.009	.084*	.016	.007	.004	--												
7. LGB	.134**	.120**	.088*	.174**	-.107**	-.018	--											
8. Ethnicity	-.042	-.013	-.019	-.071	.023	-.057	.030	--										
9. Trauma	-.184**	-.082*	-.224**	-.190**	-.196**	-.108**	-.043	.053	--									
10. # Types	.373**	.044	.287**	.324**	.123**	-.06	.005	.041	-.213**	--								
11. Severity	.298**	-.011	.192**	.183**	.136**	.001	.012	-.026	-.124**	.285**	--							
12. Power	.064	-.034	.036	.011	.022	-.017	.024	-.008	.005	-.011	.047	--						
13. PTCI	.717**	.376**	.562**	.624**	-.026	-.025	.158**	-.064	-.153**	.261**	.293**	.053	--					
14. SAQ	-.426**	-.482**	-.519**	-.539**	.046	.001	-.326**	-.080	.125	-.082	-.190	-.108	-.576**	--				
15. PTSD-B	.556**	.443**	.548**	.523**	.153	.049	.093	-.038	-.101	.291**	.283**	.100	.459**	-.335**	--			
16. SBQ	.483**	.565**	.523**	.491**	.140	.057	.257**	.040	-.206*	.251**	.172	.057	.407**	-.534**	.729**	--		
17. BCI	.572**	.407**	.511**	.496**	-.013	-.042	.138**	.004	-.095*	.222**	.202**	.031	.725**	-.637**	.431**	.443**	--	
18. BSAI	.505**	.504**	.525**	.556**	-.047	-.069	.159**	-.039	-.127**	.184**	.164**	.037	.680**	-.728**	.419**	.476**	.785**	--
19. BSBS	.542**	.519**	.595**	.597**	-.058	.033	.103**	-.009	-.130**	.227**	.130**	-.011	.587**	-.650**	.515**	.604**	.615**	.701**

Note. Sample excludes individuals whose self-reported symptoms did not suggest likely diagnosis of either SAD (SPIN \geq 19) or PTSD (PCL \geq 31). Sample includes individuals who experienced bullying 2/3 times per month or more, or at least 5 types ($n = 1279$). PTSD = PTSD symptoms to worst bullying experience (PCL-5). SAD = Social Anxiety (SPIN). Anxiety = General Anxiety (GAD-7). Dep = Depression (PHQ-9). Age (years). Gender = Female (1) Male, other, unsure (0). LGB = Lesbian, gay, bisexual, other, unsure (1) heterosexual (0). Ethnic = white (1) other (0). # types = Number of types of bullying experienced. Severity = Severity of worst bullying event. Trauma = Other traumatic experience, yes (1) no (0). Power = Power imbalance, yes (1) no (0). PTCI = Posttraumatic Cognitions Inventory. SAQ = Social Attitudes Questionnaire. PTSD-B = PTSD Safety Behaviours Questionnaire. SBQ = Social Behaviours Questionnaire. BCI = Bullied Cognitions Inventory. BSAI = Bullied Social Attitudes Inventory. BSBS = Bullied Social Behaviours Scale. Pearson correlations, * $p < .05$. ** $p < .01$.

Table 4. Among individuals whose self-reported symptoms suggest likely diagnosis of SAD or PTSD, correlations of PTSD, social anxiety, depression and general anxiety symptoms with factor scores of cognitive measures (PTCI, SAQ, BCI, BSAI)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1. PTSD	--																	
2. SAD	.288**	--																
3. Anxiety	.578**	.417**	--															
4. Dep	.606**	.400**	.758**	--														
5. PTCI-1	.698**	.373**	.558**	.641**	--													
6. PTCI-2	.578**	.270**	.394**	.439**	.712**	--												
7. PTCI-3	.427**	.199**	.338**	.349**	.514**	.484**	--											
8. PTCI-4	.572**	.302**	.457**	.447**	.680**	.561**	.376**	--										
9. SAQ-1	-.423**	-.418**	-.527**	-.562**	-.627**	-.363**	-.249*	-.481**	--									
10. SAQ-2	-.392**	-.405**	-.441**	-.458**	-.518**	-.320**	-.219*	-.415**	.794**	--								
11. SAQ-3	-.385**	-.408**	-.490**	-.494**	-.563**	-.336**	-.197*	-.436**	.798**	.848**	--							
12. BCI-1	.467**	.366**	.427**	.396**	.588**	.572**	.358**	.461**	-.429**	-.485**	-.499**	--						
13. BCI-2	.503**	.329**	.418**	.432**	.607**	.534**	.350**	.505**	-.509**	-.600**	-.561**	.664**	--					
14. BCI-3	.436**	.383**	.414**	.375**	.555**	.453**	.337**	.413**	-.533**	-.501**	-.497**	.632**	.561**	--				
15. BCI-4	.554**	.339**	.485**	.470**	.668**	.527**	.370**	.519**	-.481**	-.402**	-.414**	.681**	.651**	.625**	--			
16. BSAI-1	.481**	.486**	.494**	.551**	.663**	.470**	.326**	.463**	-.654**	-.576**	-.599**	.593**	.585**	.654**	.598**	--		
17. BSAI-2	.465**	.390**	.485**	.517**	.596**	.432**	.335**	.575**	-.539**	-.489**	-.547**	.539**	.591**	.495**	.545**	.714**	--	
18. BSAI-3	.387**	.473**	.414**	.433**	.553**	.407**	.236**	.387**	-.619**	-.753**	-.671**	.566**	.646**	.544**	.527**	.722**	.614**	--
19. BSAI-4	.405**	.376**	.401**	.384**	.539**	.410**	.255**	.414**	-.454**	-.431**	-.433**	.567**	.544**	.743**	.607**	.692**	.553**	.630**

Note. Sample excludes individuals whose self-reported symptoms did not suggest likely diagnosis of either SAD (SPIN ≥ 19) or PTSD (PCL ≥ 31). Sample includes individuals who experienced bullying 2/3 times per month or more, or at least 5 types (maximum n = 1279). PTSD = PTSD symptoms to worst bullying experience (PCL-5). SAD = Social Anxiety symptoms (SPIN). Dep = Depression symptoms (PHQ-9). Anxiety = Gender anxiety (GAD-7). Factors numbered for each cognitive measure: PTCI = Posttraumatic Cognitions Inventory, 1. Negative self-appraisals, 2. Self-blame, 3. Preoccupation with unfairness, 4. Overgeneralised danger. SAQ = Social Attitudes Questionnaire, 1. Low self-worth, 2. High expectations with negative consequences, 3. Fear of showing anxiety. BCI = Bullied Cognitions Inventory, 1. Degraded in the eyes of others, 2. Negative interpretations of reactions to bullying, 3. Recognisable as a bullying victim, 4. Social defeat. BSAI = Bullied Social Attitudes Inventory, 1. Rejection, 2. Mistrust, 3. Need to manage self-presentation, 4. Social vulnerability. Pearson correlations, * p < .05. ** p < .01.

Appendix 7. Final Bullied Cognitions Inventory

Bullied Cognitions Inventory (BCI)

On this page, you will find different thoughts that people may have. In this questionnaire we are interested in the way that YOU thought, IN THE LAST MONTH.

Please read each statement carefully and choose a number from the scale below which BEST DESCRIBES HOW MUCH YOU AGREED OR DISAGREED WITH THE STATEMENT in the last month.

	1 Totally disagree	2 Disagree very much	3 Disagree slightly	4 Neutral/neither agree nor disagree	5 Agree slightly	6 Agree very much	7 Totally agree					
1 ¹¹	If I told someone I was picked on they would think I am weak					1	2	3	4	5	6	7
2 ¹²	It is shameful to have been picked on					1	2	3	4	5	6	7
3 ¹³	If people knew I was picked on they would think less of me					1	2	3	4	5	6	7
4 ²³	I need to prove to myself I'm different from what I was then					1	2	3	4	5	6	7
5 ¹⁵	My reaction to being picked on is overdramatic					1	2	3	4	5	6	7
6 ¹⁶	It is embarrassing that I still think about it					1	2	3	4	5	6	7
7 ¹⁹	It is unreasonable to feel bad as much worse things can happen					1	2	3	4	5	6	7
8 ²⁰	It is my fault that I am not moving on					1	2	3	4	5	6	7
9 ²²	I need to succeed to show I'm better than them					1	2	3	4	5	6	7
10 ⁴	People see me as the type of person who gets picked on					1	2	3	4	5	6	7
11 ¹⁴	When I meet someone new they can sense that I've been picked on					1	2	3	4	5	6	7
12 ²¹	I'm likely to be picked on again					1	2	3	4	5	6	7
13 ⁸	I have been totally degraded					1	2	3	4	5	6	7
14 ¹⁷	I have been completely humiliated					1	2	3	4	5	6	7
15 ⁵	If I hadn't been picked on maybe I would be a better person					1	2	3	4	5	6	7

Note. Superscript represents original item number during scale development.

Appendix 8. Final Bullied Social Attitudes Inventory

Bullied Social Attitudes Inventory (BSAI)

On this page, you will find different thoughts that people may have. In this questionnaire we are interested in the way that YOU thought, IN THE LAST MONTH.

Please read each statement carefully and choose a number from the scale below which BEST DESCRIBES HOW MUCH YOU AGREED OR DISAGREED WITH THE STATEMENT in the last month.

	1 Totally disagree	2 Disagree very much	3 Disagree slightly	4 Neutral/neither agree nor disagree	5 Agree slightly	6 Agree very much	7 Totally agree					
1 ²	Everybody hates me when they get to know me					1	2	3	4	5	6	7
2 ³	Deep down my friends don't really like me					1	2	3	4	5	6	7
3 ⁸	There's no point in me trying to make friends					1	2	3	4	5	6	7
4 ¹³	Other people don't like spending time with me					1	2	3	4	5	6	7
5 ⁴⁹	People who are kind to me are faking it					1	2	3	4	5	6	7
6 ¹⁰	I am at the bottom of the pile socially					1	2	3	4	5	6	7
7 ¹⁵	I need to handle everything on my own					1	2	3	4	5	6	7
8 ¹⁶	If I show vulnerability other people will exploit it					1	2	3	4	5	6	7
9 ¹⁷	Most people will exploit each other if they can					1	2	3	4	5	6	7
10 ²²	Shutting people out keeps me safe from harm					1	2	3	4	5	6	7
11 ⁵⁹	I can't trust that people will look out for me					1	2	3	4	5	6	7
12 ²⁴	I judge myself based on how others perceive me					1	2	3	4	5	6	7
13 ⁵⁰	I need to impress people to make them like me					1	2	3	4	5	6	7
14 ⁵¹	People will ignore me if I'm not immediately likeable					1	2	3	4	5	6	7
15 ⁵²	People will ignore me if I'm not super confident					1	2	3	4	5	6	7
16 ²⁰	I rank myself below other people					1	2	3	4	5	6	7
17 ³⁰	I am easy to victimize					1	2	3	4	5	6	7
18 ⁵⁴	I am more likely to be bullied than other people					1	2	3	4	5	6	7
19 ⁵⁶	There is something wrong with me that makes people pick on me					1	2	3	4	5	6	7

Note. Superscript represents original item number during scale development.

Appendix 9. Final Bullied Social Behaviours Scale

Bullied Social Behaviours Scale (BSBS)

Please think back to social interactions you have had in the last month. How often did you do the following?

	0 Never	1 Rarely	2 Sometimes	3 Often	4 Always
1 ¹ I did not say what was on my mind	0	1	2	3	4
2 ⁸ I avoided talking about myself	0	1	2	3	4
3 ⁹ I avoided asking for help or favours	0	1	2	3	4
4 ¹⁰ I put on a neutral mask to avoid confrontation	0	1	2	3	4
5 ¹² I hid aspects of myself from friends	0	1	2	3	4
6 ¹⁸ I did not ask for help even when I was struggling	0	1	2	3	4
7 ¹⁹ I hid my true feelings	0	1	2	3	4
8 ¹⁷ I asked for reassurance from other people that they like me	0	1	2	3	4
9 ²³ I asked people to reassure me that they want me around	0	1	2	3	4
10 ²⁵ I looked for signs that people still liked me	0	1	2	3	4
11 ³² I changed the way I talked or acted or looked to try to fit in	0	1	2	3	4
12 ³⁴ I put on a different persona so that people would like me	0	1	2	3	4
13 ³⁵ I pretended to be someone else so that people would like me	0	1	2	3	4
14 ²¹ I tried very hard to please other people	0	1	2	3	4
15 ³⁶ I did too much to please other people	0	1	2	3	4
16 ²² I tried to be perfect and get everything right	0	1	2	3	4
17 ⁵ I was horrible to myself before someone else could be	0	1	2	3	4
18 ⁶ I put myself down	0	1	2	3	4
19 ³⁹ I was hard on myself for being less than other people	0	1	2	3	4

Note. Superscript represents original item number during scale development.