Risk Factors for Bullying Victimisation in a Representative Sample of Aotearoa New Zealand Adolescents

A thesis presented in partial fulfilment of the requirements for the degree of

Master of Science

in

Psychology

At Massey University, Manawatū, New Zealand

Michael Greg Birchall

2021

Abstract

School bullying, or peer victimisation, involves the infliction of harm upon a weaker student on repeated occasions either through physical, verbal, or relational means. Research has consistently indicated that the prevalence of school bullying in Aotearoa New Zealand exceeds those observed in other developed countries. Bullying has been associated with considerable decrements in physical and mental health in developing adolescents. Addressing this issue requires an understanding of the risk and protective factors for bullying victimisation. Although these factors have been studied extensively overseas, there is a paucity of research in the Aotearoa New Zealand context. The present study investigated the risk factors for victimisation by conducting secondary analysis on a publicly available dataset. A self-report questionnaire carried out during the 2018 Programme for International Student Assessment (PISA) provided a large and representative sample of 15-year-old students in New Zealand secondary schools (n = 4,137). A multiple regression analysis revealed that of the ten potential risk factors eight were significantly associated with direct or indirect forms of bullying (or both). The risk factors with the largest effect sizes for victimisation were lower parental support, lower school belonging, increased classroom disorder, and increased competitiveness in the school climate. Moreover, the present study also included an analysis of the relationship between these risk factors and the adoption of anti-bullying attitudes. Being female rather than male, having higher parental support, and a more co-operative school climate was associated with lower tolerance of bullying expressed in students' attitudes. The results of this study suggest that some overseas findings concerning bullying risk can be extended to the New Zealand context and are discussed with respect to promising areas of future research.

Acknowledgements

First of all, I must acknowledge my primary supervisor, Dr Aaron Drummond. Your support and guidance throughout the completion of this research has been of immense value. The commitment you have shown to academic integrity and precision in the communication of scientific research has had an incredibly positive influence on my development as a researcher and writer. Your extensive knowledge of psychology has facilitated sound judgement throughout this project, and I am extremely grateful to have received your tutelage.

To my co-supervisor, Dr Matt Williams, thank you for your expert guidance in the planning and analysis stages of this research. The oversight you provided during these critical stages was exceptionally thorough and I am sincerely grateful for your contributions.

Finally, thank you to my parents, Dave and Marg, for the unwavering support and encouragement you have given me, not just in the last 12 months, but throughout my life. Your kindness, generosity, and wisdom has provided me with the foundation to pursue my interests in psychology and I owe you both a tremendous debt of gratitude.

Table of Contents

List of Tables

List of Figures

Risk Factors for Bullying Victimisation in a Representative Sample of Aotearoa New Zealand Adolescents

The relationship between mental distress and bullying victimisation has led several scholars to recognise bullying as a global adolescent health issue (Craig & Pepler, 2003; Due et al., 2005; Nansel et al., 2003). Since the early 2000s, both researchers and the public have become increasingly concerned about the mental health of secondary school students in Aotearoa New Zealand. In 2018, research involving the OECD countries found that, on average, 8% of 15-year-olds were frequently involved in bullying in the past 12 months. By comparison, the rate in New Zealand was 15%, indicating that rates of bullying are disproportionately higher in this country. Bullying may be contributing to high levels of mental distress with one in three New Zealand students having experienced self-harm ideations, one in five had attempted to harm themselves, and one in nine reported making a suicide attempt (Coggan et al., 2003). On this account, the present study investigates school bullying in Aotearoa New Zealand.

From a psychological perspective, bullying is considered a subset of aggression which involves the repeated intentional act of harming a weaker person either physically, verbally, or relationally (Espelage & Swearer, 2003; Olweus, 2001). The power differential and repetitiveness observed in bullying distinguishes it from general aggression and subsequently produces more detrimental outcomes than being the victim of a single aggressive attack (Ybarra et al., 2014). The scientific understanding of bullying has expanded considerably since the 1970s and researchers in this area acknowledge that becoming a victim is not random but can be predicted by individual, social, and environmental characteristics (Arseneault et al., 2010).

Child and adolescent victims of bullying often endure serious personal violations, such as assault and theft, that most adults would consider unacceptable (Smith & Sharp, 1994). Some research indicates that the roles assumed by students (e.g., bully and victim) tend to remain constant over time, therefore leading to repeated and prolonged exposure to victimisation (Bond et al., 2001; Kumpulainen et al., 1999; Olweus, 1993; Sourander et al., 2000). Consequently, some adolescents can be subject to bullying for years; this often results in serious effects on their mental and physical health.

The Consequences of Bullying

Adolescence is a crucial stage of development during which individuals become less dependent on their parents and begin establishing new values and roles (Burton et al., 2012). Developmental psychologists have suggested that during this phase, adolescents form their identity by establishing a coherent sense of self and by committing to occupational choices and social roles (Erikson, 1968). At the same time, bullying victimisation exposes students to the challenge of social conflict, cognitive dissonance, and disequilibrium (Adams & Laursen, 2007; Harter & Monsour, 1992). Although the successful resolution of these challenges may cultivate adaptive social skills (Laursen, 1993), unsuccessful resolutions can lead to detrimental interference with social and personality development (Eslea et al., 2004; Perry, 2004; Wolfe et al., 2003). As such, victimisation interferes with critical development processes which may subsequently result in forms of psychopathology which are triggered by bullying attacks and may lead to an increased chance of relapse across the lifespan.

In addition to diminished mental health, the detrimental effects of bullying victimisation also include diminished physical health, and adverse long-term outcomes (Schoeler et al., 2018). Researchers have identified relationships between students' repeated bullying victimisation and increased levels of anxiety, loneliness, stress, hopelessness, and

social isolation (Coggan et al., 2003; Hawker & Boulton, 2000; Juvonen et al., 2003; Rigby, 1995). In addition, effects have been noted with reduced physical health experienced by victims, which may lead to increased absenteeism (Kochenderfer-Ladd & Ladd, 1996). The cascading effects of absenteeism may include lower academic performance (Cook et al., 2010) and early school exit among older students (Furlong et al., 2000). A more severe example of bullying's potentially detrimental effects is the association with self-harm and suicidal behaviours found in a sample of New Zealand adolescents (Coggan et al., 2003).

The consequences of bullying are not confined to the targeted student. Both victims and perpetrators of bullying tend to experience negative psychological outcomes, such as adjustment difficulties (Forero et al., 1999; Kaltiala-Heino et al., 2000; Kumpulainen & Rasanen, 2000). Moreover, bullies can develop long-term aggressive and antisocial behaviour patterns, however, this may be explained by a third variable underlying both bullying and future negative outcomes (Guerin & Hennessy, 2002). In one study, researchers found that bullies were more likely to have a criminal conviction by age 24 (Goleman, 1987).

Given the amount of harm related to bullying, many schools assume the ethical responsibility of reducing its prevalence and effects, therefore creating a safer and more productive environment in which all students can learn without unnecessary fear. In addition, educational policy makers also aim to minimise school bullying as they consider it an important public safety goal (Bullying Prevention Advisory Group, 2015). To sum this up Olweus (1994) states that "it is a fundamental right for a child to feel safe in school and to be spared the oppression and repeated, intentional humiliation implied in bullying" (p.1183).

Risk Factors for Victimisation

So, how might researchers go about reducing bullying? The present study aims to investigate this question by asking *what factors are associated with a student's level of*

victimisation? Early research suggested that victims were typically characterised by loneliness, withdrawal, quietude, and high reactivity (Olweus, 1993). More recently, scholars suggest that similar attributes are involved, however, they group these characteristics under the more general auspices of victims having lower self-esteem and poorer social skills (Reijntjes et al., 2010). Although understanding the role of these individual risk factors is important, researchers are expanding the scope of potential influences. Measurement of risk factors for victimisation more commonly include consideration of the school and classroom environment, the influence of teachers and peers, and the impact of one's familial characteristics. The extant literature contains many examples of risk factors for victimisation. Although a full review of these factors will be provided in the following chapter, in brief, the three most consistent risk facts appear to be parental style, school belonging, and classroom climate.

Firstly, parental style, more specifically supportive and warm parenting seems to be protective of victimisation, whereas maltreatment and neglect have been associated with increased risk of bullying victimisation (Lereya et al., 2013). Secondly, researchers have found that students who report feeling like they belong at school also reported less victimisation (Carney et al., 2018). This is thought to be related to one's position in the social hierarchy on the basis that students at the bottom of a hierarchy are more socially isolated and likely to become victims (Reijntjes et al., 2010). Finally, the climate of a classroom, more specifically the degree to which classroom order is maintained, has been associated with students' degree of victimisation (Koth et al., 2008). Higher classroom order is typified by low student disruption; minimal problematic student behaviour. (e.g., fighting, rule-breaking, and harming property); and high standards of discipline by the teacher.

Several other factors have been considered for estimating bullying victimisation risk, however, the results of these studies are less clear about the magnitude of their association

and the nature of their underlying mechanisms. These variables, which are the remaining factors considered in the present research, include academic performance, socioeconomic status, sex, video game use, social media use, and school climate. A review of the literature for each of these factors is found in the following chapter.

Victimisation in Aotearoa New Zealand

A 2007 literature review suggested that the scientific study of bullying was beginning to decline, as indicated by the decreasing rate of publications (Berger, 2007). Subsequently, the review suggests, this gap in science has created a vacuum ripe for speculation and superstition, sometimes resulting in detrimental effects. Such superstition is often presented in popular psychology books which are based on speculation rather than evidence (Cohen-Posey, 1995; Romain & Verick, 1997; Shapiro & Jankowski, 2005). Given the small amount of New Zealand based research on bullying, there is a risk that this superstition will fill the void.

Bullying in New Zealand has been under-researched compared to other developed countries, especially concerning risk factors for victimisation (Kljakovic et al., 2015). As a result, this country largely relies on literature created in other countries. This is a problem because cultural differences between countries can limit the degree to which international findings can be appropriately applied to the New Zealand context. With this country being a predominantly bicultural society, and becoming increasingly multicultural, it differs from other countries in many ways which may influence whether, and to what extent, various psychological and educational findings may generalise (Ward & Masgoret, 2018). Subsequently, more research is needed to understand the risk and protective factors of victimisation specific to bullying within New Zealand.

Another facet of bullying research which has also received little attention in New Zealand is students' attitudes towards bullying. Bullying is more likely to occur in schools when students view such acts as acceptable because their beliefs establish a school culture that supports bullying perpetration (Williams & Guerra, 2007). Hence, a popular intervention strategy involves changing students' normative attitudes towards bullying thereby making the school climate less tolerant of this behaviour (Olweus, 1994). This may be a promising area of inquiry and the present study aims to explore it in the New Zealand context.

The Present Study

The current research aimed to address the gaps in the literature around adolescent bullying victimisation risk and student attitudes towards bullying in Aotearoa New Zealand. I expected that my findings would mostly replicate what has previously been revealed in other countries. However, I anticipated some divergent findings due to the aforementioned unique social and cultural environment.

To achieve this aim, I analysed data collected by the Organisation for Economic Co-operation and Development (OECD) during their triennial Programme for International Student Assessment (PISA). The PISA is a standardised academic test which started in the year 2000 and now takes place in over 70 countries. It primarily assesses academic performance across these countries to provide a benchmark for between-country comparison based on the skills and knowledge which are believed to be essential for success in the world. The assessment, which is administered to students around 15-years-old, includes supplementary questionnaires which ask questions about the students' well-being and their appraisal of particular school characteristics. From the hundreds of variables made available in publicly accessible datasets, I chose a select few theoretically relevant variables which have previously been shown to be associated with bullying victimisation risk. Based on the

need to further explore the risk factors for bullying victimisation in New Zealand, I analysed the nine aforementioned risk factors which previous research suggests are associated with victimisation. Moreover, this study was strengthened by three unique elements.

Firstly, bullying studies in New Zealand have typically relied on samples of around 2,000 or fewer students when investigating school bullying (Adair et al., 2000; Kljakovic et al., 2015). Although some studies do report much larger samples, they have typically only been used for descriptive purposes, such as estimating prevalence rates (Education Review Office, 2019; Jang-Jones & McGregor, 2019), or examining a narrow domain of risk factors (e.g., school climate; Denny et al., 2014). In comparison, the present study examined a sample of over 6,000 students, of which around 4,000 were included in the final statistical analysis. The study also considered multiple potential risk factors.

Secondly, although the study was strengthened by involving a larger sample than is typically seen in New Zealand's bullying literature, this has implications for statistical analysis. Large samples are more prone to producing false-positive associations which cause problematic flow-on effects for researchers and practitioners who rely on the accurate interpretation of this data (Simmons et al., 2011). I aimed to mitigate this risk by developing inference criteria specific to the dataset rather than relying on traditional cut-offs for interpreting effect size. Subsequently, this enabled the detection and interpretation of both statistically significant and, more importantly, practically meaningful effects. This novel technique has been applied successfully in previous large scale sample analysis by Orben and Przybylski (2019) and is explored further in the following chapter.

Finally, to my knowledge, there have been no empirical studies conducted on the attitudes of New Zealand students towards bullying at school. Measuring bullying attitudes provides a unique perspective on the nature of the school environment. Understanding these

implicit beliefs is important because they may have a strong impact on the culture of the school environment and subsequently influence the likelihood of bullying being accepted. That being so, the present study analyses the PISA data collected about student attitudes towards bullying to determine what associations exist between them and the factors believed to be involved with victimisation risk. Understanding these associations might indicate what schools can do to encourage students to be more against bullying and therefore creating a safer school environment.

Theoretical Approach

As the literature on bullying has grown, the focus of researchers has expanded beyond understanding the individual characteristics of the bully and victim by accounting for more broad factors, such as social and cultural influences. A popular framework for understanding these influences is Bronfenbrenner's (1977) ecological systems theory (EST). According to EST, the individual is at the centre of a social system and is influenced both directly and indirectly by interactions with different levels of the system. These levels are arranged on a continuum from the micro-level (e.g., direct interaction with friends) to the macro-level (e.g., the culture of one's country). EST has been applied in several studies investigating bullying risk factors and appears to be a useful framework for answering questions related to this phenomenon (Ding et al., 2020; Espelage & Swearer, 2003; Migliaccio & Raskauskas, 2015). In the course of the present research, I use EST as a theoretical framework to understand the association between individual, interpersonal, and school-level characteristics on both victimisation risk and attitudes towards bullying. EST will be examined further in the following chapter.

Chapter 2: Literature Review

Bullying, or peer victimisation, is a form of aggression characterised by the intention to cause physical or psychological harm to another person on repeated occasions. To date, research has indicated that secondary school students in Aotearoa New Zealand are exposed to bullying at higher rates than students in other OECD countries (Jang-Jones & McGregor, 2019). What is more, the academic literature specific to bullying in this country is relatively nascent, particularly regarding the risk factors for victimisation. The present study aimed to address this gap in the literature.

Publicly available data collected during the 2018 Programme for International Student Assessment (PISA) allowed us to carry out a large-scale sample analysis. The present analysis considered which factors were associated with increased victimisation risk and, to further understand the school social environment, which factors were associated with students' attitudes towards bullying. This chapter reviews the current literature on the topic of school bullying, risk factors for victimisation, and student attitudes towards bullying in further detail.

Definitions and Concepts

Bullying involves more than just a bully and a victim, more than just benign push and shove, and more issues in its objective measurement than can be fully addressed in a Master's dissertation. The following subsections define bullying, review the prevalence and negative effects of bullying, explores the social environment which gives rise to it, and summarises what is currently known about the risk factors for victimisation.

Bullying

The subtle and overt forms of aggression which characterise bullying are not new phenomena (Espelage & Swearer, 2003). Despite its ubiquity in schools, bullying has only

attracted attention from the public, media, and academics since the 1980s (Phillips, 2007). This expansion is believed to have followed the suicide of three young Norwegian boys within the space of a week during 1982. Their deaths were attributed to severe school bullying and instigated considerable growth in public attention, academic research, and governmental policymaking around bullying (Olweus, 1993).

Definitions of bullying vary slightly throughout the literature, however, most of them resemble the definition provided by Olweus: "A student is being bullied or victimized when he or she is exposed, repeatedly and over time, to negative actions on the part of one or more other students" (1993, p. 9). Subsequent definitions tend to only vary semantically (Espelage & Swearer, 2003) and, despite being formulated over two decades ago, Olweus's definition of bullying, or variations thereof, are still applied in contemporary research (Gourneau, 2012; Hughes et al., 2009; Zhang et al., 2014).

There are three fundamental elements to the definition of bullying: (a) a deliberately harmful act; (b) repetition of the harmful behaviour over time; and (c) a power imbalance between bully and victim. These elements are consistently applied to research across international contexts (Nansel & Overpeck, 2003; Rigby, 2002). Importantly, these elements exclude behaviours that are considered aggression not intended to be harmful, for example, playful fighting, natured teasing, and rough and tumble play (Berger, 2007). This distinction prevents these beneficial forms of social development from being inadvertently attributed to bullying (Pellis & Pellis, 2007). The following definition from Nansel et al. (2001) provides a more detailed description of bullying whilst maintaining the ethos of Olweus's definition and including the three elements:

> A specific type of aggression in which (1) the behaviour is intended to harm or disturb, (2) the behaviour occurs repeatedly over time, and (3) there is an imbalance

> of power, with a more powerful person or group attacking a less powerful one. This asymmetry of power may be physical or psychological, and the aggressive behaviour may be verbal (e.g., name-calling, threats), physical (e.g., hitting), or psychological (e.g., rumours, shunning/exclusion). (p. 2094)

To unpack the nuances of this definition, I will explore the three elements individually. The first element, *a deliberately harmful act,* implies that the actions of the perpetrator are intended to inflict injury or discomfort upon another and involve a varying degree of premeditation (Olweus, 2013). This harmful intention is present in both direct and indirect forms of bullying. Direct bullying involves a face-to-face confrontation during which the bully will physically attack (by hitting, punching, kicking, spitting at, etc.) or verbally attacking (by insulting, name-calling, threatening, etc.) the victim. Indirect, or relational, bullying is more subtle and involves the tactful undoing of a victim's social connections in order to isolate them (Crick & Grotpeter, 1995). This typically involves acts such as defamation, rumour spreading, and intentional social exclusion. Indirect bullying is more sophisticated because, although it is easier to perpetrate, it is harder to detect and harder to defend against (Vaillancourt, 2005). In addition, these forms of bullying have individual effects on victims, demonstrated by research indicating that indirect bullying is uniquely predictive of immediate and future social and psychological maladjustment (Casey-Cannon et al., 2001; Espelage et al., 2004).

The second element, *repetition of behaviour over time,* distinguishes bullying from one-off acts of aggression and provides further evidence that the behaviour is deliberate (Olweus, 2013). Moreover, the measurement of this element varies considerably between studies. For example, one study required that bullying occur at least twice in the last month (Craig et al., 2009), while another study accepted a single occurrence in the previous 12 months (Adair et al., 2000). Such inconsistency, and large researcher degrees of freedom in

the measurement and definitional aspects of bullying, leads to substantial variation in the estimation of bullying prevalence rates. Although most studies only consider bullying when attacks occur frequently, less regular attacks can still have lasting impacts on the victim (Rigby, 1995). This is especially true in the case of cyber-bullying whereby the posting of harmful material to the internet can be accessed by others, potentially in perpetuity (Slonje & Smith, 2008).

Finally, bullying involves *a power imbalance* whereby the bully occupies a more dominant position than the victim. In adolescent students, bullies usually assert their dominance through superior physical strength (Hinduja & Patchin, 2009). Thus, due to the power differential, victims are less able to defend themselves or otherwise stop the bullying (Espelage & Swearer, 2010). Before an attack, bullies will "shop for victims" (Fried & Fried, 1996, p. 98) by carefully selecting students who are unlikely to threaten their dominance (Migliaccio & Raskauskas, 2015). These victimised students are typically situated low in the social hierarchy, are socially isolated, have poor social skills, and are subsequently less likely to have someone defend them during an attack (Pellegrini & Long, 2002). The ensuing attacks push the victim even lower down the hierarchy, increasing the power imbalance, and raising the likelihood of future attacks.

Cyber-Bullying

Similar to traditional bullying, cyber-bullying is defined as "willful and repeated harm inflicted through the use of computer…and other electronic devices" (Hinduja & Patchin, 2010, p. 208). Examples include public humiliation, destructive messages, gossip, slander, and other types of taunting through e-mail, chat rooms, blogs, instant messaging, and social networking sites (Patchin & Hinduja, 2006). Cyber-bullying can happen anywhere, be hard to avoid, difficult to defend against, and sometimes the anonymity afforded by the internet can

make it impossible to identify the perpetrator and hold them to account (Bilic et al., 2014). Moreover, it has been linked to several negative consequences synonymous with traditional victimisation: psychological distress, depression, anxiety, poor self-esteem, and suicidal ideation (Fisher et al., 2016; Kowalski et al., 2014; Nixon, 2014; Perren et al., 2010; Ybarra et al., 2006).

Research among New Zealand students indicates that students victimised by text-bullying (a form of cyber-bullying) were also likely to be involved in traditional forms of bullying (Marsh et al., 2010). Further studies indicate that experiencing multiple forms of bullying (traditional and cyber) may have a more detrimental effect compared to a single form (Waasdorp & Bradshaw, 2011b). Although traditional forms of bullying are the focus of the present research, given the findings of Marsh et al. (2010) and Waasdorp and Bradshaw (2011a), I would expect there to be an overlap between the risk factors for both traditional and cyber forms of victimisation.

Bullying Roles

Bullying is too often discussed in terms of a simple dichotomous relationship between bully and victim. This simplification ignores the multiplicity of social factors and social roles which contribute to a school's environment. Participation in bullying takes place on a continuum and includes roles such as bully, victim, bully-victim, bystander, and defender, all of which are discussed in the following subsections.

First, to contextualise the roles involved in bullying, it can be helpful to briefly review a more recently developed approach to bullying research. The evolutionary perspective posits that bullying is a form of antisocial behaviour that a student may use to pursue social and material goals (Ellis et al., 2016). These goals include the ability to control resources, preferential sexual access, and overall social status (also known as social standing, reputation,

and social dominance; Volk et al., 2014). This perspective is supported by strong empirical evidence, for example, access to sexual partners. Research indicates that bullies tend to start dating earlier than their peers, engage in first sexual intercourse earlier than their peers, report greater dating opportunities, are more likely to be in a dating relationship, and report significantly more sexual partners than uninvolved students (Connolly et al., 2000; Faris & Felmlee, 2011). Moreover, these findings remain consistent across age, sex, gender, self-reported attractiveness, and self-reported popularity. The notion that bullying is *goal-directed* may be best understood as a fourth element of the bullying definition and leads bullying to be classified as a proactive rather than reactive form of aggression (Volk et al., 2014). From this perspective, each of the following roles contributes to bullying as an evolutionary process.

In this pursuit of material or social goals, a *bully*, or *perpetrator,* establishes a more dominant social position by inflicting physical or psychological distress on others. Compared to non-bullies, bullies typically have a more positive view of violence, a higher opinion of themselves, and exhibit more aggressive behaviour towards others in general (Bjorkqvist et al., 1992; Lagerspetz et al., 1982; Olweus, 1973). They sometimes have high emotional instability (Tani et al., 2003), low empathy (Ang & Goh, 2010), and moral disengagement (the bypassing of moral reasoning which would normally inhibit harmful behaviour; Gini et al., 2014; Renati et al., 2012). Although bullies may obtain high social standing, they still commonly experience depression, familial conflict, attentional problems, a lack of commitment to school, and poor academic performance (Harachi et al., 2006). Bullies are sometimes misunderstood as stereotypically lacking social competence or having cognitive deficits. However, research indicates that they instead tend to be quite similar to the average student regarding their social skills, such as their theory of mind, cognitive empathy, leadership, social competence, and self-efficacy (Caravita et al., 2009). But what makes someone into a bully? Is it nature or nurture?

Several theories offer competing accounts of this issue. However, empirical evidence suggests that both genetic and environmental factors likely play a causal role (Ball et al., 2008). Twin studies indicate that around 61% of the variance contributing to bullying perpetration may be genetic (Ball et al., 2008). The remaining variance, attributable to environmental factors, can be explained using multiple theories. For example, cognitive-social learning theories suggest that aggression is learned and reinforced through behavioural modelling of family interactions which normalise the forceful interactions used to establish superior social standing (Bandura, 1986; Smith & Sharp, 1994).

By contrast, *victims* are typically characterised as anxious, withdrawn, quiet, and insecure (Bjorkqvist et al., 1992; Lagerspetz et al., 1982; Olweus, 1973). Moreover, victimisation is commonly associated with lower self-esteem, maladaptive social skills, and poorer academic performance than non-victims (Bilsky et al., 2013; Brewer & Kerslake, 2015; Low & Espelage, 2013; Reijntjes et al., 2010). Genetic influences have been found to account for 71% of individual differences related to victimisation (Ball et al., 2008) while the remaining variance is believed to be accounted for by environmental factors. More recently, it has been suggested that forming a more complete understanding of the causes of bullying relies on investigating the interaction between these individual characteristics and social and environmental factors (Espelage & Swearer, 2010; Espelage, 2014).

Of course, students don't always fit neatly into one of these dichotomous categories resulting in the need for another category of perpetrator—the *bully-victim*. The bully-victim switches between roles based on the circumstances they find themselves in. Research indicates that these bully-victims exhibit the highest amount of conduct, school, and peer relationship problems (Juvonen et al., 2003; Wolke & Samara, 2004) and often come from dysfunctional families (Smokowski & Kopasz, 2005). This term, which has become an axiom

of the bullying literature, accounts for the complex and varying nature of bullying roles (Ding et al., 2020; Swearer et al., 2001).

Perhaps the most understated and under-researched role is that of the *bystander.* Research suggests that 85% of bullying occurs in front of other people (Atlas & Pepler, 1998), however, interventions continually focus on the individuals directly involved (Carrera et al., 2011; Hamarus & Kaikkonen, 2008). A bully will adjust their behaviour based on the implicit or explicit feedback received from their peers, making the bystander an undeniable participant in the bullying interaction (Migliaccio & Raskauskas, 2015). The "uninvolved" bystander faces a dilemma: remain on the side-line and observe or intervene and risk becoming a victim themselves, therefore, sacrificing their position in the social hierarchy (Juvonen & Galván, 2008). Research indicates that in classrooms where victimisation is more common, students are more likely to believe that defending the victim would risk their well-being (Saarento et al., 2013). The former option can be interpreted by the bully as acceptance and perhaps even encouragement, creating an environment where bullying is reinforced (Migliaccio & Raskauskas, 2015). In light of this, research should investigate both risk factors for victimisation, and social factors which influence students' attitudes towards bullying and, in turn, cause them to be bystanders rather than defenders.

The Challenges of Measuring Bullying

The nature of bullying represents some challenges for the process of operationalisation and measurement. For example, how should the definition of bullying be operationalised? How should it be measured? And how can large samples be statistically analysed using robust methods? These questions are of fundamental importance because they inevitably affect the conclusions drawn from research, and the subsequent implications for intervention (Solberg & Olweus, 2003).

Definition Operationalisation. Bullying is distinguished from general aggression by its deliberateness, repetition, power differential, and goal-directedness (Bauman & Del Rio, 2006; Volk et al., 2014). Although the latter two elements have a high degree of consensus from researchers, there remains marked between-study variation in how repetition is operationalised. Variation in the criteria for repetition and frequency results in vastly different estimates of bullying prevalence rates. Broad operationalisations of this element, for example, being bullied anytime in the past 12 months (Adair et al., 2000), results in much higher estimates of bullying than more discrete timeframe operationalisations, for example, being bullied twice a month (Craig et al., 2009). To address this issue Ybarra et al. (2014) recommends that a frequency measure is embedded in the response options of the bullying questionnaire. The PISA items related to bullying analysed in the present research do this by asking students how often they have been the victim of specific bullying behaviour in the preceding 12 months.

Measurement Method. Several different methods have been used to measure bullying in schools: peer nomination, teacher report, ethnographic observation, and self-report surveys. Self-report is the most common method and involves presenting students with a roster of bullying behaviours and asking them to report the frequency in which they have been involved as a victim, perpetrator, or bystander/witness (Swearer & Doll, 2001). The benefit of this method is that it requires few resources and can be repeated over time at a low cost therefore allowing researchers to monitor bullying trends following an intervention.

Despite the popularity of self-report, there are conflicting opinions about whether students should respond based on objective or subjective definitions of bullying. In the former case, students would be provided with the aforementioned behavioural roster. In contrast, subjective self-report would simply ask the student to report how often they have been bullied. It has been argued that the latter method is less likely to prime a student's

response and therefore provide more accurate data (Espelage et al., 2001). However, research has indicated that when both approaches are used, there were no significant differences in the prevalence rates reported (Adair et al., 2000). It appears that even objectively defined surveys of bullying allow for an adequate degree of subjectivity to be applied. For example, self-report allows students to report victimisation when the behaviour might otherwise be perceived by teachers or observers as not meeting their threshold for severity to be considered bullying.

Large Sample Analysis. The collection of large samples provides the benefit of broad-scale testing of psychological theory. It has been a common occurrence in bullying research with some of the earliest studies collecting data from around 130,000 students (Olweus, 1993). Despite its benefits, large samples are innately susceptive to generating false positive (Type I error) and significant, but very small, effects (Ferguson, 2009; Orben & Przybylski, 2019; Sauer & Drummond, 2020). When analysing a large sample, the small co-variations between self-report items can generate evidence of an effect which is statistically significant by social science standards ($p < .05$) and is subsequently published as a meaningful result (Orben & Przybylski, 2019). Consequently, unjustified attention can sometimes be gained from the scientific community and the public for very small effects (Ferguson, 2018). Conclusions should be based on both statistical significance and truly meaningful effect sizes (American Psychological Association, 2010). Pre-registration and appropriate interpretations of effect sizes help mitigate this issue and are discussed further in Chapter 3: Method.

Prevalence

Estimating prevalence rates is an important function of bullying research because it increases our understanding of the problem's magnitude, allows assessment of interventions, and facilitates comparison between social and cultural groups. Although bullying is

experienced internationally, prevalence rates vary between country, gender, ethnicity, and type of bullying (Kljakovic et al., 2015). In light of this, it is important to investigate the risk factors for victimisations that are specific to Aotearoa New Zealand.

As previously discussed, the estimation of prevalence rates is largely affected by the criteria used to operationalise victimisation. To illustrate this, consider the two following studies. An early study of 130,000 Norwegian students reported that around 9% of students were victims of bullying when the threshold was set at being targeted at least two or three times a month (Olweus, 1993). By contrast, a 2004 study of 192 students in the rural United States reported that 82% of students had been targeted at least once in the past three months (Dulmus et al., 2004). Although the differences could be attributed to other factors, this example demonstrates that prevalence rates interpreted out of context can be misleading.

Bullying is a worldwide phenomenon. One study indicated that across 40 countries, around 13% of students aged 11 to 15-years-old had been bullied in the preceding two months (Craig et al., 2009). It has been suggested that New Zealand students experience bullying victimisation more frequently than other Western countries (Maharaj et al., 2000). Arguably, New Zealand's prevalence rates could be inflated by its tendency to measure victimisation based on broad criteria, for example, being bullied at any time in the preceding year (Kljakovic et al., 2015). However, despite this tendency, there does seem to be empirical support for Maharaj et al.'s (2000) claim.

Evidence that bullying is disproportionately high in Aotearoa New Zealand can be found in the 2014/2015 Trends in International Mathematics and Science Study (TIMSS). Of the 51 countries participating, New Zealand was found to have the highest rate of school bullying. Moreover, research by Adair et al. (2000) found that 11% of their sample (n = 2,066) reported being bullied once a week or more and 58% had been victimised at least once

in the past year. Using a larger sample of high school students, 2019 research found that 31% of high school students had been targeted at their current school (Education Review Office, 2019). Finally, data from the 2018 PISA indicated that 15% of Aotearoa New Zealand students are bullied frequently; the OECD average was 8% (Jang-Jones & McGregor, 2019). The notion that bullying is more common in Aotearoa New Zealand appears well supported, however, the reasons for this are far from being well understood.

Effects of Bullying

Bullying victimisation has consistently been associated with decrements in students' mental and physical health, and long-term life outcomes (Schoeler et al., 2018). Although these associations are largely derived from correlational data and do not imply causation, researchers have developed psychological theory in an attempt to understand the role bullying plays in this relationship. Gilbert (1992) proposed that the relationship between victimisation and its consequences is bidirectional. Thus, a pre-disposing characteristic, such as social isolation (Bolivin & Hymel, 1997), draws the attention of a bully and, following an attack, isolates them further, therefore increasing their vulnerability. Gilbert's theory is supported empirically by a 2010 meta-analysis which found a bidirectional relationship between victimisation and internalising problems, such as depression, anxiety, withdrawal, and avoidance (Reijntjes et al., 2010). Another example of this relationship being self-reinforcing is that depressive symptoms (a common consequence of victimisation) lead to less pro-social behaviour and subsequently causes increased social isolation (Hodges et al., 1999; Hodges & Perry, 1999). In essence, the association between risk factors and outcomes seems to be reciprocal: internalising symptoms both increase the risk of victimisation and increase as a result of victimisation (Hodges et al., 1999; Hodges & Perry, 1999; Olweus, 1993).

Research into the effects of bullying has revealed an association with various markers of mental ill-health. In the most severe cases, it has been linked to major depression, suicidal ideation, and both attempted and completed suicide (Kim et al., 2004; Kljakovic et al., 2015). Aotearoa New Zealand's disproportionately high bullying rates may explain, to some degree, its disproportionately high youth suicide rate (World Health Organisation, 1998). Moreover, victimisation has been associated with anxiety, loneliness, lower global and social self-esteem, stress, hopelessness, social isolation, and social anxiety (Coggan et al., 2003; Hawker & Boulton, 2000; Juvonen et al., 2003; Rigby, 1995). The effect of bullying on internalising symptoms, such as depression and anxiety (Hamilton et al., 2008; Nansel et al., 2001; O'Moore & Kirkham, 2001) may arise from increased emotional dysregulation, withdrawal from social contact, and altered stress responses following an attack (Hamilton et al., 2008; Nansel et al., 2001; O'Moore & Kirkham, 2001). Victimisation is also associated with other psychopathological symptoms, such as psychotic and borderline personality symptoms (Schreier et al., 2009; Wolke et al., 2012). Finally, some research suggests there is a relationship between victimisation and aggression, which is why some victims retaliate (become reactively aggressive), ergo the *bully-victim* (Pellegrini, 1998).

Victimisation may also contribute to poor physical health (Gruber & Fineran, 2008) resulting in increased absenteeism (Gruber & Fineran, 2008). A 1996 study revealed that primary school students experiencing victimisation had increased complaints of headaches and stomach aches (Williams et al., 1996). Biological evidence indicates that physiological functioning may be influenced by victimisation, as demonstrated by altered cortisol responses subsequently interfering with the body's immune response (Segerstrom & Miller, 2004). Arguably, students may report sickness deceivingly to avoid school bullies, however, the biological evidence provides a legitimate explanation for increased physical complaints and subsequent absenteeism. Associations have also been found with externalising symptoms

which may contribute to poor physical health, such as substance abuse and conduct problems (Eastman et al., 2018; Evans et al., 2018; Kretschmer et al., 2018; Segerstrom & Miller, 2004). Moreover, conduct problems, such as bullying other students, increase considerably when the original victim (and now bully-victim) is exposed to multiple forms of victimisation, for example physical, verbal, relational, and gossip (Raskauskas et al., 2006). As such, understanding the risk factors for victimisation is an important area of research for reducing the amount of harm caused by this form of aggression.

Ecological Systems Theory

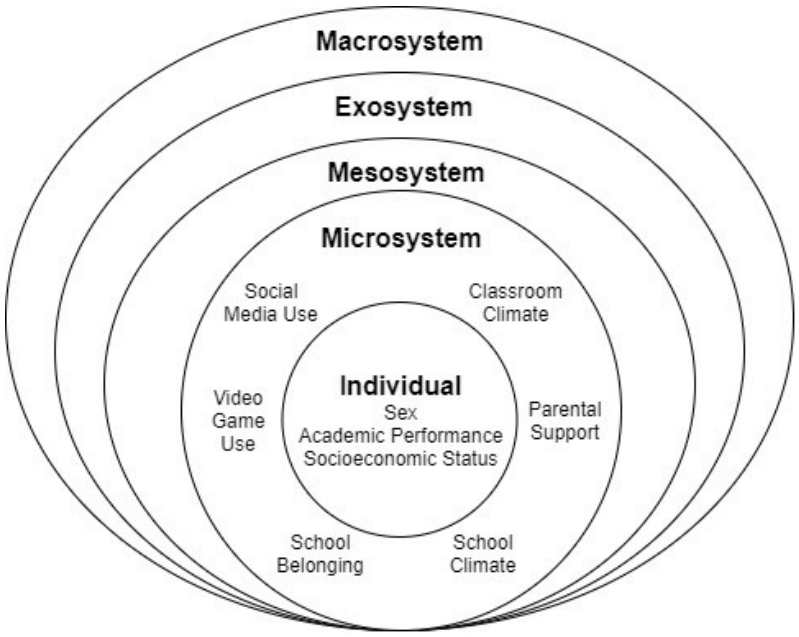
Understanding risk in bullying victimisation has traditionally relied on investigating the individual characteristics of bullies and victims in order to identify their respective risk and protective factors (Carrera et al., 2011; Hamarus & Kaikkonen, 2008). Examples of these factors include particular personality traits, internalising symptoms, and anti-social tendencies. This tendency to focus on the individual subsequently constrains the consideration of other factors which may contribute to victimisation risk (Carrera et al., 2011). Moreover, individual-focused interventions have subsequently become the norm, for example, addressing bullies' empathy and self-control (Unnever & Cornell, 2004) or educating victims on how to respond to bullies (Hazler & Carney, 2002; Howard et al., 2001; Ttofi et al., 2008; Whitted & Dupper, 2005).

To account for a broader scope of social and cultural factors, some researchers have begun investigating bullying using Bronfenbrenner's (1997) ecological systems theory (EST; Cook et al., 2010; Cross et al., 2015; Ding et al., 2020; Espelage & Swearer, 2003; Guo, 2016; Hong & Espelage, 2012; Hong et al., 2016; Migliaccio & Raskauskas, 2015; Zych et al., 2019). Similarly, the present research approaches bullying from the ecological perspective by applying the same framework. This theory acknowledges the potential

influence of factors beyond the individual, such as social and cultural influences. Fundamentally, bullying is a group process, and it should be studied as such; this is what EST facilitates (Espelage & Swearer, 2010; Espelage, 2014).

Figure 1

Ecological Systems Theory



Note. Bronfenbrenner's ecological systems theory including the risk factors analysed in the present study. Adapted from "Psychological development in racially and ethnically diverse youth: Conceptual and methodological challenges in the 21st Century", by D. P. Swanson, M. B. Spencer, V. Harpalani, D. Dupree, and E. Noll, 2003, *Development and Psychology, 15*(3), p. 751. Copyright 2003 by the Cambridge University Press.

From the ecological systems perspective, the development of an individual involves the progressive accommodation of the changing environment in which they live (Bronfenbrenner, 1977). This accommodation process takes place in both immediate settings

(peer interactions) and broader social contexts (school environment). As such, the individual exists and interacts with multiple levels of social nesting (Karcher, 2004; Osborne, 2004). These levels are described as follows.

The microsystem is where the individual directly interacts with an immediate setting or physical space where they act, for example, home, classroom, or sports team. When two or more of these microsystems interact, for example, the relationship between home and school (such as parental involvement in their child's school), they are categorised as part of the mesosystem. Mesosystems have an effect on the developing individual given that the interaction between the microsystems transforms the individual's ecology. Settings which affect the individual but do not involve direct contact with them make up the exosystem; for example, teachers taking professional development courses to reduce school bullying. Finally, the macrosystem is the cultural blueprint which affects social and political functions on a large scale (Bronfenbrenner, 1977). Some macrosystems exist as laws and social policy, however, most macrosystems are informal and implicit and are propagated through norms, values, beliefs, and customs.

As an approach to studying bullying, EST has received support through empirical research, meta-analyses, and narrative reviews (Cook et al., 2010; Cross et al., 2015; Guo, 2016; Hong et al., 2016; Zych et al., 2018). Overall, this research suggests that influences from a variety of social contexts (e.g., school, home, peer groups) are associated bullying involvement as both victims and perpetrators. EST recognises that actions and events are precipitated by social interactions which take place through the various systems. Consequently, it provides a practical framework for guiding the present research by expanding the traditional focus on individual characteristics and instead accounting for a wider variety of social influences. This historic tendency is important to address as given the

individual approach has failed to account for potentially important risk factors embedded in one's social and cultural environment.

Bullying Attitudes

Research of bullying has tended to focus on the characteristics of bullies and victims and subsequently, less is known about roles such as the defender and bystander (Gini et al., 2008). To understand the motivation of students who are typically considered uninvolved, the present study considers the attitudes of students towards bullying. Attitudes represent the norms of the environment or, in other words, the behaviours which are commonly carried out, approved of, or sanctioned by others (Saarento et al., 2013). Consequently, it is of interest to bullying researchers to understand the factors which influence the formation of these attitudes and whether interventions can be made to create a safer school environment.

A large-scale 2015 study of New Zealand adolescents (n = 9,107) revealed that schools where students took an active role in stopping bullying (a clear demonstration of anti-bullying attitudes), less bullying was reported among students (Kljakovic et al., 2015). Despite this study, research of the individual and social factors which precipitate bullying attitudes has not received substantive attention in the academic literature.

Before investigating bullying attitudes, the relationship between attitudes and observable behaviour bears consideration. The theory of planned behaviour proposes that behaviour can be predicted by an individual's attitude towards it, perceived behavioural control, and subjective norms (Azjen, 1991). Accordingly, one can infer that in schools where bullying is more accepted, students may be willing to put their anti-bullying attitudes aside to support the school norm and reduce the risk of being victimised themselves (Stevens et al., 2000). When more students exhibit stronger anti-bullying attitudes, the school climate becomes collectively less tolerant of bullying, and people may be willing to intervene.

Students' attitudes impact several systems in the ecological model, in particular, the macrosystem which includes the culture of the school and school climate.

To date, research suggests that bullying-related attitudes are significantly associated with the role the participant takes in a bullying interaction, such as victim, bully, or bystander (Salmivalli & Voeten, 2004). Moreover, students with more pro-bullying attitudes are more likely to perpetrate bullying and less likely to intervene (or report it) when they are witness to attacks as per the theory of planned behaviour (Boulton et al., 1999; Rigby, 2005; Salmivalli & Voeten, 2004; van Goethem et al., 2010). Interestingly, research also indicates that although most peer groups do not condone bullying, few are willing to intervene when it occurs (Pepler et al., 2004; Stevens et al., 2000).

So, although there is speculation about the relationship between attitudes and behaviour, the question remains: Which factors in the individual's environment are associated with the production of these attitudes? The present study aims to address this gap in the literature by investigating how risk factors for victimisation might also be related to anti-bullying attitudes. This type of exploration may produce practical implications for the intervention strategies which focus on creating a school environment with low tolerance for bullying (Olweus & Limber, 1999; Orpinas et al., 2003).

Risk Factors for Victimisation

Despite bullying having been well researched with respect to its prevalence and negative consequences, there remains a paucity of research concerning the risk factors associated with victimisation (Berger, 2007). In the following sections, I introduce nine risk factors analysed in the present study along with a review of previous research about their relationship with victimisation.

Sex

The relationship between sex, gender, and psychological phenomena has been the focus of much scientific enquiry. Its relationship with bullying is of particular interest as findings are somewhat conflicting and ambiguous. One source of this ambiguity stems from the usage of the terms *sex* and *gender*. Although they are often used interchangeably in the public sphere, academics make a clear distinction between them. Sex is a biological characteristic which is ascribed by anatomy, hormones, and physiology (West & Zimmerman, 1987); individuals are most often categorised dichotomously as male or female. By comparison, gender is a social identity made up of attitudes, feelings, and behaviours that one's culture has ascribed to biological sex (American Psychological Association, 2012). In the current study, students were only asked about their sex, and therefore, the statistical analysis was constrained to only analysing this biological characteristic.

Although several previous studies have investigated the relationship between sex and bullying roles, the findings are inconsistent. For example, research has demonstrated, that being female is both significantly protective of (Lam et al., 2014) and a significant risk factor for bullying victimisation (Low & Espelage, 2013). Studies involving children indicate that males tend to be more likely to be bullies whereas females are more often victims (Rodkin & Berger, 2009). However, this characterisation may be less accurate in adolescents as both sexes tend to engage in more indirect, and less direct, forms of bullying as they age (Espelage et al., 2004).

Regarding the type of bullying experienced, some research suggests that males are more likely to perpetrate and be the victim of direct forms of bullying, while females tend to be more likely to perpetrate and be the victim of indirect forms of bullying (Anderson & Bushman, 2001; Li, 2006; Whitney & Smith, 1993). Despite these findings, in a 2009 meta-analysis, researchers found that this sex-related pattern was not consistent across students in

the 40 countries analysed (Craig et al., 2009). Moreover, the researchers suggested that cultural differences may be underlying these inconsistent findings.

In Aotearoa New Zealand, there remains a lack of research to draw definitive conclusions about the association with sex. One study (n = 1,774) found that there were no significant differences between males and females for total rates of victimisation (Kljakovic et al., 2015). This may be because research has shown that boys experienced more direct victimisation and girls experienced more indirect victimisation (Adair et al., 2000). More research is needed to replicate and understand these findings.

Academic Performance

A student's learning is optimised when the school environment is nurturing and induces feelings of safety (Baren & Qing, 2007). Unfortunately, peer victimisation threatens students' right to safety and causes stress and embarrassment. Victims are denied access to a safe and productive learning environment (Raskauskas et al., 2010). Research investigating the relationship between victimisation and academic performance suggests there is a bidirectional effect whereby poor academic performance both causes victimisation and can be the result of victimisation.

Although both positive and negative associations have been found between academic performance and victimisation, the evidence is overwhelmingly in support of the latter (Beran, 2008; Bishop et al., 2004; Cook et al., 2010; Eisenberg et al., 2003; Holt et al., 2007; Kowalski et al., 2014; Nakamoto & Schwartz, 2010; Ybarra et al., 2007; Zych et al., 2018). This relationship appears consistently using both objective and subjective measures of academic performance (Spriggs et al., 2007). Earlier research suggests that victimisation is associated with increased absenteeism, subsequently limiting one's time in class and

therefore academic progression (Rigby, 1995). I therefore expected to see a similar trend in the present study given the sizeable amount of evidence already gathered.

Socioeconomic Status

A review of the literature on socioeconomic status (SES) reveals some debate among scholars about which factors ought to measure it. While some argue it should represent social class, others suggest that it should represent one's economic position (Bradley & Corwyn, 2002). The consensus appears to be that SES should represent three forms of capital: financial, human, and social capital. Importantly, SES is a component of a student's social ecology because it influences one's family, school, and peer relationships. Subsequently, it may have an important role to play in bullying victimisation.

Research into the relationship between SES and bullying has demonstrated that students from lower socioeconomic backgrounds are at increased risk of being victimised (Fu et al., 2013; Jansen et al., 2012; Khamis, 2015; Tippett & Wolke, 2014). This relationship remains consistent when different methods of measuring SES are used, such as family income (Jansen et al., 2012) and student self-report (Fu et al., 2013; Khamis, 2015). Research indicates that low SES is associated with less intellectual resources, such as knowledge, values, social skills, and coping strategies, which subsequently increases a student's vulnerability and decreases their ability to cope (Braveman et al., 2005). Additionally, research has also shown that children from low SES families are more likely to encounter adverse home environments marked by harsh punishment, authoritarian parenting, and violence, all of which interfere with the development of adaptive social skills (Bolger et al., 1998; Salzinger et al., 2002).

The Ministry of Education (2015) report that, according to 2014/2015 Trends in International Mathematics and Science Study (TIMMS) data, students at economically

disadvantaged schools experience more victimisation than those at less disadvantaged schools. Beyond this, to my knowledge, there is only one other study which has examined the association between SES and bullying victimisation in Aotearoa New Zealand. Using a sample of 78 schools, Kljakovic et al. (2015) examined the relationship between school decile and self-reported victimisation. School decile indicates the proportion of students in a school who reside in low socio-economic communities; a loose proxy for SES (Ministry of Education, 2014). They found that school decile did not contribute to the variance in victimisation risk. However, they also considered that school decile might not be sensitive enough to account for the complexity of SES disparity. In both of these studies, SES is being measured at the school level rather than the individual level. However, as the present study employs an individual measure of SES, consistent with international research, I expected lower SES to be associated with more frequent victimisation.

Parental Support

Before children begin schooling, they are socialised by the relationships and experiences within their family. These influences can affect their ability to adapt to new social environments, for example, school, and may impact their vulnerability to victimisation (Bowlby, 1958; Ladd, 1992). Parental involvement is an inherent aspect of the familial environment and, as the following review suggests, may have a critical role to play in one's risk for victimisation.

The importance of parental involvement was demonstrated in a meta-analysis by investigating specific parenting characteristics and their association with bullying victimisation (Lereya et al., 2013). An examination of 70 studies revealed that parental support was the most protective factor against bullying victimisation (Lereya et al., 2013). Parental support is typified by high supervision and involvement, warmth and affection, and

the absence of maladaptive parenting such as overprotection, abuse, and neglect. Researchers suggest that this type of support strengthens a child's self-concept and promotes the development of adaptive coping strategies which increase resilience and reduce the likelihood of victimisation (Kochenderfer-Ladd & Skinner, 2003; Rutter, 1987). By contrast, overprotective parenting was related to increased risk of victimisation which may be caused by the child failing to develop autonomy and assertive social skills (Bowers et al., 1992; Finnegan et al., 1998; Olweus, 1993). Moreover, child maltreatment, neglect, and deprivation have all been shown to affect stress reactions in children which may contribute to increased vulnerability at school (Belsky & de Haan, 2011).

Belonging

Within the social ecology of a school, students organise themselves into an implicit social hierarchy. To date, research suggests that one's position in this hierarchy may have a noticeable influence on victimisation risk. The social hierarchy has been characterised as being based on two types of popularity: sociometric popularity and actual popularity (Migliaccio & Raskauskas, 2015; Rodkin et al., 2000). A student gains sociometric popularity by exerting power over weaker students and therefore asserting their dominance (Adler & Adler, 1998). This is the familiar behavioural pattern of a typical bully. But, although a bully may climb the social hierarchy, it does not confer that they are well-liked by other students. Instead, they are often avoided out of fear and dislike (Juvonen et al., 2003).

By contrast, actual popularity is gained by the student who uses prosocial behaviour to climb the hierarchy and therefore increasing their actual likability. These behaviours include friendly relationship-building, co-operation, and reciprocation (Hawley, 1999). The result of this hierarchical structuring is that some students inevitably sink to the bottom where they become socially isolated, disconnected from school, and more vulnerable to

victimisation (Reijntjes et al., 2010). Furthermore, biological evidence provides further support for this observation by indicating that bullied children show increased blood-markers of systemic inflammation proportional to the number of times they are bullied (Kaptoge et al., 2010).

Belonging describes the degree to which a student feels socially connected at school by their belief that adults and peers in the school care about their learning and themselves as people. According to the theory of social hierarchies, I would expect that students who report less belonging at school, or feeling less connected to school, are more likely to become victims of bullying. To date, this is what the research suggests (Carney et al., 2018; Duggins et al., 2016). Studies also indicate that victims score significantly lower in their perceptions of belonging compared to non-victims (Arango et al., 2018; Liu et al., 2020). Once again, the relationship between belonging and victimisation appears to be bidirectional given that ostracism is both a risk factor, and a consequence of, victimisation (Reijntjes et al., 2010).

Video Game Use

Another microsystem influence which may assist in identifying risk for victimisation is the use of video games. Engagement in gaming is increasing with a 2015 study indicating that 91% of boys aged 13–17 owned or had access to a gaming console (Lenhart, Duggan, et al., 2015; McInroy & Mishna, 2017). Previous research has demonstrated that increased gaming is related to increased victimisation in both traditional and cyber forms (Chang et al., 2015; Lenhart, Smith, et al., 2015). Having said this, the mechanism underlying this relationship is not completely understood and may be attributable to multiple explanations.

Firstly, several studies suggest that victims of bullying may game as a behavioural response to the stress and adversity they face from being targeted (Hsieh et al., 2016; Jun & Choi, 2015; Snodgrass et al., 2014). Gaming may allow these students to avoid traditional

victimisation, cope with its negative consequences, and meet unfulfilled psychological needs (Snodgrass et al., 2014; Swickert et al., 2002). This coping behaviour has been associated with decreases in academic performance, psychosocial maladjustment, and increased physical problems (Lobel et al., 2014; Van Rooij et al., 2011; Yu et al., 2013). Moreover, the retreat to gaming prevents the victimised student from learning skills that might allow them to withstand and even overcome the bullying (Rostad et al., 2018). Subsequently, their risk of future victimisation is increased and the cycle repeats.

A second explanation for this relationship is that increased video game use, especially online gaming, increases one's opportunity for exposure to cyber-bullies. Research by Chang et al. (2015) found that an increase in online game use among 15-year-olds predicted an increase in cyberbullying victimisation. Similar findings were revealed by Rostad et al. (2018) who found that five hours or more of daily video game use was associated with increased victimisation risk. Moreover, Lam et al. (2013) found that exposure to video games, especially violent ones, increased the likelihood of cyber-bullying perpetration and victimisation. Based on this information, I expected that increased video game use would be associated with increased bullying victimisation, especially in indirect forms where instances of cyberbullying are more likely to be detected.

Social Media Use

Similar to video gaming, the use of social media has increased considerably and is now an inextricable component of the modern social environment. Research indicates that 73% of American students aged 13 to 17-years-old have access to a smartphone, and 87% have access to a computer (Lenhart, 2005). Moreover, 33% of teenagers in Aotearoa New Zealand spend four or more hours online on an average day (Netsafe, 2018). Despite its

widespread influence, researchers are yet to formulate a complete understanding of social media's effects on health and wellbeing.

On one hand, social media increases social capital (Ellison et al., 2007), connects otherwise ostracised and marginalised groups (Reid Chassiakos et al., 2016), and promotes the practice of self-presentation and self-disclosure (Valkenburg & Peter, 2011); both hallmarks of adaptive and pro-social behaviour. On the other hand, it has been associated with an increased risk of cyber-bullying, social isolation, and exploitation (Juvonen & Gross, 2008; Kraut et al., 1998; McPherson et al., 2006; Milani et al., 2009). The true effect probably lies somewhere between these extremes (Bryant et al., 2006). However, social media's influence on victimisation raises well-founded concern.

Given that a considerable amount of cyberbullying takes place on social media, I expect that increased social media use is associated with increased bullying victimisation. This type of victimisation can be in the form of harassing messages, slanderous discussions in chat rooms, or posting of obscene photos on social networking sites, to name a few (Patchin & Hinduja, 2006; Willard, 2005). Moreover, similar to increases in video game use, increased social media use can impair the students' mental health and subsequently increase their vulnerability to victimisation. For example, increased social media use has been associated with increases in internalising symptoms, such as depression, anxiety, and lower self-esteem (Woods & Scott, 2016). These symptoms have also been linked to an increased risk of victimisation in students (Reijntjes et al., 2010).

Classroom Climate

Because students spend a large amount of time in class each day, the classroom environment should mitigate bullying so that learning and well-being can be maximised. A productive and safe classroom is characterised by structure, predictability, mutual respect

among students, and an absence of harmful behaviours (Payne, 1999). According to ecological systems theory, the classroom is one of the microsystems which influence a student. This is an important area of focus given that between-classroom variance in bullying victimisation has been reported to be between 4% and 12% (Kärnä et al., 2011). Therefore, of the many approaches to reducing bullying, addressing classroom climate might be particularly promising (Harvey & Evans, 2003).

A specific feature of the classroom climate which might be involved in reducing bullying is classroom order and discipline. A poor disciplinary environment where rules are unclear and there is a lack of enforcement can promote a culture of bullying (Koth et al., 2008; Låftman et al., 2017; Ma, 2001, 2002). Research indicates that when there is an increased amount of disorder in the class environment, victimisation also increases (Ma, 2002; Modin et al., 2018). By contrast, when classroom behaviour is more closely monitored, the amount of bullying decreases (Roland & Galloway, 2002). A 2010 study of Aotearoa New Zealand students found that an improved classroom climate was related to increased prosocial behaviour reported by students (Raskauskas et al., 2010). It appears that teachers who maintain classroom discipline and set an anti-bullying tone in class create an environment of respect, control, and order therefore positively influencing the classroom ecology (Olweus, 1993; Roland & Galloway, 2002).

School Climate

Although the between-classroom variance in victimisation has been demonstrated, research indicates that between-school variance is even greater: between 8% and 15% (Khoury-Kassabri et al., 2004). Despite this, researchers agree that little attention has been paid to the role of school climate as a contributor to student aggression and bullying (Cassidy, 2009; Chan, 2006; Hepburn, 1997; You et al., 2008). The school climate constitutes a

macrosystem influence which affects an individual student indirectly by the norms and attitudes shared by the school as a collective group. A school climate in which bullying is implicitly supported puts victims at a considerable disadvantage because they are up against the individual bullies and the culture of the entire school.

The formation of a school's climate can be explained, in some part, by social dominance theory (SDT). SDT suggests that during adolescence students form new social relationships, and they will do so by competing for access to peers using both coercive and co-operative strategies (Neal, 2010). Subsequently, they will form social hierarchies (as described earlier), sometimes resorting to bullying to attain a higher position in the hierarchy and more access to peers (Adler et al., 1992; Espelage & Swearer, 2003). Schools, where this type of aggressive behaviour is more common, are marked by higher rates of bullying and increased school competitiveness reported by students (Rodkin et al., 2000). Also, research indicates that schools which have high-conflict and poor organisation are likely to see increased bullying behaviour than low-conflict, harmonious schools (Kasen et al., 2004).

Researchers have reported that a large proportion of bullying occurs outside the classroom, for example, in a United States sample 43% of students reported being targeted in the hallway or stairwell, and 27% reported being targeted in the cafeteria (National Centre for Education Statistics, 2018). Subsequently, it may be useful to consider the macrosystem influence of school climate which, hypothetically, has a larger scale influence on student behaviour. In addition to the empirical evidence already mentioned, many effective bullying prevention programmes encourage students to help others and form positive peer support systems, creating an environment of acceptance, belonging, trust, and subsequent co-operation (Olweus, 1991; Olweus & Limber, 1999).

Summary

Research of the risk factors associated with bullying victimisation has increased substantially in the last 50 years, however, this expansion of scientific enquiry has not been equally reflected in the Aotearoa New Zealand context. Due to this country's disproportionate rates of school bullying, it would benefit from developing a more accurate understanding of the risk factors specific to its social environment. A growing body of Aotearoa New Zealand research will assist in designing and implementing effective, evidence-based, and culturally appropriate intervention strategies. The present study aims to address this gap in the bullying literature by examining the risk factors for school bullying victimisation and the factors associated with anti-bullying attitudes in Aotearoa New Zealand adolescents.

Hypotheses

Based on the literature review, the present study investigated 20 hypotheses. The hypotheses are presented below in two sections; the first section relates to risk factors for bullying victimisation:

1.1. Being a male will be associated with greater physical bullying victimisation than female in the past 12 months. Being female will be associated with greater relational victimisation than male in the past 12 months.

1.2. There will be a negative relationship between Economic, Social, and Cultural Status Index (ESCS) and both physical and relational bullying victimisation in the past 12 months. In other words, higher ESCS will be associated with lower victimisation.

1.3. There will be a negative relationship between parental support and both physical and relational bullying victimisation in the past 12 months.

1.4. There will be a negative relationship between the student's classroom climate (the amount of behavioural order/teacher control) and both physical and relational bullying victimisation in the past 12 months.

1.5. There will be a positive relationship between the students' video game use and both physical and relational bullying victimisation in the past 12 months.

1.6. There will be a negative relationship between the students' academic performance (on mathematics, reading, and science) and both physical and relational bullying victimisation in the past 12 months.

1.7. There will be a negative relationship between the students' sense of belongingness at school and both physical and relational bullying victimisation in the past 12 months.

1.8. There will be a positive relationship between the students' social media use and both physical and relational bullying victimisation in the past 12 months.

1.9. There will be a positive relationship between a competitive school climate and both physical and relational bullying victimisation in the past 12 months.

1.10. There will be a negative relationship between a co-operative school climate and both physical and relational bullying victimisation in the past 12 months.

The second set of hypotheses are related to the factors believed to be associated with anti-bullying attitudes:

2.1 Males will hold lower anti-bullying attitudes than females in the past 12 months.

2.2 The Economic, Social, and Cultural Status Index (ESCS) will be positively correlated with anti-bullying attitudes.

2.3 There will be a positive relationship between parental support and agreement with anti-bullying attitudes.

2.4 There will be a positive relationship between the students' classroom climate (the amount of behavioural order/teacher control) and agreement with anti-bullying attitudes.

2.5 There will be a positive relationship between the students' video game use and agreement with anti-bullying attitudes.

2.6 There will be a positive relationship between the students' academic performance (on mathematics, reading, and science) and agreement with anti-bullying attitudes.

2.7 There will be a positive relationship between the students' sense of belongingness at school and agreement with anti-bullying attitudes.

2.8 There will be a negative relationship between the students' social media use and agreement with anti-bullying attitudes.

2.9 There will be a negative relationship between a competitive school climate and agreement with anti-bullying attitudes.

2.10 There will be a positive relationship between a co-operative school climate and agreement with anti-bullying attitudes.

Chapter 3: Method

Risk factors for bullying victimisation have been researched more extensively in international settings, however, there remains a paucity of research in the Aotearoa New Zealand context, particularly concerning large samples. The present study aimed to estimate the risk factors for bullying victimisation and predictors of bullying attitudes using a nationally representative sample of 15-year-old secondary school students. The current chapter outlines the method used to achieve this aim and is presented in five sections: pre-registration, participants, instruments, procedure, and data analysis.

Pre-Registration

The present study was pre-registered using the Open Science Framework website (www.osf.io). The pre-registration document outlined the confirmatory analyses I intended to conduct and included my hypotheses and intended data analysis method. Furthermore, I disclosed that the dataset compendium had been accessed (before registration) which included descriptive statistics relating to the variables being analysed. These statistics were only briefly reviewed, and no inferential data analysis was conducted on the dataset prior to the submission of the pre-registration document.

Included in the pre-registration was a sensitivity power analysis using G*Power version 3.1.9.6 (Faul et al., 2007). Initial calculations of statistical power were made based on a sample size of 6,713 ($\alpha = .05$) and estimated subsequent analyses would be capable of detecting a small effect size, $f^2 = .0036$. According to Cohen (1988), an f^2 value below .02 is small. Note, the actual size of the original sample was 6,173 and the initial power analysis was therefore incorrect. Despite this, the correct value would have produced an almost identical effect size, $f^2 = .0039$). The final sample size used in the study, following removal of

some cases, was 4,137 which, when analysed using G*Power, would be capable of detecting an effect as small as $f^2 = .0059$.

Participants

The current section describes the sampling methods used in the PISA, exclusion criteria, response rate, and demographic statistics of the final sample. Much of the following information was obtained from the PISA technical report which is openly available on the PISA website (OECD, 2018b).

Dataset

Pre-existing data was selected from the OECD's Programme for International Student Assessment (PISA), which is a triennial survey designed to measure academic performance in schools around the world. In 2018, 79 countries took part, including all 37 OECD member countries (Education Counts, 2018). The data obtained is made openly available on the PISA website and was downloaded for use in the present study on 10 November 2020.

Target Population

The target population for the present study were students in New Zealand high schools. The PISA surveys 15-year-old students, therefore providing an appropriate sample of the target population. The specific age range for PISA eligibility is between 15 years and 3 months to 16 years and 2 months old, with one-month variance allowed (OECD, 2018c).

School Sampling

PISA implemented a stratified sampling technique to obtain representative samples of students in each test country. Stratified sampling improves the sample design by partitioning the population into groups according to stratification variables and ensuring all parts of a population are represented in the final sample (OECD, 2018c).

School sampling involved two stages. Firstly, a list of all New Zealand schools with PISA-eligible students was created and was known as the sampling frame. Secondly, probabilities were assigned to each school based on the number of PISA-eligible students using a technique called probability proportional to size (PPS). Thirdly, schools were stratified using explicit and implicit stratum to further improve sample-based estimates. Explicitly, schools were grouped by size at three levels (small < 25; medium 25–150; large > 150) and each level assigned a two-digit unique identifier. Next, eligible students within each explicit stratum were identified and assigned a three-digit unique identifier. Implicit strata were used to assign schools to four mutually exclusive groups with multiple levels. These included decile (1–3, 4–7, 8–10, and independent schools[1]); funding (private or public); gender composition (boys only, girls only, and co-educational); and urbanisation (urban or rural). Following stratification, 208 schools were randomly selected to make up the final Aotearoa New Zealand sample (Avvisati et al., 2019).

Student Sampling

Once schools had been selected, they were contacted and asked to produce a list of PISA-eligible students. Students from the list were then randomly selected to make up the target cluster size (TCS) of 42. If a school had less than 42 eligible students, all were selected. A within school response rate of 50% was required for a school's data to be included in the programme. If they failed to generate this, a replacement school was contacted to take their place. Individual countries were required to obtain an 85% school response rate and replacement schools were used to make up the difference where necessary (OECD, 2018c).

[1] Although the New Zealand decile system implies ten levels of school socioeconomic position, the PISA data only reports this data in the four quartiles mentioned above.

Exclusion Criteria

Exclusion took place at both the student and school level. International PISA guidelines required that students be excluded if they met any of the following criteria: students who had a documented mental or emotional disability (intellectually disabled), students who are physically disabled in a way that prevents them from being validly assessed, students with insufficient experience in the assessment language (English), students educated in a language of instruction for which there were no test materials available, and students who were not assessable for other agreed-upon reasons by the international contractor (OECD, 2018c). Schools attended only by students who fit the above criteria were considered a school-level exclusion. Further guidelines imposed by PISA ensured that the overall exclusion rate within each country was kept below 5% of the desired target population (OECD, 2018c). I did not impose any exclusions in addition to the PISA criteria.

Response Rate

According to data released by the OECD (2018b), at the time of assessment, there were 59,700 15-year-olds in the New Zealand population. Of these, 58,131 were enrolled at grade 7 (year 11) or above. From this population, 857 were removed based on the school-level exclusion criteria, and 443 based on the within-school exclusion criteria. Of the final sample selected to take part in the New Zealand PISA, an 83% response rate was reported. Because this fell below the 85% threshold, replacement schools were required to increase the sample.

Demographics

The Aotearoa New Zealand sample contained 6,173 students, representing approximately 11% of the 15-year-olds nationwide. After the removal of cases within missing responses, 4,137 students remained. Table 1 shows the demographic statistics of the

final sample. There were slightly more female students than male, and the average age was *M* = 15.78, *SD* = 0.29.

Table 1

Participant Demographic Statistics in the Aotearoa New Zealand Sample Following Case Removal

Independent Variable	Mean (*SD*)	Mode (Frequency)	Range (Min, Max)
Sex	N/A	Female (53.54%)	1(Female) – 2(Male)
Age (years)	15.78 (0.29)	N/A	1.08 (15.25, 16.33)
Birth Year	2002.32 (.47)	2002 (68.4%)	1 (2002, 2003)
Year Level	N/A	Year 11 (90.1%)	5 (9,13)
Ethnicity [a]			NZ Population [b]
NZ European/Pākehā	N/A	72.7%	50.2%
Māori	N/A	19.2%	22.5%
Pacific Islander	N/A	10.3%	9.3%
Asian	N/A	15.9%	11.6%
Other	N/A	2.4%	2.3%

[a] Students were able to select multiple ethnicities therefore the cumulative proportion exceeds 100%.

[b] (Education Counts, 2018)

Materials and Measures

The current section describes each variable involved in the present study, including the items involved in scale development and metrics of scale reliability. In 2018, three computer-based questionnaires were administered to Aotearoa New Zealand students:

Educational Career Questionnaire, ICT Familiarity Questionnaire, and the Student Questionnaire. The items used in the present study were derived from the latter two questionnaires only and were all in the form of self-report. Reliability metrics reported in this section were sourced from the PISA Technical Manual (OECD, 2018e) where possible. For variables where reliability data is not available, (e.g., for composite variables created for the present study) they have been calculated in SPSS Version 27.0. Standards for reliability were as follows: 0.6–0.7 (acceptable), above 0.8 (very good), and above 0.95 (good but may indicate redundancy within the scale; Hulin et al., 2001).

Bullying Victimisation

The bullying victimisation scale was used to measure the frequency in which students were targeted by bullies. Students were asked, "During the past 12 months, how often have you had the following experiences in school?" The items included three examples of direct bullying ("I was threatened by other students," "Other students took away or destroyed things that belonged to me," and "I was hit or pushed around by other students") and three examples of indirect bullying ("Other students left me out of things on purpose," "Other students made fun of me," and "Other students spread nasty rumours about me"). A Likert scale offered four response categories: "Never or almost never," "A few times a year," "A few times a month," and "Once a week or more." Although the question asks students to report about the frequency of these experiences in school, the question notes "Some experiences can also happen in social media." The structure and content of this questionnaire are similar to the Olweus bully/victim questionnaire which has demonstrated strong construct and discriminant validity (Solberg & Olweus, 2003). It also conforms to the format suggested by Ybarra et al. (2014) for accurately assessing the repetition element of bullying victimisation.

Two composite continuous variables were created to represent direct and indirect bullying by summing the responses from the relevant items. Higher scores reflected more frequent victimisation. Both scales were analysed in the present study and demonstrated good internal consistency, $\alpha = .79$ and $\alpha = .83$, respectively. These estimates are supported by PISA's analysis which reported $\alpha = .79$ for three of the six bullying items (OECD, 2018e). By choosing to create continuous variables, instead of categorising students dichotomously as victims and non-victims, I was able to address the issue discussed in the literature review about operationalising repetition in bullying. Instead of categorising students based on an arbitrary cut-off, each student received a bullying score which places them on a continuum of victimisation.

Bullying Attitudes

The bullying attitudes scale measured the degree to which students were against bullying. Students were asked, "To what extent do you agree with the following statements?" Five statements were provided: "It irritates me when nobody defends bullied students," "It is a good thing to help students who can't defend themselves," "It is a wrong thing to join in bullying," "I feel bad seeing other students bullied," and "I like it when someone stands up for other students who are being bullied." Responses were gained through a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). These scores were summed to create a composite variable in which higher scores reflected a greater anti-bullying attitude. Analysis in the present study demonstrated this scale's high internal consistency, $\alpha = .90$.

Socioeconomic Status

Socioeconomic status (SES) was measured using PISA's Index of Economic, Social, and Cultural Status (ESCS). The index is a well-established instrument for measuring SES in national assessments of school-aged children (Cowan et al., 2012). ESCS is a composite

variable based on three indicators: highest parental occupation, parental education, and home possessions (a proxy measure of family wealth). The home possessions scale has demonstrated acceptable internal consistency as per analysis by PISA, α = .76 (OECD, 2018e). The index is calculated using the arithmetic mean of each indicator after being imputed and standardised (Avvisati, 2020). Data from all participating countries were used to estimate ESCS scores, however, the scale was transformed by PISA to have a mean of 0 and a standard deviation of 1 for reporting purposes. Higher scores on this index reflect higher SES. No further transformations of this variable were employed for the present study. A complete description of the ESCS scale is located in the PISA technical manual which is available on the PISA website (OECD, 2018e).

Video Game Use

Video game use was measured using two items in the ICT Familiarity Questionnaire. Students were asked, "How often do you use digital devices for the following activities outside of school?" including "Playing one-player games" and "Playing collaborative online games." The response format was a 5-point Likert scale with the following response categories: "Never or hardly never," "Once or twice a month," "Once or twice a week," "Almost every day," and "Every day." Responses were summed to create a composite variable with higher scores reflecting more frequent video game use. Analysis in the present study revealed an acceptable level of internal consistency for this scale, α = .77.

Belonging

School belonging was measured using a 7-item scale in which students were asked, "Thinking about your school: to what extent do you agree with the following statements?" Four statements were positively worded (e.g., "I make friends easily at school") and three negatively worded (e.g., "I feel like an outsider at school"). The response format was a 4-

point Likert scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). Positively worded items were reverse coded before being summed with the negatively worded items to produce a composite variable. Higher scores represented greater feelings of belonging. An analysis by PISA demonstrated high internal consistency, $\alpha = 0.82$ (OECD, 2018e).

An error in the pre-registration reported that this variable contained seven items, however, data relating to the "I feel safe at school" item was not included in the PISA dataset. This is most likely an extra item that was added to the New Zealand version of the questionnaire by the national program manager (NPM). As such, the present study employs the remaining six items listed in the pre-registration.

Social Media Use

Social media use was measured using three items from the digital device scale, also used to measure video game use. Students were asked, "How often do you use digital devices for the following activities outside of school?" with three items representing social media use: "Chatting online (e.g., Facebook, Skype, Snapchat, Instagram, Twitter)," "Participating in social networks (e.g., Facebook, Twitter)," and "Playing online games via social networks (e.g., Candy Crush Saga, Clash of Clans, Mobile Strike, Farm Heroes Saga)." The same 5-point Likert scale described in *Video Game Use* was used. Responses were summed to create a composite variable in which higher scores reflected more frequent social media use. Analysis during the present study revealed this scale had poor internal consistency, $\alpha = .57$.

Academic Performance

Academic performance, the primary focus of the PISA, was measured using tests of reading, mathematics, and science literacy. Each cycle of the PISA focuses specifically on one domain with reading literacy being the focus in 2018. Subsequently, there were 245 possible reading items, 82 mathematics items, and 115 science items. Each domain is

comprised of smaller units which include a stimulus or scenario followed by questions or tasks relating to it. All items are multi-choice or short answer. Rasch model estimation is used to produce 10 estimates of the student's score on each test. Scores are standardized to have an average of approximately 500 and a standard deviation of 100. The average of these 30 total scores was used to measure overall academic performance. Of note, 2018 marked the first year PISA used multi-stage adaptive testing (MSAT). MSAT increases the accuracy of performance measurement by presenting students with an initial testlet and, based on their score, presents subsequent testlets which are easier or harder (OECD, 2018d).

Parental Support

Parental support, which aimed to measure students' perceived emotional support from their parents, asked students, "Thinking about this school year: to what extent do you agree or disagree with the following statements?" Three items were presented: "My parents support my educational efforts and achievements," "My parents support me when I am facing difficulties at school," and "My parents encourage me to be confident." A 4-point Likert scale was used ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The responses to each item were summed to create a composite score with higher scores representing greater perceived support. PISA analysis reported good internal consistency for this variable, $\alpha = .90$ (OECD, 2018e).

Classroom Climate

Classroom climate aimed to measure the extent to which classroom order (discipline) was maintained in English classes. Students were asked, "How often do these things happen in your English lessons?" regarding six items: "Students don't listen to what the teacher says," "There is noise and disorder," "The teacher has to wait a long time for students to settle down." "Students cannot work well," and "Students don't start working for a long time

after the lesson begins." The response format included a 4-point Likert scale with the following categories: 1 (*Every lesson*), 2 (*Most lessons*), 3 (*Some lessons*), and 4 (*Never or hardly ever*). The responses were summed to create an overall climate score with higher scores representing greater classroom order. PISA analysis reported good internal consistency for this scale, $\alpha = .89$ (OECD, 2018e).

School Climate

School climate was measured across two dimensions: co-operation and competitiveness. Both dimensions were measured using 4-item scales which asked students to "Think about your school: how true are the following statements?" The co-operation scale items included "Students seem to value co-operation," "It seems that students are co-operating with each other," "Students seem to share the feeling that co-operating with each other is important," and "Students feel that they are encouraged to co-operate with others." The competitiveness scale items included "Students seem to value competition," "It seems that students are competing with each other," "Students seem to share the feeling that competing with each other is important," and "Students feel that they are being compared with others." Both dimensions shared a 4-point Likert scale response format which included the following categories: 1 (*Not at all true*), 2 (*Slightly true*), 3 (*Very true*), and 4 (*Extremely true*). The scores were summed to create composite measures for each dimension with higher scores representing the greater perception of co-operation or competitiveness. Both scales were reported by PISA to demonstrate high internal consistency, $\alpha = .90$ and $\alpha = .86$, respectively (OECD, 2018e).

Procedure

Ethical Considerations

The current study analyses publicly available data, however, ethical considerations are still necessary. Despite the data already having been collected, there was consideration given to how the participating students could be benefitted and their rights respected. Confidentiality was ensured as it would be difficult to identify students based on the data collected. Demographic information obtained during the assessment would have been insufficient to identify an individual and students were only identified by their unique identification number. No names or other contact details were collected during the assessment.

A risk with analysing secondary, large-scale data is that inferential results can be interpreted as evidence for causality (Auld & Morris, 2016). Secondary data analysis increases the likelihood of Type I error as the result of undisclosed researcher degrees of freedom (Simmons et al., 2011). Researchers regularly seek statistically significant results and subsequently make decisions about analysis based on this outcome, rather than employing practical significance as their inference criteria. One might call it a 'fishing expedition for statistical significance'. The resulting false positives can be expensive and highly counterproductive (Simmons et al., 2011). The present study mitigated the effect of this tendency by making decisions about data exclusions and analysis before conducting the research. Furthermore, I pre-registered these decisions to ensure transparency in my analysis technique. As per the recommendations included in Simmons et al. (2011), this pre-registration included the amount of data I intended to analyse, sufficient sample size to constitute reasonable statistical power, a list of all the variables being measured, transformations of variables, details about how missing data will be dealt with, and the type of confirmatory and exploratory analyses I intended to carry out on the data. Finally, ethics approval was obtained from the Massey University Human Ethics Committee by way of a Low-Risk Notification (refer to appendix).

Test Administration Roles

Administration of the PISA required collaboration between several agencies and staff. Participating countries each nominated a co-ordinator known as the national program manager (NPM) who was responsible for implementing the project. The NPM was based at the national centre and had several assistants who communicated with school co-ordinators to plan testing at each school. Test administrators were trained by assistants from the national centre and were required to follow testing procedures outlined in the international administrator manual to ensure uniformity across countries.

Testing Procedure

As per the administration guidelines, testing was carried out within 56 days between 1 March 2018 and 31 August 2018. Testing was not permitted within the first six weeks of the school year given concerns that student performance may decrease during the annual break and therefore be lower at the start of the year than at the end of the previous year. Computer-based assessment software (designed by PISA) was used to administer the test over two one-hour blocks with a five-minute break in between. After the second block, students were given a 15-minute break before taking the student questionnaire for which they were allowed 35 minutes to complete. Test administrators then submitted the data to the national centre.

Data Analysis

Data Management

Following pre-registration, the data was downloaded from the PISA website (OECD, 2018a) and prepared for analysis in six steps. Firstly, using statistical software SPSS Version 27.0, the dataset was reduced to include only cases from Aotearoa New Zealand. Secondly, the values of all variables were checked for extreme outliers that might indicate a missing value not already accounted for in the missing data criteria. Thirdly, cases with missing data

on any of the variables of interest were removed using listwise deletion. This process reduced the sample by 2,036 from 6,173 to 4,137. Listwise deletion was chosen because the sample already provided a large degree of statistical power and the deletion of cases was not expected to substantially diminish its power. Fourthly, three of the items from the belonging scale were reverse coded to reflect higher belongingness. Finally, composite variables were created for the ten independent variables described above as well as the three dependent variables.

Statistical Analysis

Following its preparation, the dataset was entered into the statistical software JASP Version 13.1 (JASP Team, 2020) where descriptive statistics were calculated. The confirmatory analysis followed, and hypotheses were tested using multiple linear regression. Three separate models were tested - one for each dependent variable. Coefficients were transformed into standardised beta scores for interpretation.

Inference Criteria

There is debate about how to determine the minimum effect size of interest. Many employ a priori cut-offs such as .1 (Cohen, 1988) or .2 (Ferguson, 2009). One method is to determine the strength of the relationship between theoretically implausible independent variables and the outcome variable under investigation (Orben & Przybylski, 2019). This allows researchers to determine what magnitude of effect should be determined practically irrelevant therefore indicating the smallest effect size of interest. This technique helps researchers to discriminate between practically meaningful effects and statistical noise. I used this method in the present study to establish the minimum effect size of interest.

To develop the inference criteria, three neutral variables were selected from the original dataset for which no plausible theoretical rationale predicted a meaningful

association with the dependent variables. These included how often the student downloads a new app to a mobile device (Never or hardly ever to Every day); whether they have been taught at school how to detect phishing (scams) or spam emails (Yes or No); and whether or not they have a USB (memory) stick available for use at home (Yes, and I use it; Yes, but I don't use it; No). A literature search using Scopus and Massey Discover search engines failed to locate any research suggesting these variables were related to bullying victimisation or attitudes.

Before data analysis began, a multiple regression model was tested with the three neutral variables as independent variables and total bullying (sum of direct and indirect bullying scores) as the dependent variable. As per table 2 below, there were no meaningful relationships by Cohen's (1998) standards. Following the procedure of Orben and Pryzybylski (2019), my hypotheses were considered supported if they satisfied three criteria. Firstly, they were statistically significant following a two-tail significance test producing a *p*-value below .05, as per conventional social science standards (Andrade, 2019). Secondly, their effect size must have exceeded +/- .042, the smallest effect size of interest as determined by the analyses of implausible independent variables. Thirdly, to ensure only meaningful differences were being used to support the hypothesis, the 95% confidence interval of each standardised coefficient did not overlap with the minimum effect size of interest as determined above.

In addition to this criterion, though I considered that effect sizes as small as .05 might be interesting, I noted that there are other pre-conditions which must be satisfied to argue that such an effect would be meaningful (Sauer & Drummond, 2020). Subsequently, any results in the present study between .042 and .10 were interpreted with a high degree of caution in accordance with conventional effect size guidelines (Cohen, 1988; Sauer & Drummond, 2020).

Table 2

Unstandardised (B) and Standardised (β) Coefficients for the Neutral Variables

Variable	*B*	SE *B*	*β*
New App	0.258	0.052	.078
USB Available	-0.012	0.069	-.003
Detect Spam	0.324	0.0116	.044
Mean			.042*

*Mean calculated after *USB Available* variable was transformed to a positive value.

Chapter 4: Results

The current chapter reports the results of this study, which aimed to investigate the antecedents of bullying victimisation and bullying attitudes in New Zealand adolescents. This chapter is arranged into five sections beginning with descriptive statistics for all of the variables involved. The three subsequent sections are arranged by the dependent variable and report the results of the multiple linear regression models tested for direct bullying, indirect bullying, and bullying attitudes. Finally, the chapter concludes with a summary of the main findings of the statistical analysis.

Descriptive Statistics

Data from the 2018 Programme for International Student Assessment (PISA) was used in the present study to evaluate several individual, family, class, and school-level variables and their relationship to bullying victimisation and bullying attitudes. These variables are presented in table 3 accompanied by their descriptive univariate statistics.

Table 3

Descriptive Statistics for the Variables in the Present Study

Variable	Mean (*SD*)	Mode (Frequency)	Min - Max
Direct Bullying	4.01 (1.77)	3 (62.41%)	3–12
Indirect Bullying	4.99 (2.24)	3 (36.19%)	3–12
Bullying Attitudes	16.90 (2.89)	N/A	5–20
Sex	N/A	Female (53.54%)	1(Female)–2(Male)
ESCS	0.25 (0.95)	N/A	-3.42–3.38
Parental Support	10.33 (2.01)	N/A	3–12
Classroom Climate	14.12 (3.70)	N/A	5–20

Video Game Use	5.10 (2.56)	N/A	2–10
Academic Performance	519.95 (87.15)	N/A	250.80–768.88
Belonging	17.55 (3.36)	N/A	6–24
Social Media Use	10.74 (2.89)	N/A	3–15
School Competitiveness	11.23 (2.64)	N/A	4–16
School Co-operation	10.68 (2.54)	N/A	4–16

Both scales for bullying victimisation (direct and indirect) had mean scores between 4–5. Given that possible values on each scale range from 3–12, the means suggest that most students do not experience frequent bullying (i.e., more than a few times a year). Moreover, the mode for both forms of bullying was 3, further indicating that most students experience no victimisation.

The bullying attitudes scale ranged between 4–20, $m = 16.90$, with higher scores representing more agreement with anti-bullying attitudes. This mean suggests the average response on the Likert-type scales of the individual items was between 3–4, indicating that most students "Agree" or "Strongly Agree" that bullying is wrong. This, taken together with a skewness of -1.08 ($SE = 0.04$) indicates there may be a slight ceiling effect in these data.

Confirmatory Analysis

Multiple linear regression analysis was used to measure the relationships between the potential risk factors and bullying victimisation/attitudes. This section presents the findings from these analyses for each hypothesis outlined in the literature review. Hypotheses were considered supported if the relationships were of the predicted direction, were statistically significant ($p = < .05$), and the 95% confidence interval of the beta coefficient did not overlap with the smallest effect size of interest (+/-0.042). Additionally, given that the traditional cut-

off for a small effect size = .10 (Cohen, 1988), any results between .042 and .10 were interpreted with caution. This section is split into three subsections by dependent variable: direct bullying, indirect bullying, and bullying attitudes.

Direct Bullying

Table 4 shows the results of the multiple linear regression model for direct bullying. As indicated by the standardised co-efficient (*β)*, belonging, sex, and academic performance were the most predictive of direct bullying victimisation. The model was able to account for 17.7% of the variance among direct bullying, $F(10, 4126) = 88.48$, P = <.001, $R^2 = .177$.

Table 4

Unstandardised (B) and Standardised (β) Coefficients for the Effect on Direct Bullying

Variable	*B*	SE *B*	*β* [95% CI]	*t*	*p*
Sex*	0.611	0.062	.173 [.138, .207]	9.83	< .001
ESCS	0.085	0.029	.046 [.015, .076]	2.92	.004
Parental Support*	-0.088	0.013	-.100 [-.129, -.070]	-6.62	< .001
Classroom Climate*	-0.053	0.007	-.111 [-.140, -.081]	-7.42	< .001
Video Game Use	0.020	0.012	.029 [-.006, .065]	1.62	.105
Academic Performance*	-0.003	4.00	-.152 [-.183, -.121]	-9.62	< .001
Belonging*	-0.131	0.008	-.250 [-.280, -.220]	-16.37	< .001
Social Media Use	0.016	0.009	.026 [-.004, .055]	1.69	.091
Competitiveness*	0.066	0.010	.098 [.070, .127]	6.75	< .001
Co-operation	0.003	0.011	.004 [-.026, .033]	0.25	.804

* Variable satisfies inference criteria

The statistical analysis confirmed my hypotheses that sex, parental support, classroom climate, academic performance, belonging, and competitive school climate were all significantly related to direct bullying victimisation. In addition, their 95% confidence interval did not overlap with the smallest effect size of interest, indicating they may be meaningful. Contrary to my hypotheses, the results indicated that ESCS, video game use, social media use, and co-operative school climate were not associated with direct bullying victimisation as they were not statistically significant or were below the smallest effect size of interest. Of note, the analyses revealed that co-operative school climate and ESCS predicted bullying victimisation in the opposite direction to my hypotheses. The effect size for co-operative school climate was very small ($\beta = .004$) and, although the effect size for ESCS exceeded the minimum effect size of interest ($\beta = .046$), there was a substantial overlap of the 95% CI with the smallest effect size of interest.

Indirect Bullying

Indirect bullying was analysed using a second multiple linear regression model which suggested that belonging and a competitive school climate had the strongest predictive relationship. Table 5 presents the output for this analysis for each independent variable. The model accounted for 23.1% of the variance in indirect bullying victimisation, $F(10, 4126) = 125.56$, P = <.001, $R^2 = .233$.

Table 5

Unstandardised (B) and Standardised (β) Coefficients for the Effect on Indirect Bullying

Variable	*B*	SE *B*	*β* [95% CI]	*t*	*p*
Sex	0.180	0.076	.040 [.007, .074]	2.382	.017
ESCS	0.102	0.035	.043 [.014, .073]	2.88	.004
Parental Support	-0.065	0.016	-.058 [-.096, -.033]	-4.00	< .001
Classroom Climate*	-0.061	0.009	-.102 [-.130, -.073]	-7.07	< .001
Video Game Use	0.022	0.015	.026 [-.009, .060]	1.47	.142
Academic Performance*	-0.003	3.885	-.103 [-.133, -.073]	-6.78	< .001
Belonging*	-0.251	0.010	-.380 [-.409, -.351]	-25.84	< .001
Social Media Use*	0.057	0.011	.074 [.045, .102]	5.03	< .001
Competitiveness*	0.138	0.012	.164 [.137, .192]	11.69	< .001
Co-operation	-0.012	0.013	-.014 [-.042, .015]	-0.94	.346

* Variable satisfies inference criteria

As I expected, the present analysis revealed that classroom climate, academic performance, belonging, social media use, and competitive school climate all significantly predicted indirect forms of bullying victimisation and did not overlap with the smallest effect size of interest. There were, however, several variables which did not support my hypotheses: sex, ESCS, parental support, video game use, and co-operative school climate. Although some of these variables produced statistically significant results, they did not exceed the smallest effect size of interest. Interestingly, the analyses indicated that sex and ESCS were related to indirect bullying victimisation in the opposite direction of my hypothesis. However,

these variables had beta scores of .040 and .043, respectively, and did not exceed the smallest effect size of interest.

Bullying Attitudes

The final linear regression model estimated the effects of the risk factors on bullying attitudes. Only four variables produced results which satisfied the inference criteria, with sex and a co-operative school climate being the most reliable predictors of anti-bullying attitudes. Table 6 presents the complete results for this regression analysis. The model was able to account for 18.9% of the variance in anti-bullying attitudes, $F(10, 4126) = 96.29$, P = <.001, $R^2 = .187$.

Table 6

Unstandardised (B) and Standardised (β) Coefficients for the Effect on Bullying Attitudes

Variable	*B*	SE *B*	*β* [95% CI]	*t*	*p*
Sex*	-1.581	0.101	-.273 [-.307, -.239]	-15.68	< .001
ESCS	0.030	0.047	.010 [-.021, .040]	0.63	.529
Parental Support*	0.200	0.022	.139 [.110, .169]	9.31	< .001
Classroom Climate	0.005	0.012	.006 [-.023, .035]	0.43	.667
Video Game Use	-0.027	0.020	-.024 [-.059, .011]	-1.33	.184
Academic Performance	0.002	5.181	.071 [.041, .102]	4.56	< .001
Belonging	-0.007	0.013	-.008 [-.037, .022]	-0.51	.610
Social Media Use	0.046	0.015	.046 [.017, .076]	3.06	.002
Competitiveness*	0.102	0.016	.093 [.065, .122]	6.46	< .001
Co-operation*	0.231	0.017	.203 [.174, .233]	13.55	< .001

* Variable satisfies inference criteria

In agreement with my hypotheses, the results revealed that sex, parental support, and co-operative school climate were significant predictors of anti-bullying attitudes. However, contrary to my hypotheses, the results also revealed that none of the other variables were significantly related to anti-bullying attitudes, namely, ESCS, classroom climate, video game use, academic performance, belonging, social media use, and competitive school climate.

In further contradiction to my hypotheses, video game use, belonging, social media use, and competitive school climate all produced results that were in the opposite direction to what was expected. Their effect sizes ranged from $\beta = -.008$ to $\beta = .093$, indicating that some of these results may not be trivial. Social media use and school competitiveness had effect sizes above the minimum effect size of interest. Moreover, the 95% confidence interval of school competitiveness also exceeded the minimum effect size of interest.

Summary of results

This chapter presented the results of the multiple linear regression analysis used to answer the research aims. The analysis of direct bullying victimisation revealed that six of the ten independent variables were capable of predicting direct victimisation. These variables all produced both statistically significant results, and practically meaningful effect sizes as per the established inference criteria. Lower belonging, ($\beta = -.250$), being of male sex ($\beta = .173$), and a more competitive school climate ($\beta = .098$) were all associated with increased direct victimisation. Higher academic performance ($\beta = -.152$), a more disciplined classroom climate ($\beta = -.111$), and higher parental support were associated with lower direct victimisation ($\beta = -.100$). According to the interpretative standards suggested by Cohen (1988), all of these effects would be considered small to moderate.

The results of the analysis of indirect bullying victimisation indicated that five variables were significantly associated with indirect bullying. Lower belonging ($\beta = -.380$),

higher school competitiveness (β = .164), increased social media use (β = .074), and higher academic performance (β = -.103) were all associated with indirect victimisation. A more disciplined classroom climate (β = -.102) was associated with a decrease in indirect victimisation. Again, most of these effects are small except for belonging, which had a medium effect size (above 0.3; Cohen, 1998).

Finally, three variables demonstrated practically meaningful relationships with bullying attitudes. Being of male sex (β = -.273) was associated with lower anti-bullying attitudes, whereas, increased school co-operation (β = .203), and increased parental support (β = .139) were associated with an increase in anti-bullying attitudes. The magnitude of these effects indicate that the associations are small to moderate in size (Cohen, 1988)

Overall, four variables provided practically meaningful results for both direct and indirect bullying: classroom climate, academic performance, belonging, and competitive school climate. Belonging reported the largest effect size in both analyses, β = -.250 and β = -.380, respectively. Sex was also one of the stronger associations in the analysis of direct bullying and bullying attitudes, β = .173 and β = -.273, respectively. Of note, only two of the predictor variables did not produce practically meaningful results in any of the analysis: ESCS, and video game use.

Chapter 5: Discussion and Conclusions

The present study sought to investigate the relationship between several individual and environmental characteristics of adolescent students, the frequency in which they experienced bullying victimisation, and their attitudes towards bullying. In summary, I found that students who reported greater belongingness at school, a higher degree of behavioural order in the classroom, and feelings of parental support also reported being bullied less frequently than students who scored lower on these factors. For bullying attitudes, the results indicated that students who reported greater parental support and a more co-operative school climate held stronger anti-bullying attitudes. The current chapter discusses the results of the study and begins with a discussion of my findings about risk factors for victimisation.

Risk Factors for Victimisation

The current section discusses the results of my analysis of risk factors for bullying victimisation. Both direct and indirect forms of victimisation are discussed. This section begins with a focus on evidence which showed support for my hypotheses and is followed by a discussion of where further research is still required to clarify the findings.

Supported Hypotheses

The results indicated that sex, parental support, classroom climate, belonging, school competitiveness, and academic performance were meaningfully related to at least one form of victimisation by satisfying the inference criteria stipulated in the pre-registration. According to the analyses, males were significantly more likely than females to report being the victim of direct forms of victimisation such as physical and verbal attacks. This is in line with previous research conducted both overseas (Anderson & Bushman, 2001; Li, 2006; Whitney & Smith, 1993) and in Aotearoa New Zealand (Adair et al., 2000). This study adds to the growing evidence that males are more likely to be the victim of direct bullying within New

Zealand populations. While these findings are correlational, their consistency with previous research implies that interventions directed at males might be particularly effective for reducing direct forms of bullying victimisation. Although being male may not be a causal factor for direct victimisation, males do appear to be at higher risk for this form of bullying and may therefore benefit from a targeted intervention.

In contrast, the analysis did not reveal a significant relationship between indirect bullying and sex. This finding suggests that neither males or females were more likely to become the victim of indirect attacks. Previous research has consistently indicated that females more often experienced this type of victimisation than males (Adair et al., 2000; Anderson & Bushman, 2001; Carbone-Lopez et al., 2010; Li, 2006; Whitney & Smith, 1993). Though the results may imply that there is no difference between males and females in terms of their indirect victimisation, it is also possible that measurement issues partially account for the divergent findings. A source of potential limitation in the present study, which may explain this contradictory finding, is the set of items used to measure indirect bullying. This is discussed further in the limitations section. Moreover, these findings may be explained by cultural variation specific to the New Zealand population. The effect of culture and ethnicity on the form and prevalence of bullying appears to be understudied in New Zealand but may be a promising area of inquiry for explaining the findings discussed above.

As I hypothesised, increased parental support was associated with lower direct (but not indirect) bullying victimisation. This suggests that students who receive more support and encouragement from their parents are less likely to be directly victimised. My findings concord with a meta-analysis by Lereya et al. (2013) and suggest that this relationship appears to be robust among students in Aotearoa New Zealand. Several plausible explanations may underlie these findings, however, the level of support offered by one's parents likely has some causal effect on the student's risk of being victimised. Previous

research has indicated that parenting style has a considerable impact on a child's social skills (Kol, 2016) and social skill deficits have been associated with increased risk of victimisation (Reijntjes et al., 2010). The reverse causality explanation, that students who are not bullied tend to get more parental support, seems unlikely. Nevertheless, there may be an unidentified third variable which explains this relationship. This finding also offers more support for the validity of ecological systems theory, which proposes that familial interactions, taking place at the microsystem level affect the individual's experience in other parts of life. It is unclear why this relationship was not consistent across both types of victimisation; however, the potential limitations of the indirect victimisation scale may have been involved.

Student perceptions of good classroom climate (marked by more behavioural discipline and order) were associated with a decrease in both forms of bullying victimisation. This implies that less bullying took place in classrooms with a more disciplinary climate. This aligns with my hypothesis and shows support for previous research on classroom climate (Koth et al., 2008; Låftman et al., 2017; Ma, 2001, 2002; Modin et al., 2018; Roland & Galloway, 2002). It should be noted that several other variables may have a confounding influence here. For example, classroom order may not be something deliberately regulated by teachers but a natural consequence of their teaching ability or style. Consequently, encouraging teachers to be more disciplinary in their management of the classroom may not be sufficient to reduce bullying. Although this appears to be a promising level of intervention, more research is first required to understand the complexities of the classroom environment.

The analysis also demonstrated a significant association between a student's sense of belonging and the frequency in which they were targeted by bullies in both direct and indirect forms. This finding supports my hypothesis and confirms previous findings. Research on this relationship has predominantly taken place overseas (Arango et al., 2018; Carney et al., 2018; Duggins et al., 2016; Liu et al., 2020; Reijntjes et al., 2010) however the present findings

suggest that the conclusions drawn from this research can be extended to Aotearoa New Zealand. The growing body of evidence in support of this relationship suggests that belongingness could be an effective factor for identifying students who are at increased risk of bullying. Furthermore, additional investigation of this factor may reveal evidence of a causal relationship between belonging and victimisation and therefore inform targeted interventions that mitigate the risk of bullying.

A more competitive school climate was associated with both increased direct and indirect bullying victimisation. At face value, this suggests that as schools become more competitive, students may experience more bullying in both forms. Having said this, the effect on indirect bullying was considerably larger. This conforms to my hypotheses, and supports previous research by Rodkin et al. (2000). However, although the strength of the association met the inference criteria for direct bullying, it was still fairly small and should be interpreted with caution. Although the cross-sectional nature of the present study cannot establish causality, one interpretation is that competition in schools leads to an increased desire for social esteem among students. This aligns with the evolutionary perspective which suggests that bullying behaviour is a means of attaining social or material goals (Ellis et al., 2016). Alternatively, a student's perception may become biased as they become the target of bullying. Victims may be more likely to perceive the environment as more competitive after being bullied compared to those students who are bullies or uninvolved.

Finally, academic performance was significantly associated with both direct and indirect forms of victimisation. This suggests that as a student's academic performance decreases, their risk for being the target of bullying increases. One explanation for these results is that academically elite students may draw more attention from bullies because they stand out more or perhaps they threaten the bully's position in the social hierarchy. Alternatively, being bullied may interfere with a student's academic performance through

increased absenteeism as outlined in the literature review. Although these findings support my research hypothesis and the findings of previous research on victimisation, longitudinal research is required to identify whether there is any evidence for a causal relationship between this risk factor and victimisation (Beran, 2008; Bishop et al., 2004; Cook et al., 2010; Eisenberg et al., 2003; Holt et al., 2007; Kowalski et al., 2014; Nakamoto & Schwartz, 2010; Ybarra et al., 2007; Zych et al., 2018).

Mixed Findings

Despite a number of my hypotheses being supported, several were not. Variables for which the evidence is still unclear or mixed include socioeconomic status, social media use, video game use, and school co-operation. They are discussed below, accompanied by potential explanations for the findings in the present study.

Contrary to my hypothesis, socioeconomic status was not associated with either direct or indirect bullying. Although this finding conflicts with research conducted overseas (Fu et al., 2013; Jansen et al., 2012; Khamis, 2015; Tippett & Wolke, 2014), it does support previous findings in another New Zealand sample which showed that socioeconomic status did not affect bullying victimisation rates (Kljakovic et al., 2015). The results of the analyses were statistically significant; however, they were in the opposite direction of my hypothesis, and thus failed to satisfy the inference criteria. The effect size cut-off set out in the pre-registration, which was informed by analysis of neutral variables (Orben & Przybylski, 2019) and previous papers (Ferguson, 2009; Sauer & Drummond, 2020), both suggest the size of this effect is negligible and no more meaningful than the relationship with an implausible or randomly selected variable. The relationship between socioeconomic status and victimisation risk within New Zealand does not appear to conform to that observed in other OECD

countries and is therefore not well understood. Suggestions for future research in this domain are discussed in the latter sections of this chapter.

For social media use, the results showed no significant relationship with direct bullying victimisation. As such, more frequent social media use does not appear to increase the risk of being directly attacked by a bully. I was unable to locate any previous studies which considered the relationship between social media use and direct victimisation, however, given that social media use has been associated with cyber-victimisation (Sampasa-Kanyinga & Hamilton, 2015), I expected to see a significant relationship emerge. I speculate that this lack of association may be related to the form of bullying experienced when social media use increases. The types of bullying measured using the direct victimisation scale include being threatened, hit or pushed, and having property stolen or destroyed. Only the first of these behaviours can take place on social media. Due to the nature of social media, it seems that indirect forms of bullying are more likely, and the current study provides some support for this.

The analysis suggested that social media use was positively associated with indirect forms of bullying. Subsequently, at face value, it appears that as one's social media use increases, so does the likelihood of being indirectly bullied. This finding is in line with my hypothesis. While I was unable to locate previous empirical research that also specifically measures indirect bullying, several previous studies have found a similar relationship when the form of bullying analysed is cyberbullying (Juvonen & Gross, 2008; Kraut et al., 1998; McPherson et al., 2006; Milani et al., 2009). Importantly, the effect size detected for this relationship was very small; it was below the traditional cut-off of .10 (Cohen, 1988) and needs to be interpreted with a high degree of caution. Previous research using a large-scale sample has indicated that the relationship between digital screen use and psychological well-being is complex and non-linear (Przybylski & Weinstein, 2017). This research found that

outcomes could instead be predicted using a quadratic equation which accounts for several other factors. This may also be the case for bullying outcomes; thus, it may be useful for future research to consider other factors associated with social media use, such as the time it is used (weekday vs. weekend), the duration of use (compared to only frequency), and the specific purpose of its use (e.g., instant messaging in various forms, playing games, and checking news feeds).

The items used to measure indirect bullying (being left out, made fun of, and having rumours spread) in the PISA data are more possible to enact via social media than the direct bullying behaviours, suggesting that this relationship may be because social media acts as a vector for indirect bullying. The correlational study design means that I cannot determine the direction or temporal relationship between social media use and indirect victimisation. Longitudinal studies are required to establish the directionality of this relationship. Moreover, when interpreting these findings on indirect bullying, it should be noted that although the effect size satisfied the pre-registered inference criteria, it fell below the traditional cut-off of .10. This suggests that although the finding might be statistically significant, the effect size is very small and may not be a practically meaningful relationship. Further research should be conducted using more specific items relating to forms of indirect bullying to establish if there is a meaningful relationship. Once again, there may be a more complex non-linear relationship at work that could not be detected using the design of the present study.

The analysis revealed that video game use was not significantly associated with direct or indirect bullying. This suggests that the frequency of one's video game use does not increase their risk of being victimised. Although there appears to be very little empirical evidence for this relationship, the theoretical positions which informed my hypothesis were not supported. For example, although video game use may be a behavioural response to stress (Hsieh et al., 2016; Jun & Choi, 2015; Snodgrass et al., 2014), my research suggests this type

of stress may not come from bullying victimisation. One of the few examples of empirical research into this relationship supported the theoretical stance that victimisation would be associated with increased video game use (Rostad et al., 2018). My results do not concur with the findings of this study. One explanation for this contradictory result might be found in the scale used to measure video game use. The present study asked students, "How often do you use digital devices for the following activities outside of school?" including "Playing one-player games" and "Playing collaborative online games". The response format was a 5-point Likert scale with the following response categories: "Never or hardly never," "Once or twice a month," "Once or twice a week," "Almost every day," and "Every day." A limitation of this scale is that it measures frequency, not the total dosage of gaming. That is, the scale does not measure how many hours a student spends gaming. This results in a relatively coarse-grained measure of a student's video gameplay. Students could play video games every day but, if only for a short period of time, their exposure to cyberbullies would remain limited. Conversely, someone who plays one sixteen-hour gaming session each week on the weekend might have a low frequency of gameplay, but the high dosage might result in more exposure to cyberbullies than students who play more frequently for shorter total periods.

By contrast, previous studies which have aimed to measure video game use have implemented a more specific item such as "On an average school day, how many hours do you play video or computer games or use a computer for something that is not schoolwork?" Response options ranged from *not at all* to *5 or more hours a day*, in one-hour increments (Rostad et al., 2018). Although the present research suggests that the effect of video game use on victimisation does not extend to Aotearoa New Zealand, more research should be conducted using a measure of total time spent using video games rather than only the frequency of video game use.

Contrary to my hypotheses, perceptions of within-school co-operation were not significantly associated with either form of school bullying. I expected that as students perceived the school as more co-operative, bullying would decrease. Therefore, although making the school climate less competitive may be productive, the present findings, at face value, do not suggest that students within more co-operative schools experience less bullying. One explanation for this finding could be that the composite co-operation variable may share a substantial amount of variance with the variable examining competitiveness. A Pearson's correlation analysis reveals an $r(4136) = .118$, $p < .001$. As such, some shared variance may have been attributed to the latter variable by the regression analyses. Future research should examine this relationship more closely to determine what makes school climate less prone to bullying.

Bullying Attitudes

Although the analysis of risk factors for bullying victimisation indicated support for most of my hypotheses, the results of the analysis of bullying attitudes were more mixed. There is a paucity of research on bullying attitudes, therefore, my hypotheses were informed by theoretical perspectives on the plausible relationship between attitudes and behaviour (Azjen, 1991). Although some research has identified a relationship between bullying attitudes and behaviour (Boulton et al., 1999; Boulton et al., 2010), the authors acknowledge that the phenomenon is complex and requires longitudinal studies to understand it in more detail. To my knowledge, there is no academic literature on the relationship between individual/environmental characteristics and bullying attitudes, and therefore, this aspect of the study served a largely exploratory purpose.

It is important to note that several measurement issues accompany the study of bullying attitudes. Perhaps the most problematic is a bias towards socially desirable

responding. While this issue is addressed in the limitations section, the following paragraphs discuss the findings on the relationship between the risk factors and bullying attitudes.

Supported Hypotheses

The analysis indicated that there was evidence to support three of the independent variables: sex, parental support, and school co-operation. I hypothesised that males would hold lower anti-bullying attitudes than females. This hypothesis was supported and suggests that males may be more tolerant of bullying in school than females. This is contrary to research by Boulton et al. (1999) which indicates that there is considerable overlap between the attitudes of males and females. This difference may, however, be attributable to the scale used to assess bullying attitudes. This is discussed further in the Mixed Findings section. Although the PISA scale demonstrated high internal consistency, the wording of the items may have lent itself to socially desirable responding and subsequent ceiling effects which appeared to be observed. Future research of bullying attitudes might benefit from using a longer-form scale and therefore provide the opportunity to make more reliable comparisons with previous research, such as Boulton et al. (1999). Alternatively, there could be cultural reasons that males appear to be less tolerant of bullying in New Zealand.

Students who reported greater parental support held higher anti-bullying attitudes. This may indicate that parents who are involved and supportive may also be more involved in teaching their child pro-social behaviour either directly, or indirectly through observed behaviour. A reverse causality explanation may also be true. For example, it may be that parents become more supportive of children who are well socialised, friendly, and temperamentally inclined towards holding stronger anti-bullying attitudes. Again, this is speculative and future research using longitudinal methods are required to determine whether parental support is influencing attitudes or if there is a third variable explanation.

Finally, students who perceived the school climate as more co-operative reported holding higher anti-bullying attitudes. It may be that schools which are more co-operative influence the attitudes of students. It could also be that when students have stronger anti-bullying attitudes, a more co-operative school climate emerges as a result. Given that both of these variables are attitudinal measures, they might both be measuring a more pro-social school environment in general. Moreover, there could be a third variable explanation for this relationship. Longitudinal studies would, once again, shed more light on the complexity of this relationship.

Mixed Findings

The remainder of the independent variables were not associated with bullying attitudes to a statistically significant degree and include socioeconomic status, classroom climate, video game use, academic performance, belonging, social media use, and competitive school climate. Speculating about the reason for these null results is challenging given the paucity of literature. One explanation may be the design of the metric used to measure attitudes in the present study. This possibility is considered more fully in the discussion at the end of this section.

The present study indicated there was no relationship between socioeconomic status and bullying attitudes. This is contrary to my hypothesis which was informed by previous findings indicating there was a small negative relationship between SES and bullying perpetration (Tippett & Wolke, 2014). From this, I reasoned that it would be likely for SES to be positively related to anti-bullying attitudes. Overall, the findings have indicated that both these variables have generally produced non-significant results and the construction of the variables may explain the null result with respect to SES.

A similar conclusion can be drawn about the video game use variable which also did not produce any significant results for either victimisation risk or bullying attitudes. The limitations of this variable, discussed in the section above, may explain the lack of findings with respect to attitudes also. Another plausible explanation that should be considered is that there is truly no relationship between these variables. Given that the present study appears to be the first in New Zealand to investigate the relationship between video game use, victimisation, and bullying attitudes, further research is required to replicate these findings before dismissing the potential influence of this risk factor.

Contrary to my hypothesis, classroom climate was not associated with anti-bullying attitudes. Given that the present study as well as previous studies (Koth et al., 2008; Låftman et al., 2017; Ma, 2001, 2002) have indicated that increased classroom order may influence bullying behaviours, it is reasonable to expect that it should also affect bullying attitudes. Moreover, there was no significant association between a competitive school climate and bullying attitudes. These factors may hold promise for future research if studied using more robust metrics of bullying attitudes. The limitations of the present attitudes scale are discussed at the end of this section. There may be no relationship between these variables. However, further research in New Zealand using more robust measures should be conducted before drawing this conclusion.

I expected that academic performance would be positively associated with anti-bullying attitudes, however, this was not supported. This hypothesis was based on findings that academic performance has been associated with lower victimisation (Beran, 2008; Bishop et al., 2004; Cook et al., 2010; Eisenberg et al., 2003; Holt et al., 2007; Kowalski et al., 2014; Nakamoto & Schwartz, 2010; Ybarra et al., 2007; Zych et al., 2018) as well as findings that lower victimisation is associated with greater psychosocial adjustment (Hawker & Boulton, 2000). The lack of support may suggest that these relationships are more

complex. Again, however, it would be wise for future research to apply more reliable metrics before speculating about the mechanism of this relationship.

Finally, I expected that students who felt more connected to their school (increased belonging) would also hold higher anti-bullying attitudes; however, the analysis failed to support this. This hypothesis was based on findings that increased belonging was associated with decreased risk for victimisation (Carney et al., 2018; Duggins et al., 2016). While there may be no true relationship between these variables, the scale used to measure anti-bullying attitudes may have been inadequate due to limitations in its design.

The overall lack of support for hypotheses relating to anti-bullying attitudes may be attributable to the scale I used to measure this outcome. The scale included six items to measure bullying attitudes. These items appeared to clearly imply that there was a right and wrong response (e.g., "It is a wrong thing to join in bullying"), and this may have encouraged socially desirable responding. Moreover, the 4-point Likert-type scale also excluded a neutral response category, so the students' choice was forced to either agree or disagree. The data demonstrated a ceiling effect which makes it difficult to discriminate between participants who report high levels of anti-bullying attitudes. By comparison, Boulton et al.'s (1999) study used a 21-item scale which measured more specific descriptions of one's attitude, such as "Children should be allowed to bully others who deserve it," "Weak children have only themselves to blame when they bully," and "Bullying is a part of school life and is acceptable." Furthermore, their 5-point Likert-type scale includes a neutral response category termed "Neither agree or disagree". The use of more descriptive items and more response categories may have led to greater variance in the Boulton et al.'s (1999) data and therefore revealed a statistically significant relationship between the predictor variables and anti-bullying attitudes. Future research may benefit from the use of a similar scale which may reduce socially desirable responding and the subsequent ceiling effects.

Theoretical Implications

The findings of the present research may have some implications for the central theory applied in this research, ecological systems theory, as well as other theories described in the literature review. This study indicates that positive parental influence appears to have a protective effect against victimisation. This result also supports the notion that increased parental involvement and support allows students to adapt to new environments such as school (Bowlby, 1958; Ladd, 1992). The current research replicates overseas findings (Lereya et al., 2013), suggesting that the importance of parental support can be extended to New Zealand. Moreover, for ecological systems theory, this finding supports the proposition that one's relationship with their social environment has a measurable influence on their experience. Student belonging may also be a promising domain for bullying research. Belonging represents the degree to which students report feeling left out, feeling awkward, feeling lonely, making friends easily, feeling like they belong, feeling liked by other students, and feeling safe at school. The current findings align with previous research indicating that having more friends, higher self-esteem, and better academic performance all appear to be protective factors for victimisation (Bilsky et al., 2013; Brewer & Kerslake, 2015; Low & Espelage, 2013; Reijntjes et al., 2010). Although there appears to be a relationship between belonging and victimisation, the cross-sectional nature of the study limits the degree to which we can infer a causal effect and therefore derive reliable implications for practice. Despite this, belonging appears to be a fruitful area of investigation and future research may help identify useful policy responses.

The relationship between competitive school climate and victimisation risk supports the evolutionary theory,(and similarly, social dominance theory) of bullying which suggests that bullies pursue social and material goals by asserting dominance over weaker students. In essence, they are competing for resources and in a school where more of this competition

takes place, it seems the more bullying one can expect. Although further research is required to replicate and further explore this hypothesis, the early evidence is promising. Having said this, the recent analysis is constrained by its correlational design. It could be that increased bullying precedes the development of a competitive and bullying environment. Again, future research should use longitudinal methods to investigate these variables further to disentangle these competing explanations.

With respect to the analysis of school climate, these findings lend some support for ecological systems theory. The school climate, a macrosystem level influence, has been shown to have a strong association with students' experience of bullying. This further indicates that interventions which focus on a school-wide approach to reducing bullying might be effective. This is the type of intervention which has been used overseas (Bowllan, 2011), and my data suggests that this might be equally effective in New Zealand. It would be beneficial to carry out longitudinal or randomised controlled intervention studies to investigate this relationship further.

Limitations

Despite its strengths, the present study was not without limitations. Firstly, the amount of unaccounted variance in all three regression models should be noted. The models only account for between 17.7% and 23.1% of the variance in the outcome variables, suggesting there are quite likely other unmeasured factors explaining the majority of variance in bullying attitudes and behaviour. For bullying attitudes, previous literature has suggested that peer-group influences have a substantial effect on one's attitudes towards bullying (Espelage et al., 2011) and the present study was unable to account for such influences given the type of data which was gathered during the PISA. Future studies which account for these

influences may be able to substantially improve their predictive validity and therefore increase our understanding of bullying attitudes and one's willingness to intervene.

Secondly, it must be acknowledged that the cross-sectional study design limited the type of inferences that can be made from the data. Because of the correlational nature, one can only speculate about the association between risk factors and bullying but not any causal effects which may be present. As a result, I have been careful to only discuss what the findings meant with respect to the previous literature and its extension in the New Zealand context. The use of prospective longitudinal studies is required to investigate factors which may cause victimisation to increase or decrease, as well as the effectiveness of any intervention strategy. These types of studies provide temporal data on the presentation of risk factors and can therefore inform speculation about the directionality of the effect. Moreover, these studies would provide information about how the role of perpetrator and victim varies over time. In overseas research, it has been shown that the frequency of perpetration and victimisation varies among individuals over time and this may also be true in New Zealand (Ryoo et al., 2015). To my knowledge, only one New Zealand study has used longitudinal data. This study only considered the incidence of victimisation and demographic associations and did not provide any evidence for a temporal relationship between risk factors and the occurrence of bullying (Kljakovic et al., 2015).

The use of self-report scales meant that two potential issues arose: socially desirable responding and self-report bias. Students may have been inclined to underreport bullying as it is a sensitive matter and they may be embarrassed, in fear, and not want to attract unwanted attention (Card & Hodges, 2008). Moreover, when being asked about their attitudes towards bullying, students may have been inclined to report more negative (less tolerant) attitudes towards bullying because, generally speaking, it is widely understood to be socially unacceptable behaviour (van Goethem et al., 2010).

Some researchers suggest that, because the assessment was being carried out by an external organisation, students may have been less prone to this bias than if the data was collected directly by the school (Crothers & Levinson, 2011). PISA attempted to mitigate any bias by ensuring anonymity. However, this resulted in the only measures of bullying behaviours and attitudes being self-report and may result in self-reporting bias. In future research, increased accuracy of bullying measurement can be achieved by using a multi-informant method by combining self-report with teacher report, peer report, and ethnographic observations. This type of approach would increase the validity of findings as the occurrence of bullying could be confirmed using multiple sources.

The present study focused largely on individual and microsystem level influences, however, it tended to neglect the macrosystem level influences such as culture, the social environment outside school, and community factors. Although the analysis was constrained by the data available in the chosen dataset, future research which aims to extend the social ecological model in the New Zealand context should consider these macrosystem influences.

One important limitation is that the analysis of sex and gender was constrained by how the PISA questionnaire only included an item that asked students to indicate whether they were of male or female sex. It did not consider that a student may have non-binary biological sex or gender identity. Previous research indicates that non-binary youth are more likely to become the target of different types of victimisation, including multiple forms of school bullying (Sterzing et al., 2017). Future research should consider if this finding extends to Aotearoa New Zealand as the present study was unable to address the issue.

An additional limitation was that many of the significant effects detected in the present study were, by conventional social science standards, small, or very small, in magnitude. Some of the results which satisfied the pre-registered inference criteria did not,

however, meet the .10 cut-off for a small effect (Cohen, 1988). Although this is a limitation at face value, effects this small should not be prematurely dismissed but interpreted with both caution and nuance. Small effects may still have practical significance, especially if they are cumulated over the long run (Funder & Ozer, 2019). Moreover, because the present study was pre-registered, the small effects reported may have greater verifiability if replicated in future pre-registered and open data studies (Sauer & Drummond, 2020). Despite the potential validity of small effects accumulated over time, it should be noted that issues of measurement purity, operationalisation, and sample size might render these small effects less meaningful. The interpretation of effect sizes should be considered within the context of each subsequent study as opposed to implementing a narrow interpretation of effect size based on traditional social science standards.

Finally, many of the hypothesised relationships for indirect bullying victimisation went unsupported. The contents of the scale used to measure indirect bullying likely influenced this outcome. In comparison to the present study, previous research by Carbone-Lopez et al. (2010) asked participants to report the frequency in which they have had mean rumours or lies spread about them; been made fun of at school due to their looks or the way they talk; and had sexual jokes, comments, or gestures made to them at school. At face value, this set of questions appears to be more specific than the items I analysed from the PISA dataset to represent indirect bullying. These included being left out on purpose, having rumours spread, and being made fun of. The specificity and detail included in the criterion may have therefore produced more valid results. Furthermore, the latter of these bullying behaviours (being made fun of) might plausibly be considered direct bullying given that it can occur both face-to-face and behind one's back. Future research should focus more specifically on specific metrics of cyberbullying and indirect forms of victimisation.

Implications for Future Research

Based on the results of the present study, there appear to be several promising areas for future research. The main limitation of the present study was its correlational nature. This meant that although some overseas findings could be extended to New Zealand, studies which aim to determine the direction of effect are required to extend the literature within this country.

At a conceptual level, future research of New Zealand samples might benefit from the application of more parsimonious theories of victimisation. Crime-related theories of victimisation such as victim precipitation theory, lifestyle theory, and deviant place theory may be a worthwhile starting point. The catalyst model also appears to have promise for application to bullying research given that it accounts for both proximal (genetic variation) and distal (social influences) risk factors which predict anti-social behaviour (Ferguson et al., 2013). In contrast to ecological systems theory (EST), the catalyst model acknowledges that not all risk factors have an equal influence and there is a need to parse out the most influential factors. While EST proposes that influences in various social systems affect the developing individual, it does not point to which factors might have more or less influence on bullying risk. In practice, this makes it difficult to determine which factors to prioritise for intervention, especially when resources are limited. By contrast, the catalyst model acknowledges that factors such as family environment and peer delinquency interact with genetic risk factors to increase the risk of bullying involvement (Ferguson et al., 2013). Consequently, more trivial influences, such as media use, can be appropriately placed further down the list of priorities for intervention (Ferguson et al., 2013). The ability for the catalyst model to hierarchically organise the risk factors for bullying provides more cogent guidance for practice because it identifies which are the most important variables to target with public policy interventions to ensure the greatest return on investment.

For classroom climate, there was some consistency in findings across both forms of bullying, and this may be a promising area to consider for developing interventions which reduce victimisation risk. It appears that teachers who have higher classroom standards, such as a low tolerance for classroom disruption and disorder, are more likely to have students who report lower levels of bullying. Future research might aim to explore this emerging evidence further by using more rigorous methods such as a longitudinal study or randomised controlled intervention targeting classroom standards.

With respect to belonging, the strength of evidence for this relationship is substantial and by replicating previous studies in the present research, our findings suggest that it also exists in New Zealand. This may be a promising area of future research and longitudinal studies may increase our understanding of this relationship by providing evidence for its directionality and therefore increasing our ability to make causal inferences. Furthermore, this may be a promising pathway for intervention and trials may be considered to establish whether bullying victimisation could be reduced by increasing one's belonging.

From the results on academic performance, deriving implications for schools from this finding is challenging given that multiple explanations are possible for the relationship. Firstly, as suggested in the literature review, this finding may be related to the association between victimisation and increased absenteeism (Gruber & Fineran, 2008). However, future research should be carried out in the New Zealand context to confirm that this is also true within New Zealand. Secondly, it may be that students who perform more poorly are more likely to be targeted for this reason suggesting that the relationship may be unidirectional rather than bidirectional. Finally, as suggested by Nakamoto and Schwartz (2010), there may be a third variable which is influencing both academic performance and victimisation, for example, emotional dysregulation. Future research should investigate this relationship in

more detail and examine its underlying mechanism to identify practical implications that may be of use to schools.

Given the strength of previous research, I was surprised by the lack of findings regarding socioeconomic status. This outcome may be attributable to cultural differences in Aotearoa New Zealand that separate it from other countries. To my knowledge, there are only two analyses of this variable as a predictor for victimisation, and therefore future studies should investigate this relationship further using different measures of SES to establish the validity of these findings and to make more accurate comparisons with overseas research. For example, previous research has relied on parental income for measuring SES (Tippett & Wolke, 2014), a metric that does not appear to have been employed in New Zealand in the bullying literature.

With respect to bullying attitudes, this appears to be a particularly fruitful area of research. The literature thus far indicates that students' attitudes to bullying are meaningfully related to their participation in bullying as a perpetrator, defender, or victim (Salmivalli & Voeten, 2004). Despite this, little is known about which factors are related to the formation of these attitudes. The use of longitudinal studies in this area would, once again, allow for more reasonable speculation about causal relationships which might exist here.

Lastly, the complexity of the available ethnicity data, and how these data were recorded (i.e., with participants being able to select multiple ethnicities) made analysis too challenging for the scope of a master's project. It may be useful for future studies to examine the relationship between bullying victimisation risk, anti-bullying attitudes, and ethnicity. This type of analysis may provide some further indication if cultural differences are underlying our results and if any ethnic groups are at increased risk of victimisation.

Conclusions

The present research investigated the relationship between several individual factors believed to be associated with bullying victimisation risk. Data collected during the 2018 Programme for International Student Assessment (PISA), which is made openly available, meant that trends in New Zealand adolescents could be analysed. Following the pre-registration of the study design, I used a multiple linear regression model to estimate the relationship between these risk factors and self-reported bullying victimisation in both direct and indirect forms. I also investigated the relationship between these factors and students self-reported anti-bullying attitudes.

In summary, the analysis revealed that bullying victimisation (in at least one form) was significantly associated with sex, parental support, classroom climate, belonging, school climate, and academic performance. The strongest of these findings indicated that males were at more risk of direct bullying than females, although both appeared to be at equal risk of indirect forms of bullying. Increased belonging (or connectedness to school) and academic performance appeared to be associated with lower bullying of both forms. Though the findings of this study are broadly consistent with overseas research, further research employing longitudinal design and metrics with increased validity are required before speculating about the causal influence of these factors.

For bullying attitudes, the findings were less clear. Females held stronger anti-bullying attitudes than males, as did students who reported increased parental support. Finally, school climate was associated with bullying attitudes on both dimensions: competitiveness and co-operation. Despite the relative lack of significant findings, bullying attitudes may be a fruitful area of research given the relationship which has been previously established between attitudes and behaviour. Future research may benefit from the use of a more detailed scale for measuring attitudes, such as the 21-item scale described above.

Overall, the findings suggest that some bullying trends are similar and some are different to those which have been observed overseas. The present study demonstrates the need for more longitudinal research on bullying in the Aotearoa New Zealand context which would extend our understanding of the causal factors for bullying victimisation. As a result, schools and policymakers would be more informed before employing interventions designed to reduce bullying behaviour. Moreover, investigation of the factors which precipitate anti-bullying attitudes has received very little attention but appears to be a promising domain of inquiry. Continued research in both of these areas may eventually lead to well-founded implications which aim to reduce adolescent bullying and improve the mental health of students around Aotearoa New Zealand.

References

Adair, V. A., Dixon, R. S., Moore, D. W., & Sutherland, C. M. (2000). Ask your mother not to make yummy sandwiches: Bullying in New Zealand Secondary Schools. *New Zealand Journal of Educational Studies, 35*(2), 207 - 221.

Adams, R. E., & Laursen, B. (2007). The correlates of conflict: Disagreement is not necessarily detrimental. *Journal of Family Psychology, 21*(3), 445-458. https://doi.org/10.1037/0893-3200.21.3.445

Adler, P., & Adler, P. (1998). *Peer power: Preadolescent culture and identity*. Rutgers University Press.

Adler, P., Kless, P., & Adler, S. (1992). Socialization to gender roles: Popularity among elementary school boys and girls. *Sociology of Education, 65*(3), 169-187.

American Psychological Association. (2010). *Publication manual of the American Psychological Association* (6th ed.).

American Psychological Association. (2012). Guidelines for psychological practice with lesbian, gay, and bisexual clients. *American Psychologist, 67*(1), 10-42.

Anderson, C. A., & Bushman, B. J. (2001). Effects of violent video games on aggressive behavior, aggressive cognition, aggressive affect, physiological arousal, and prosocial behavior: A meta-analytic review of the scientific literature. *Psychological Science, 12*(5), 353-359. https://doi.org/10.1111/1467-9280.00366

Andrade, C. (2019). The p value and statistical significance: Misunderstanding, explanations, challenges, and alternatives. *Indian Journal of Psychological Medicine, 41*(3), 210-215.

Ang, R. P., & Goh, D. H. (2010). Cyberbullying among adolescents: The role of affective and cognitive empathy, and gender. *Child Psychiatry and Human Development, 41*, 387-397.

Arango, A., Cole-Lewis, Y., Lindsay, R., Yeguez, C. E., Clark, M., & King, C. (2018). The protective role of connectedness on depression and suicidal ideation among bully victimized youth. *Journal of Clinical Child & Adolescent Psychology*, 1-12.

Arseneault, L., Bowes, L., & Shakoor, S. (2010). Bullying victimization in youths and mental health problems: 'much ado about nothing'? *Psychological Medicine, 40*(5), 717-729. https://doi.org/10.1017/S0033291709991383

Atlas, R. S., & Pepler, D. J. (1998). Observations of bullying in the classroom. *Journal of Educational Research, 92*, 86.

Auld, E., & Morris, P. (2016). PISA, policy and persuasion: Translating complex conditions into education 'best practice'. *Comparative Education, 52*(2), 202-229. https://doi.org/10.1080/03050068.2016.1143278

Avvisati, F. (2020). The measure of socio-economic status in PISA: a review and some suggested improvements. *Large-scale Assessments in Education, 8*(1). https://doi.org/10.1186/s40536-020-00086-x

Avvisati, F., Echazarra, A., Givord, P., & Schwabe, M. (2019). *Programme for International Student Assessment (PISA): Results from PISA 2018: New Zealand*. https://www.oecd.org/pisa/publications/PISA2018_CN_NZL.pdf

Azjen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.

Ball, H. A., Arseneault, L., Taylor, A., Maughan, B., Caspi, A., & Moffitt, T. E. (2008). Genetic and environmental influences on victims, bullies and bully-victims in childhood. *Journal of Child Psychology and Psychiatry, 49*(1), 104-112. https://doi.org/10.1111/j.1469-7610.2007.01821.x

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice Hall.

Baren, T., & Qing, L. (2007). The relationship between cyberbullying and school bullying. *Journal of Student Wellbeing, 1*(2), 15-33.

Bauman, S., & Del Rio, A. (2006). Preservice teachers' responses to bully scenarios: Comparing physical, verbal, and relational bullying. *Journal of Educational Psychology, 98*, 219-231.

Belsky, J., & de Haan, M. (2011). Annual research review: Parenting and children's brain development: The end of the beginning. *Journal of Child Psychology and Psychiatry, 52*, 409-428.

Beran, T. (2008). Consequences of being bullied at school. In D. J. Pepler & W. Craig (Eds.), *Understanding and addressing bullying: An international perspective* (pp. 44-46). AuthorHouse.

Berger, K., S. (2007). Update on bullying at school: Science forgotten? *Developmental Review, 27*(1), 90-126. https://doi.org/10.1016/j.dr.2006.08.002

Bilic, V., Flander, G. B., & Rafajac, B. (2014). Life satisfaction and school performance of children exposed to classic and cyber peer bullying. *Collegium Antropolgicum, 38*(1), 21-29.

Bilsky, S. A., Cole, D. A., Dukewich, T. L., Martin, N. C., Sinclair, K. R., & Tran, C. V. (2013). Does supportive parenting mitigate the longitudinal effects of peer victimization on depressive thoughts and symptoms in children? *Journal of Abnormal Psychology, 122*, 406-410.

Bishop, J. H., Bishop, M., & Bishop, M. (2004). Why we harass nerds and freaks: A formal theory of student culture and norms. *Journal of School Health, 74*, 235.

Bjorkqvist, K., Lagerspetz, K., & Kaukiainen, A. (1992). Do girls manipulate and boys fight? Developmental trends in regard to direct and indirect aggression. *Aggressive Behavior*(18), 117-127.

Bolger, K. E., Patterson, C. J., & Kupersmidt, J. B. (1998). Peer relationships and self-esteem among children who have been maltreated. *Child Development, 69*(4), 1171-1197.

Bolivin, M., & Hymel, S. (1997). Peer experiences and social self-perceptions: A sequential model. *Development Psychology, 33*, 135-145.

Bond, L., Carlin, J. B., Thomas, L., Rubin, K., & Patton, G. (2001). Does bullying cause emotional problems? A prospective study of young teenagers. *The BMJ, 323*, 480-484.

Boulton, M. J., Bucci, E., & Hawker, D. D. S. (1999). Swedish and English secondary school pupils' attitudes towards, and conceptions of, bullying: Concurrent links with bully/victim involvement. *Scandinavian Journal of Psychology, 40*, 277-282.

Boulton, M. J., Trueman, M., & Flemington, I. (2010). Associations between secondary school pupils' definitions of bullying, attitudes towards bullying, and tendencies to engage in bullying: Age and sex differences. *Educational Studies, 28*(4), 353-370. https://doi.org/10.1080/0305569022000042390

Bowers, L., Smith, P. K., & Binney, Y. (1992). Cohesion and power in the families of children involved in bully/victim problems at school. *Journal of Family Therapy, 14*, 371-387.

Bowlby, J. (1958). The nature of the child's tie to his mother. *International Journal of Psycho-Analysis, 39*, 350-373.

Bowllan, N. M. (2011). Implementation and evaluation of a comprehensive, school-wide bullying prevention program in an urban/suburban middle school. *Journal of School Health, 81*(4), 167-173. https://doi.org/10.1111/j.1746-1561.2010.00576.x

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology, 53*, 731-799.

Braveman, P. A., Cubbin, C., Egerter, S., Chideya, S., Marchi, K. S., Metzler, M., & Posner, S. (2005). Socioeconomic status in health research: One size does not fit all. *Journal of American Medical Association, 14*(294), 2879-2888.

Brewer, G., & Kerslake, J. (2015). Cyberbullying, self-esteem, empathy and loneliness. *Computers in Human Behavior, 48*, 255-260.

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist, 32*, 513-531.

Bryant, J. A., Sanders-Jackson, A., & Smallwood, A. M. K. (2006). IMing, text messaging, and adolescent social networks. *Journal of Computer Mediated Communication, 11*(2). https://doi.org/10.1111/j.1083-6101.2006.00028.x

Bullying Prevention Advisory Group. (2015). *Bullying prevention and response: A guide for schools*. https://www.education.govt.nz/assets/Documents/School/Bullying-prevention/MOEBullyingGuide2015Web.pdf

Burton, L., Westen, D., & Kowalski, R. (2012). *Psychology* (3rd Australian and New Zealand ed.). John Wiley & Sons Asutralia, Ltd.

Caravita, S. C. S., Di Blasio, P., & Salmivalli, C. (2009). Unique and interactive effects of empathy and social status on involvement in bullying. *Social Development, 18*(1), 140-163. https://doi.org/10.1111/j.1467-9507.2008.00465.x

Carbone-Lopez, K., Esbensen, F., & Brick, B. T. (2010). Correlates and consequences of peer victimization: Gender differences in direct and indirect forms of bullying. *Youth Violence and Juvenile Justice, 8*(4), 332-350. https://doi.org/10.1177/1541204010362954

Card, N. A., & Hodges, E. V. E. (2008). Peer victimization among schoolchildren: Correlations, causes, consequences, and considerations in assessment and intervention. *School Psychology Quarterly, 23*(4), 451-461. https://doi.org/10.1037/a0012769

Carney, J. V., Liu, Y., & Hazler, R. J. (2018). A path analysis on school bullying and critical school environment variables: A social capital perspective. *Children Youth Services Review, 93*, 231-239.

Carrera, M., DePalma, R., & Lameiras, M. (2011). Toward a more comprehensive understanding of bullying in school settings. *Educational Psychology Review, 23*, 479-499.

Casey-Cannon, S., Hayward, C., & Gowen, C. (2001). Middle-school girls' reports of peer victimization: Concerns, consequences, and implications. *Professional School Counseling, 5*, 138-148.

Cassidy, T. (2009). Bullying and victimization in school children: The role of social identity, problem-solving and family and school context. *Social Psychology of Education, 2*(1), 63-76.

Chan, J. (2006). Systemic patterns in bullying and victimization. *School Psychology International, 27*(3), 352-369.

Chang, F. C., Chiu, C. H., Miao, N. F., Chen, P. H., Lee, C. M., Huang, T. F., & Pan, Y. C. (2015). Online gaming and risks predict cyberbullying perpetration and victimization in adolescents. *International Journal of Public Health, 60*, 257-266.

Coggan, C., Bennett, S., Hooper, R., & Dickinson, P. (2003). Association between bullying and mental health status in New Zealand adolescents. *International Journal of Mental Health Promotion, 5*(1), 16-22. https://doi.org/10.1080/14623730.2003.9721892

Cohen-Posey, K. (1995). *How to handle bullies, teasers, and other meanies*. Rainbow Books.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. L. Erlbaum Associates.

Connolly, J., Pepler, D. J., Craig, W., & Taradash, A. (2000). Dating experiences of bullies in early adolescence. *Child Maltreatment, 5*(4), 293-310. https://doi.org/10.1177/1077559500005004002

Cook, C. R., Williams, K. R., Guerra, N. G., Kim, T. E., & Sadek, S. (2010). Predictors of bullying and victimization in childhood and adolescence: A meta-analytic investigation. *School Psychology Quarterly, 25*(2), 65-83. https://doi.org/10.1037/a0020149

Cowan, C. D., Hauser, R. M., Levin, H. M., Beale Spencer, M., & Chapman, C. (2012). *Improving the measurement of socioeconomic status for the National Assessment of Educational Progress: A theoretical foundation*. https://eric.ed.gov/?id=ED542101

Craig, W., Harel-Fisch, Y., Fogel-Grinvald, H., Dostaler, S., Hetland, J., Simons-Morton, B., Molcho, M., de Mato, M. G., Overpeck, M., Due, P., Pickett, W., Violence, H., Injuries Prevention Focus, G., & Group, H. B. W. (2009). A cross-national profile of bullying and victimization among adolescents in 40 countries. *International Journal of Public Health, 54*, 216-224. https://doi.org/10.1007/s00038-009-5413-9

Craig, W. M., & Pepler, D. J. (2003). Identifying and targeting risk for involvement in bullying and victimization. *Canadian Journal of Psychiatry, 48*(9), 577-582.

Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66*, 710-722.

Cross, D., Barnes, A., Papageorgiou, A., Hadwen, K., Hearn, L., & Lester, L. (2015). A social-ecological framework for understanding and reducing cyberbullying behaviours. *Aggression and Violent Behavior, 23*, 109-117.

Crothers, L. M., & Levinson, E. M. (2011). Assessment of bullying: A review of methods and instruments. *Journal of Counselling & Development, 82*(4), 496-503. https://doi.org/10.1002/j.1556-6678.2004.tb00338.x

Denny, S., Peterson, E. R., Stuart, J., Utter, J., Bullen, P., Fleming, T., Ameratunga, S., Clark, T., & Milfont, T. (2014). Bystander intervention, bullying, and victimization: A multilevel analysis of New Zealand high schools. *Journal of School Violence, 14*(3), 245-272. https://doi.org/10.1080/15388220.2014.910470

Ding, Y., Li, D., Li, X., Xiao, J., Zhang, H., & Wang, Y. (2020). Profiles of adolescent traditional and cyber bullying and victimization: The role of demographic, individual, family, school, and peer factors. *Computers in Human Behavior, 111*. https://doi.org/10.1016/j.chb.2020.106439

Due, P., Holstein, P. E., Lynch, J., Diderischsen, F., Gabhain, S. N., Scheidt, P. C., & Currie, C. (2005). Bullying and symptoms among school-aged children: International comparative cross sectional study in 28 countries. *European Journal of Public Health, 15*(2), 128-132.

Duggins, S. D., Kuperminc, G. P., Henrich, C. C., Smalls-Glover, C., & Perilla, J. L. (2016). Aggression among adolescent victims of school bullying: Protective roles of family and school connectedness. *Psychology of Violence, 6*, 205-212.

Dulmus, C. N., Theriot, M. T., Sowers, K. M., & Blackburn, J. A. (2004). Student Reports of Peer Bullying Victimization in a Rural School. *Stress, Trauma, and Crisis, 7*(1), 1-16. https://doi.org/10.1080/15434610490281093

Eastman, M., Foshee, V., Ennett, S., Sotres-Alvarez, D., Reyes, H. L. M., Faris, R., & North, K. (2018). Profiles of internalizing and externalizing symptoms associated with bullying victimization. *Journal of Adolescence, 65*, 101-110.

Education Counts. (2018). *PISA 2018*. Retrieved November 25 2020 from https://www.educationcounts.govt.nz/data-services/international/pisa_research/pisa-2018#:~:text=79%20countries%20took%20part%20in,all%2037%20OECD%20member%20countries

Education Review Office. (2019). *Bullying prevention and response in New Zealand Schools*. https://www.ero.govt.nz/assets/Uploads/Bullying-Prevention-and-Response-in-New-Zealand-Schools-May-2019.pdf

Eisenberg, M. E., Neumark-Sztainer, D., & Perry, C. L. (2003). Peer harassment, school connectedness, and academic achievement. *Journal of School Health, 73*, 311-316.

Ellis, B. J., Volk, A. A., Gonzalez, J. M., & Embry, D. D. (2016). The meaningful roles intervention: An evolutionary approach to reducing bullying and increasing prosocial behavior. *Journal of Research on Adolescence, 26*(4), 622-637. https://doi.org/10.1111/jora.12243

Ellison, N. B., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook "friends:" Social capital and college students' use of online social network sites. *Journal of Computer Mediated Communication*, 1143-1168. https://doi.org/10.1111/j.1083-6101.2007.00367.x

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

Eslea, M., Menesini, E., Y., M., O'Moore, M., Mora-Merchan, J. A., & Pereira, B. (2004). Friendship and loneliness among bullies and victims: Data from seven countries. *Aggressive Behavior, 30*(1), 71-83.

Espelage, D., Bosworth, K., & Simon, T. (2001). Short-term stability and change of bullying in middle school students: An examination of demographic, psychosocial, and environmental correlates. *Violence & Victims, 16*, 411-426.

Espelage, D., Green, H., & Polanin, J. (2011). Willingness to Intervene in bullying episodes among middle school students. *The Journal of Early Adolescence, 32*(6), 776-801. https://doi.org/10.1177/0272431611423017

Espelage, D., & Swearer, S. (2010). *Bullying in American schools* (2nd ed.). Routledge.

Espelage, D. L. (2014). Ecological theory: Preventing youth bullying, aggression, and victimization. *Theory Into Practice, 53*(4), 257-264. https://doi.org/10.1080/00405841.2014.947216

Espelage, D. L., Mebane, S. E., & Swearer, S., M. (2004). Gender differences in bullying: Moving beyond mean level differences. In D. L. Espelage & S. Swearer, M. (Eds.), *Bullying in American schools: A social-ecological perspective on prevention and intervention* (pp. 15-35). Erlbaum.

Espelage, D. L., & Swearer, S. M. (2003). Research on school bullying and victimization: What have we learned and where do we go from here? *School Psychology Review* (32), 365-383.

Evans, C. B. T., Smokowski, P. R., Rose, R. A., Mercado, M. C., & Marshall, K. J. (2018). Cumulative bullying experiences, adolescent behavioral and mental health, and academic achievement: An integrative model of perpetration, victimization, and bystander behavior. *Journal of Child and Family Studies*. https://doi.org/10.1007/s10826-018-1078-4

Faris, R., & Felmlee, D. (2011). Status Struggles: Network centrality and gender segregation in same- and cross-gender aggression. *American Sociological Review, 76*(1), 48-73. https://doi.org/10.1177/0003122410396196

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioural, and biomedical sciences. *Behavior Research Methods, 39*, 175-191. https://doi.org/10.3758/BF03193146

Ferguson, C. J. (2009). An effect size primer: A guide for clinicians and researchers. *Professional Psychology: Research and Practice, 40*(5), 532-538. https://doi.org/10.1037/a0015808

Ferguson, C. J. (2018). The problem of false positives and false negatives in violent video game experiments. *International Journal of Law Psychiatry, 56*, 35-43.

Ferguson, C. J., Ivory, J. D., & Beaver, K. M. (2013). Genetic, maternal, school, intelligence, and media use predictors of adult criminality: A longitudinal test of the catalyst model in adolescence through early adulthood. *Journal of Aggression, Maltreatment & Trauma, 22*(5), 447-460. https://doi.org/10.1080/10926771.2013.785457

Finnegan, R. A., Hodges, E. V. E., & Perry, D. G. (1998). Victimization by peers: Associations with children's reports of mother-child interaction. *Journal of Personality and Social Psychology, 75*, 1076-1086.

Fisher, B. W., Gardella, J. H., & Teurbe-Tolon, A. R. (2016). Peer cybervictimization among adolescents and the associated internalizing and externalizing problems: A meta-analysis. *Journal of Youth and Adolescence, 45*(1727-1743). https://doi.org/10.1007/s10964-016-0541-z

Forero, R., McLellan, L., Rissel, C., & Bauman, A. (1999). Bullying behaviour and psychosocial health among school students in New South Wales, Australia: Cross sectional survey. *British Medical Journal, 319*, 344-348.

Fried, S., & Fried, P. (1996). *Bullies & victims: Helping your children through the schoolyard battlefield*. M. Evans and Company, Inc.

Fu, Q., Land, K. C., & Lamb, V. K. (2013). Bullying victimization, socioeconomic status and behavioral characteristics of 12th graders in the United States, 1989 to 2009: Repetitive trends and persistent risk differentials. *Child Indicators Research, 6*(1), 1-21.

Funder, D. C., & Ozer, D. J. (2019). Evaluating effect size in psychological research: Sense and nonsense. *Advances in Methods and Practices in Psychological Science, 2*(2), 156-168. https://doi.org/10.1177/2515245919847202

Furlong, M. J., Sharma, B., & Rhee, S. (2000). Defining school violence victim subtypes: A step toward adapting prevention and intervention programs to match student needs. In *Violence in American schools: A practical guide for counsellors* (pp. 67-88). American Counselling Association.

Gilbert, P. (1992). *Depression: The evolution of powerlessness*. Guilford Press.

Gini, G., Albiero, P., Benelli, B., & Altoe, G. (2008). Determinants of adolescents' active defending and passive bystanding behavior in bullying. *Journal of Adolescence, 31*(1), 93-105. https://doi.org/10.1016/j.adolescence.2007.05.002

Gini, G., Pozzoli, T., & Hymel, S. (2014). Moral disengagement among children and youth: A meta-analytic review of links to aggressive behavior. *Aggressive Behavior, 40*, 56-58.

Goleman, D. (1987). The bully: New research depicts a paranoid, life-long loser. *The New York Times*.

Gourneau, B. (2012). Students' perspectives of bullying in schools. *Contemporary Issues in Education Research, 5*(2), 117-126.

Gruber, J. E., & Fineran, S. (2008). Comparing the impact of bullying and sexual harassment victimization on the mental and physical health of adolescents. *Sex Roles, 59*(1-2), 1-13. https://doi.org/10.1007/s11199-008-9431-5

Guerin, S., & Hennessy, E. (2002). *Aggression and bullying*. BPS Blackwell.

Guo, S. (2016). A meta-analysis of the predictors of cyberbullying perpetration and victimization. *Psychology in the Schools, 53*, 432-453.

Hamarus, P., & Kaikkonen, P. (2008). School bullying as a creator of pupil peer pressure. *Educational Research, 50*, 333-345.

Hamilton, L. D., Newman, M. L., Delville, C. K., & Delville, Y. (2008). Physiological stress response of young adults exposed to bullying during adolescence. *Physiology & Behavior, 95*, 617-624.

Harachi, T. W., Fleming, C. B., White, H. R., Ensminger, M. E., Abbott, R. D., & Catalano, R. F. (2006). Aggressive behavior among girls and boys during middle childhood: Predictors and sequelae of trajectory group membership. *Aggressive Behavior, 32*(4), 279-293.

Harter, S., & Monsour, A. (1992). Development analysis of conflict caused by opposing attributes in the adolescent self-portrait. *Developmental Psychology, 28*(2).

Harvey, S. T., & Evans, I. M. (2003). Understanding the emotional environment of the classroom. In D. Fraser & R. Openshaw (Eds.), *Informing our practice* (pp. 182-195). Kanuka Grove Press.

Hawker, D. S. J., & Boulton, M. J. (2000). Twenty years' research on peer victimization and psychosocial maladjustment: A meta-analytic review of cross-sectional studies. *Journal of Child Psychology and Psychiatry, 41*(4), 441-455.

Hawley, P. H. (1999). The ontogenesis of social dominance: A strategy-based evolutionary perspective. *Developmental Review, 19*, 97-132.

Hazler, R. J., & Carney, J. V. (2002). Empowering peers to prevent youth violence. *Journal of Humanistic Counseling, Education & Development, 41*, 129-149.

Hepburn, A. (1997). Teachers and secondary school bullying: A postmodern discourse analysis. *Discourse & Society, 81*(1), 27-48.

Hinduja, S., & Patchin, J. W. (2009). *Bullying beyond the schoolyard: Preventing and responding to cyberbullying*. Corwin Press.

Hinduja, S., & Patchin, J. W. (2010). Bullying, cyberbullying, and suicide. *Archive of Suicide Research, 14*(3), 206-221. https://doi.org/10.1080/13811118.2010.494133

Hodges, E. V. E., Boivin, M., Vitaro, F., & Bukowski, W. M. (1999). The power of friendship: Protection against an escalating cycle of peer victimization. *Development Psychology, 35*, 94-101.

Hodges, E. V. E., & Perry, D. G. (1999). Personal and interpersonal antecedents and consequences of victimization by peers. *Journal of Personality and Social Psychology, 76*, 677-685.

Holt, M., Finkelhor, D., & Kantor, G. (2007). Multiple victimization experiences of urban elementary school students: Associations with psychological functioning and academic performance. *Child Abuse and Neglect, 31*, 503-513.

Hong, J. S., Lee, J., Espelage, D. L., Hunter, S. C., Patton, D. U., & Rivers, T. J. (2016). Understanding the correlates of face-to-face and cyberbullying victimization among U.S. adolescents: A social-ecological analysis. *Violence & Victims, 31*, 638-663.

Howard, N. M., Horne, A. M., & Jolliff, D. (2001). Self-efficacy in a new training model for the prevention of bullying in schools. *Journal of Emotional Abuse, 2*, 181-191.

Hsieh, Y. P., Shen, A. C. T., Wei, H. S., Feng, J. Y., Huang, C. Y., & Hwa, H. L. (2016). Associations between child maltreatment, PTSD, and internet addiction among Taiwanese students. *Computers in Human Behavior, 56*, 209-214.

Hughes, P. P., Middleton, K. M., & Marshall, D. D. (2009). Students' perceptions of bullying in Oklahoma public schools. *Journal of School Violence, 8*(3), 216-232. https://doi.org/10.1080/15388220902910656

Hulin, C., Netemeyer, R., & Cudeck, R. (2001). Can a reliability coefficient be too high? *Journal of Consumer Psychology, 10*(1), 55-58.

Jang-Jones, A., & McGregor, A. (2019). *PISA 2018: New Zealand students' wellbeing*. Ministry of Education.

Jansen, P. W., Verlinden, M., Dommisse-van Berkel, A., Mieloo, C., van der Ende, J., Veenstra, R., Verhulst, F. C., Jansen, W., & Tiemeier, H. (2012). Prevalence of bullying and victimization among children in early elementary school: Do family and school neighborhood socioeconomic status matter. *BMC Public Health, 12*(1), 494.

JASP Team. (2020). *JASP.* In (Version 0.13.1) [Computer software]. https://jasp-stats.org/

Jun, S., & Choi, E. (2015). Academic stress and internet addiction from general strain theory framework. *Computers in Human Behavior, 49*, 282-287.

Juvonen, J., & Galván, A. (2008). Peer influence in involuntary social groups. In M. J. Prinstein & K. A. Dodge (Eds.), *Understanding peer influence in children and adolescents* (pp. 225-244). Guilford Press.

Juvonen, J., Graham, S., & Schuster, M. A. (2003). Bullying among young adolescents: the strong, the weak, and the troubled. *Pediatrics, 112*(6 Pt 1), 1231-1237. https://www.ncbi.nlm.nih.gov/pubmed/14654590

Juvonen, J., & Gross, E. F. (2008). Extending the school grounds? Bullying experiences in cyberspace. *Journal of School Health, 78*(9), 496-505.

Kaltiala-Heino, R., Rimpela, M., Rantanen, P., & Rimpela, A. (2000). Bullying at school—an indicator of adolescents at risk for mental disorders. *Journal of Adolescent Health, 23*, 661-674.

Kaptoge, S., Di Angelantonio, E., & Lowe, G. (2010). Emerging risk factors collaboration: C-reactive protein concentration and risk of coronary heart disease, stroke, and mortality: An individual participant meta-analysis. *Lancet, 375*, 132-140.

Karcher, M. J. (2004). Connectedness and school violence: A framework for developmental interventions. In E. R. Gerler (Ed.), *Handbook of school violence* (pp. 7-39). The Haworth Reference Press.

Kärnä, A., Voeten, M., Little, T. D., Poskiparta, E., Kaljonen, A., & Salmivalli, C. (2011). A large-scale evaluation of the KiVa antibullying program: Grades 4–6. *Child Development, 82*, 311-330.

Kasen, S., Berenson, K., Cohen, P., & Johnson, J. G. (2004). The effects of school climate on changes in aggressive and other behaviors related to bullying. In D. Espelage & S. M. Swearer (Eds.), *Bullying in American schools* (pp. 187-210). Lawrence Erlbaum.

Khamis, V. (2015). Bullying among school-age children in the greater Beirut area: Risk and protective factors. *Child Abuse and Neglect, 39*, 137-146.

Khoury-Kassabri, M., Benbenishty, R., Astor, R. A., & Zeira, A. (2004). The contributions of community, family, and school variables to student victimization. *American Journal of Community Psychology, 34*, 187-204.

Kim, Y. S., Koh, Y.-J., & Leventhal, B. L. (2004). Prevalence of school bullying in Korean middle school students. *Archives of Pediatrics & Adolescent Medicine, 158*(8), 737-741. https://doi.org/10.1001/archpedi.158.8.737

Kljakovic, M., Hunt, C., & Jose, P. E. (2015). Incidence of bullying and victimisation among adolescents in New Zealand. *New Zealand Journal of Psychology, 44*(2), 57-67.

Kochenderfer-Ladd, B., & Ladd, G. W. (1996). Peer victimization: Cause or consequence of school maladjustment? *Child Development, 67*, 1305-1317.

Kochenderfer-Ladd, B., & Skinner, K. (2003). Children's coping strategies: Moderators of the effects of peer victimization? *Developmental Psychology, 38*, 267-278.

Kol, S. (2016). The effects of parenting styles on social skills of children aged 5-6. *The Malaysian Online Journal of Educational Sciences, 4*(2).

Koth, C. W., Bradshaw, C. P., & Leaf, P. J. (2008). A multilevel study of predictors of student perceptions of school climate: The effect of classroom-level factors. *Journal of Educational Psychology, 100*, 96-104.

Kowalski, R. M., Giumetti, G. W., Schroeder, A. N., & Lattanner, M. R. (2014). Bullying in the digital age: A critical review and meta-analysis of cyberbullying research among youth. *Psychological Bulletin, 140*, 1073-1137. https://doi.org/10.1037/a0035618

Kraut, R., Patterson, M., Lundmark, V., Kielser, S., Mukopadhyay, T., & Scherlis, W. (1998). Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist, 53*, 1017-1031.

Kretschmer, T., Veenstra, R., Branje, S., Reijneveld, S. A., Meeus, W. H. J., Dekovi´c, M., & Oldehinkel, A. J. (2018). How competent are adolescent bullying perpetrators and victims in mastering normative developmental tasks in early adulthood? *Journal of Abnormal Child Psychology, 46*, 41-56.

Kumpulainen, K., & Rasanen, E. (2000). Children involved in bullying at elementary school age: Their psychiatric symptoms and deviance in adolescence. An epidemiological sample. *Child Abuse and Neglect, 24*, 1567-1577.

Kumpulainen, K., Rasanen, E., & Henttonen, I. (1999). Children involved in bullying: Psychological disturbance and the persistence of the involvement. *Child Abuse and Neglect, 23*, 1253-1262.

Ladd, G. W. (1992). Themes and theories: Perspectives on processes in family peer relations. In R. D. Parke & G. W. Ladd (Eds.), *Family-peer relationships: Models of linkage* (pp. 3-34). Lawrence Erlbaum Associates.

Låftman, S. B., Östberg, V., & Modin, B. (2017). School climate and exposure to bullying: A multilevel study. *School Effectiveness and School Improvement, 28*, 153-164.

Lagerspetz, K. M., Bjorkqvist, K., Berts, M., & King, E. (1982). Group aggression among school children in three schools. *Scandinavian Journal of Psychology, 23*, 45-52.

Lam, L. T., Cheng, Z., & Liu, X. (2013). Violent online games exposure and cyberbullying/victimization among adolescents. *Cyberpsychology, Behavior, and Social Networking, 16*(3), 159-165. https://doi.org/10.1089/cyber.2012.0087

Lam, S.-F., Law, W., Chan, C.-K., Wong, B. P. H., & Zhang, X. (2014). A latent class growth analysis of school bullying and its social context: The self-determination theory perspective. *School Psychology Quarterly*, 1-16. https://doi.org/10.1037/spq0000067

Laursen, B. (1993). *Close friendships in adolescence*. Jossey-Bass.

Lenhart, A. (2005). *Protecting teens online*. PEW Research Centre. https://www.pewresearch.org/internet/2005/03/17/protecting-teens-online/

Lenhart, A., Duggan, M., Perrin, A., Stepler, R., Raine, L., & Parker, K. (2015). *Teen, social media and technology overview 2015*. PEW Research Centre. https://www.pewresearch.org/internet/2015/04/09/teens-social-media-technology-2015/

Lenhart, A., Smith, A., Anderson, M., Duggan, M., & Perrin, A. (2015). *Teen, technology and friendships*. PEW Research Centre. http://www.pewinternet.org/files/2015/08/Teens-and-Friendships-FINAL2.pdf.

Lereya, S. T., Samara, M., & Wolke, D. (2013). Parenting behavior and the risk of becoming a victim and a bully/victim: a meta-analysis study. *Child Abuse & Neglect, 37*(12), 1091-1108. https://doi.org/10.1016/j.chiabu.2013.03.001

Li, Q. (2006). Cyberbullying in schools: A research of gender differences. *School Psychology International, 27*, 157-170.

Liu, Y., Carney, J. V., Kim, H., Hazler, R. J., & Guo, X. (2020). Victimization and students' psychological well-being: The mediating roles of hope and school connectedness. *Children and Youth Services Review, 108*. https://doi.org/10.1016/j.childyouth.2019.104674

Lobel, A., Granic, I., Stone, L. L., & Engels, R. C. (2014). Associations between children's video game playing and psychosocial health: Information from both parent and child reports. *Cyberpsychology, Behavior, and Social Networking, 17*, 639-643.

Low, S., & Espelage, D. (2013). Differentiating cyber bullying perpetration from non-physical bullying: Commonalities across race, individual, and family predictors. *Psychology of Violence, 3*, 39-52. https://doi.org/10.1037/a0030308

Ma, X. (2001). Bullying and being bullied: To what extent are bullies also victims? *American Educational Research Journal, 38*, 351-370.

Ma, X. (2002). Bullying in middle school: Individual and school characteristics of victims and offenders. *School Effectiveness and School Improvement, 13*, 63-89.

Maharaj, A. S., Tie, W., & Ryba, K. (2000). Deconstructing bullying in Aotearoa/New Zealand: Disclosing its liberal and colonial connections. *New Zealand Journal of Educational Studies, 35*(1), 9-23.

Marsh, L., McGee, R., & Nada-Raja, S. (2010). Brief report: Text bullying and traditional bullying among New Zealand secondary school students. *Journal of Adolescence, 33*, 237-240. https://doi.org/10.1016/j.adolescence.2009.06.001

McInroy, L. B., & Mishna, F. (2017). Cyberbullying on online gaming platforms for children and youth. *Child and Adolescent Social Work Journal, 34*(6), 597-607. https://doi.org/10.1007/s10560-017-0498-0

McPherson, M., Smith-Lovin, L., & Brashears, M. E. (2006). Social isolation in America. *American Sociological Review, 71*(3), 353-375.

Migliaccio, T., & Raskauskas, J. L. (2015). *Bullying as a social experience: Social factors, prevention and intervention*. Routledge.

Milani, L., Osualdella, D., & Di Blasio, P. (2009). Quality of interpersonal relationships and problematic Internet use in adolescence. *Cyberpsychology & Behavior, 12*, 681-684. https://doi.org/10.1089/cpb.2009.0071

Ministry of Education. (2014). *School decile ratings*. https://www.education.govt.nz/school/funding-and-financials/resourcing/operational-funding/school-decile-ratings/

Ministry of Education. (2015). *New Zealand's school climate for learning: What we know from TIMSS 2014/2015*. Ministry of Education. www.educationcounts.govt.nz/goto/timss

Modin, B., Plenty, S., Låftman, S. B., Bergström, M., Berlin, M., Gustafsson, P. A., & Hjern, A. (2018). School contextual features of social disorder and mental health complaints: A multilevel analysis of Swedish sixth-grade students. *International Journal of Environmental Research and Public Health, 15*, 156. https://doi.org/10.3390/ijerph15010156

Nakamoto, J., & Schwartz, D. (2010). Is peer victimization associated with academic achievement? A meta-analytic review. *Social Development, 19*, 221-242.

Nansel, T. R., Overpeck, M., Haynie, D. L., Ruan, J., & Scheidt, P. C. (2003). Relationships between bullying and violence among US youth. *Archives of Pediatrics & Adolescent Medicine, 157*(4), 348-353.

Nansel, T. R., Overpeck, M., Pilla, R. S., Ruan, W. J., Simons-Morton, B., & Scheidt, P. C. (2001). Bullying behaviors among U.S. youth: Prevalence and association with psychosocial adjustment. *Journal of American Medical Association, 285*(16), 2094-2100.

Nansel, T. R., & Overpeck, M. D. (2003). Operationally defining “bullying” (Reply). *Archives of Pediatrics & Adolescent Medicine, 157*, 1135-1136.

National Centre for Education Statistics. (2018). *Indicators of school crime and safety: 2018*. US Department of Justice. https://nces.ed.gov/pubs2019/2019047.pdf

Neal, J. (2010). Social aggression and social position in middle childhood and early adolescence: Burning bridges or building them? *Journal of Early Adolescence, 30*(1), 122-137.

Netsafe. (2018). *New Zealand teens' digital profile: A factsheet*. Netsafe. https://www.netsafe.org.nz/youth-factsheet-2018

Nixon, C. L. (2014). Current perspectives: The impact of cyberbullying on adolescent health. *Adolescent Health, Medicine, and Therapeutics, 5*, 143-158. https://doi.org/10.2147/AHMT.S36456

O'Moore, M., & Kirkham, C. (2001). Self-esteem and its relationship to bullying behavior. *Aggressive Behavior, 27*, 269-283.

OECD. (2018a). *Data*. Retrieved 10 November from http://www.oecd.org/pisa/data/

OECD. (2018b). PISA 2018 Technical Report. https://www.oecd.org/pisa/data/pisa2018technicalreport/

OECD. (2018c). *PISA 2018 technical report - Chapter 4: Sample design*. https://www.oecd.org/pisa/data/pisa2018technicalreport/PISA2018%20TecReport-Ch-04-Sample-Design.pdf

OECD. (2018d). *PISA technical report - Chapter 2: Test design and development*. https://www.oecd.org/pisa/data/pisa2018technicalreport/PISA2018%20TecReport-Ch-02-Test-Design.pdf

OECD. (2018e). *PISA technical report - Chapter 16: Construct validation*. https://www.oecd.org/pisa/data/pisa2018technicalreport/PISA2018_Technical-Report-Chapter-16-Background-Questionnaires.pdf

Olweus, D. (1973). *Hackkycklingar och oversittare: Forskning om skolmobbning*. Almqvist & Wiksell.

Olweus, D. (1991). Bully/victim problems among schoolchildren: Basic facts and effects of a school based intervention program. In D. J. Pepler & K. Rubin (Eds.), *The development and treatment of childhood aggression*. Erlbaum.

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

Olweus, D. (1994). Bullying at school: basic facts and effects of a school based intervention program. *Journal of Child Psychology and Psychiatry, 35*(7), 1171-1190. https://doi.org/10.1111/j.1469-7610.1994.tb01229.x

Olweus, D. (2001). Peer harassment: A critical analysis and some important issues. In J. Juvonen & S. Graham (Eds.), *Peer harassment in school: The plight of the vulnerable and victimized* (pp. 3-20). Guilford Press.

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

Olweus, D., & Limber, S. P. (1999). Bullying prevention program. In D. S. Elliot (Ed.), *Blueprints for violence prevention: Book nine*. University of Colorado.

Orben, A., & Przybylski, A. K. (2019). The association between adolescent well-being and digital technology use. *Nature Human Behavior, 3*(2), 173-182. https://doi.org/10.1038/s41562-018-0506-1

Orpinas, P., Horne, A. M., & Staniszewski, D. (2003). School bullying: Changing the problem by changing the school. *School Psychology Review, 23*, 431-444.

Osborne, J. W. (2004). Identification with academics and violence in schools. In E. R. Gerler (Ed.), *Handbook of school violence*. The Haworth Reference Press.

Patchin, J. W., & Hinduja, S. (2006). Bullies move beyond the schoolyard: A preliminary look at cyberbullying. *Youth Violence and Juvenile Justice, 4*(2), 148-169.

Payne, R. K. (1999). *Preventing school violence by creating emotional safety*. Aha! Process.

Pellegrini, A. D. (1998). Bullies and victims in school: A review and call for research. *Journal of Applied Developmental Psychology, 19*, 165-176.

Pellegrini, A. D., & Long, J. D. (2002). A longitudinal study of bullying, dominance, and victimization during the transition from primary school through secondary school. *British Journal of Developmental Psychology, 20*(2), 259-280. https://doi.org/10.1348/026151002166442

Pellis, S. M., & Pellis, V. C. (2007). Rough-and-tumble play and the development of the social brain. *Current Directions in Psychological Science, 16*(2), 95-98. https://doi.org/10.1111/j.1467-8721.2007.00483.x

Pepler, D. J., Smith, P. K., & Rigby, K. (2004). Looking back and forward: Implications for making interventions work effectively. In P. K. Smith, D. J. Pepler, & K. Rigby (Eds.), *Bullying in schools: How successful can interventions be?* (pp. 307-324). Cambridge University Press.

Perren, S., Dooley, J., Shaw, T., & Cross, D. (2010). Bullying in schools and cyberspace: Associations with depressive symptoms in Swiss and Australian adolescents. *Child and Adolescent Journal of Psychiatry and Mental Health, 4*(28). https://doi.org/10.1186/1753-2000-4-28

Perry, B. D. (2004). *New directions in interventions with maltreated and traumatised children and adolescents* Paper presented at the Brain Development Seminar, Wellington, New Zealand.

Phillips, D. A. (2007). Punking and bullying: Strategies in middle school, high school, and beyond. *Journal of Interpersonal Violence, 22*, 158-178.

Przybylski, A. K., & Weinstein, N. (2017). A large-scale test of the Goldilocks hypothesis. *Psychological Science, 28*(2), 204-215. https://doi.org/10.1177/0956797616678438

Raskauskas, J. L., Carroll-Lind, J., & Kearney, A. (2006). Multiple peer victimization in New Zealand: Links to bullying beahviour. *New Zealand Journal of Educational Studies, 41*(2), 349-366.

Raskauskas, J. L., Gregory, J., Harvey, S. T., Rifshana, F., & Evans, I. M. (2010). Bullying among primary school children in New Zealand: relationships with prosocial behaviour and classroom climate. *Educational Research, 52*(1), 1-13. https://doi.org/10.1080/00131881003588097

Reid Chassiakos, Y. L., Radesky, J., Christakis, D., Moreno, M. A., Cross, C., & Council on Communications and Media. (2016). Children and adolescents and digital media. *Pediatrics, 138*(5), e1-e18.

Reijntjes, A., Kamphuis, J. H., Prinzie, P., & Telch, M. J. (2010). Peer victimization and internalizing problems in children: a meta-analysis of longitudinal studies. *Child Abuse & Neglect, 34*(4), 244-252. https://doi.org/10.1016/j.chiabu.2009.07.009

Renati, R., Berrone, C., & Zanetti, M. A. (2012). Morally disengaged and unempathetic: Do cyberbullies fit these definitions? An exploratory study. *Cyberpsychology, Behavior, and Social Networking, 15*, 391-398.

Rigby, K. (1995). New thinking about bullying in schools. *Independent Education*, 3-6.

Rigby, K. (2002). *New perspectives in bullying*. Jessica Kingsley.

Rigby, K. (2005). Why do some children bully at school? The contributions of negative attitudes towards victims and the perceived expectations of friends, parents and teachers. *School Psychology International, 26*, 147-161. https://doi.org/10.1177/0143034305052910

Rodkin, P. C., & Berger, C. (2009). Who bullies who? Social status asymmetries by victim and gender. *International Journal of Behavioral Development, 32*, 473-485. https://doi.org/10.1177/0165025408093667

Rodkin, P. C., Farmer, T. W., Pearl, R., & Van Acker, R. (2000). Heterogeneity of popular boys: Antisocial and prosocial configurations. *Developmental Psychology, 36*(1), 14-24.

Roland, E., & Galloway, D. (2002). Classroom influences on bullying. *Educational Research, 44*, 299-312.

Romain, T., & Verick, E. (1997). *Bullies are a pain in the brain*. Free Spirit Publishing.

Rostad, W. L., Basile, K. C., & Clayton, H. B. (2018). Association among television and computer/video game use, victimization, and suicide risk among U.S. high school students. *Journal of Interpersonal Violence, 36*(5-6), 2282-2305. https://doi.org/10.1177/0886260518760020

Rutter, M. (1987). Psychological resilience and protective mechanisms. *The American Journal of Orthopsychiatry, 57*, 316-331.

Ryoo, J. H., Wang, C., & Swearer, S., M. (2015). Examination of the change in latent statuses in bullying behaviors across time. *School Psychology Quarterly, 301*(1), 105-122. https://doi.org/10.1037/spq0000082

Saarento, S., Karna, A., Hodges, E. V., & Salmivalli, C. (2013). Student-, classroom-, and school-level risk factors for victimization. *Journal of School Psychology, 51*(3), 421-434. https://doi.org/10.1016/j.jsp.2013.02.002

Salmivalli, C., & Voeten, M. (2004). Connections between attitudes, group norms, and behaviour in bullying situations. *International Journal of Behavioral Development, 28*, 246-258.

Salzinger, S., Feldman, R. S., Ng-Make, D. S., Mojica, E., Stockhammer, T., & Rossario, M. (2002). Effects of partner violence and physical child abuse on child behavior: A study of abused and comparison children. *Journal of Family Violence, 17*(1), 23-52.

Sampasa-Kanyinga, H., & Hamilton, H. A. (2015). Use of social networking sites and risk of cyberbullying victimization: A population-level study of adolescents. *Cyberpsychology, Behavior, and Social Networking, 18*(12), 704-710. https://doi.org/10.1089/cyber.2015.0145

Sauer, J. D., & Drummond, A. (2020). Boundary conditions for the practical importance of small effects in long runs: A comment on Funder and Ozer (2019). *Advances in Methods and Practices in Psychological Science, 3*(4), 502-504. https://doi.org/10.1177/2515245920957607

Schoeler, T., Duncan, L., Cecil, G. M., Ploubidis, G. B., & Pingault, J. B. (2018). Quasi-experimental evidence on short- and long-term consequences of bullying victimization: A meta-analysis. *Psychological Bulletin, 144*, 1229-1246.

Schreier, A., Wolke, D., Thomas, K., Horwood, J., Hollis, C., Gunnell, D., & Harrison, G. (2009). Prospective study of peer victimization in childhood and psychotic symptoms in nonclinical population at age 12 years. *Archives of General Psychiatry, 66*, 527-536.

Segerstrom, S. C., & Miller, G. E. (2004). Psychological stress and the human immune system: A meta-analytic study of 30 years of inquiry. *Psychological Bulletin, 30*, 601-630.

Shapiro, R. M., & Jankowski, M. A. (2005). *Bullies, tyrants, and impossible people*. Crown Business.

Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: undisclosed flexibility in data collection and analysis allows presenting anything as significant. *Psychological Science, 22*(11), 1359-1366. https://doi.org/10.1177/0956797611417632

Slonje, R., & Smith, P. K. (2008). Cyberbullying: another main type of bullying? *Scandinavian Journal of Psychology, 49*(2), 147-154. https://doi.org/10.1111/j.1467-9450.2007.00611.x

Smith, P. K., & Sharp, S. (1994). The problem of school bullying. In P. K. Smith & S. Sharp (Eds.), *School bullying: Insights and perspectives* (pp. 1-19). Routledge.

Smokowski, P. R., & Kopasz, K. H. (2005). Bullying in school: An overview of type, effects, family characteristics, and intervention strategies. *Children & Schools, 27*(2), 101-110.

Snodgrass, J. G., Lacy, M. G., Dengah, H. J., Eisenhauer, S., Batchelder, G., & Cookson, R. (2014). A vacation from your mind: Problematic online gaming is a stress response. *Computers in Human Behavior, 38*, 248-260.

Solberg, M. E., & Olweus, D. (2003). Prevalence estimation of school bullying with the Olweus bully/victim Questionnaire. *Aggressive Behavior, 29*(3), 239-268. https://doi.org/10.1002/ab.10047

Sourander, A., Helstela, L., Helenius, H., & Piha, J. (2000). Persistence of bullying from childhood to adolescence: A longitudinal 8-year follow-up study. *Child Abuse and Neglect, 24*(7), 873-881.

Spriggs, A. L., Iannotti, R. J., Nansel, T. R., & Haynie, D. L. (2007). Adolescent bullying involvement and perceived family, peer and school relations: commonalities and differences across race/ethnicity. *Journal of Adolescent Health, 41*(3), 283-293. https://doi.org/10.1016/j.jadohealth.2007.04.009

Sterzing, P. R., Ratliff, G. A., Gartner, R. E., McGeough, B. L., & Johnson, K. C. (2017, May). Social ecological correlates of polyvictimization among a national sample of transgender, genderqueer, and cisgender sexual minority adolescents. *Child Abuse & Neglect, 67*, 1-12. https://doi.org/10.1016/j.chiabu.2017.02.017

Stevens, V., DeBourdeaudhuji, I., & Van Oost, P. (2000). Bullying in Flemish schools: An evaluation of anti-bullying intervention in primary and secondary schools. *British Journal of Educational Psychology, 70*, 195-210.

Swanson, D. P., Spencer, M. B., Harpalani, V., Dupree, D., Noll, E., Ginzburg, S., & Seaton, G. (2003). Psychosocial development in racially and ethnically diverse youth: conceptual and methodological challenges in the 21st century. *Development and Psychopathology, 15*(3), 743-771. https://doi.org/10.1017/s0954579403000361

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

Swearer, S. M., Song, S. Y., Cary, P. T., Eagle, J. W., & Mickelson, W. T. (2001). Psychosocial correlates in bullying and victimization: The relationship between depression, anxiety, and bully/victim status. *Journal of Emotional Abuse, 2*, 95-121.

Swickert, R., J., Hittner, J. B., Harris, J. L., & Herring, J. A. (2002). Relationships among internet use, personality, and social support. *Computers in Human Behavior, 18*, 437-451.

Tani, F., Greenman, P. S., Schneider, B. H., & Fregoso, M. (2003). Bullying and the big five: A study of childhood personality and participant roles in bullying incidents. *School Psychology International, 24*, 131-146.

Tippett, N., & Wolke, D. (2014). Socioeconomic status and bullying: A meta-analysis. *American Journal of Public Health, 104*(6), e48-e59.

Ttofi, M., Farrington, D. P., & Baldry, A. (2008). *Effectiveness of programmes to reduce school bullying*. S. C. f. C. Prevention.

Unnever, J. D., & Cornell, D. G. (2004). Middle school victims of bullying: Who reports being bullied? *Aggressive Behavior, 30*, 373-388.

Vaillancourt, T. (2005). Indirect aggression among humans. In R. E. Tremblay, W. W. Hartup, & J. Archer (Eds.), *Developmental origins of aggression* (pp. 158-177). Guilford Press.

Valkenburg, P. M., & Peter, J. (2011). Online communication among adolescents: An integrated model of its attraction, opportunities, and risks. *Journal of Adolescent Health, 48*, 121-127.

van Goethem, A. A. J., Scholte, R. H. J., & Wiers, R. W. (2010). Explicit and implicit bullying attitudes in relation to bullying behavior. *Journal of Abnormal Child Psychology, 38*, 829-842. https://doi.org/10.1007/s10802-010-9405-2

Van Rooij, A. J., Schoenmakers, T. M., Vermulst, A. A., Van den Eijnden, R. J., & Van de Mheen, D. (2011). Online video game addiction: Identification of addicted adolescent gamers. *Addiction, 106*, 205-212.

Volk, A. A., Dane, A. V., & Marini, Z. A. (2014). What is bullying? A theoretical redefinition. *Developmental Review, 34*(4), 327-343. https://doi.org/10.1016/j.dr.2014.09.001

Waasdorp, T. E., & Bradshaw, C. P. (2011a). Examining student responses to frequent bullying: A latent class approach. *Journal of Educational Psychology, 103*(2), 336-352.

Waasdorp, T. E., & Bradshaw, C. P. (2011b). Examining student responses to frequent bullying: A latent class approach. *Journal of Educational Psychology, 103*, 336-352. https://doi.org//10.1037/a0022747

Ward, C., & Masgoret, A.-M. (2018). Attitudes toward immigrants, immigration, and multiculturalism in New Zealand: A social psychological analysis. *International Migration Review, 42*(1), 227-248. https://doi.org/10.1111/j.1747-7379.2007.00119.x

West, C., & Zimmerman, D. H. (1987). Doing gender. *Gender and Society, 1*(2), 125-151.

Whitney, I., & Smith, P. K. (1993). A survey of the nature and extent of bullying in junior/middle and secondary schools. *Educational Research, 35*(1), 3-25.

Whitted, K. S., & Dupper, D. R. (2005). Best practice for preventing or reducing bullying in schools. *Children & Schools, 27*, 167-175.

Willard, N. (2005). *Educator's guide to cyberbullying and cyberthreats: Responding to the challenge of online social aggression, threats, and distress*. https://education.ohio.gov/getattachment/Topics/Other-Resources/School-Safety/Safe-and-Supportive-Learning/Anti-Harassment-Intimidation-and-Bullying-Resource/Educator-s-Guide-Cyber-Safety.pdf.aspx

Williams, K., Chambers, M., Logan, S., & Robinson, D. (1996). Association of common health symptoms with bullying in primary school children. *British Medical Journal, 313*, 17-19.

Williams, K. R., & Guerra, N. G. (2007). Prevalence and predictors of internet bullying. *Journal of Adolescent Health, 41*(6), S14-21. https://doi.org/10.1016/j.jadohealth.2007.08.018

Wolfe, D. A., Crooks, C. V., Lee, V., McIntyre-Smith, A., & Jaffe, P. G. (2003). The effects of children's exposure to domestic violence: A meta-analysis and critique. *Clinical Child and Family Psychology Review, 6*(3), 171-187.

Wolke, D., & Samara, M. M. (2004). Bullied by siblings: Association with peer victimisation and behaviour problems in Israeli lower secondary school children. *Journal of Child Psychology and Psychiatry, 45*, 1015-1029.

Wolke, D., Schreier, A., Zanarini, M. C., & Winsper, C. J. (2012). Bullied by peers in childhood and borderline personality symptoms at 11 years of age: A prospective study. *Journal of Child Psychology and Psychiatry, 53*, 846-855.

Woods, H. C., & Scott, H. (2016). #Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression and low self-esteem. *Journal of Adolescence, 51*, 41-49. https://doi.org/10.1016/j.adolescence.2016.05.008

World Health Organisation. (1998). *World health statistics quarterly*.

Ybarra, M. L., Diener-West, M., & Leaf, P. J. (2007). Examining the overlap in interest harassment and school bullying: Implications for school intervention. *Journal of Adolescent Health, 41*, 42-50.

Ybarra, M. L., Espelage, D. L., & Mitchell, K. J. (2014). Differentiating youth who are bullied from other victims of peer-aggression: the importance of differential power and repetition. *Journal of Adolescent Health, 55*(2), 293-300. https://doi.org/10.1016/j.jadohealth.2014.02.009

Ybarra, M. L., Mitchell, K. J., Wolak, J., & Finkelhor, D. (2006). Examining characteristics and associated distress related to Internet harassment: Findings from the second youth internet safety survey. *Pediatrics, 118*(4), e1169-e1177.

You, S., Furlong, M. J., Felix, E., Sharkey, J., & Tanigawa, D. (2008). Relations among school connectedness, hope, life satisfaction, and bully victimization. *Psychology in the Schools, 45*(5), 446.

Yu, J. J., Kim, H., & Hay, I. (2013). Understanding adolescents' problematic internet use from a social/cognitive and addiction research framework. *Computers in Human Behavior, 29*, 2682-2689.

Zhang, L., Osberg, L., & Phipps, S. (2014). Is all bullying the same? *Archives of Public Health, 72*(1), 19.

Zych, I., Farrington, D. P., & Ttofi, M. M. (2018). Protective factors against bullying and cyberbullying: A systematic review of meta-analyses. *Aggression and Violent Behavior, 45*, 4-19.

Appendix

Low Risk Ethics Notification

Date: 03 August 2020

Dear Mike Birchall

Re: Ethics Notification - **4000023097** - **The Antecedents of Bullying Victimisation in a Sample of New Zealand Adolescents**

Thank you for your notification which you have assessed as Low Risk.

Your project has been recorded in our system which is reported in the Annual Report of the Massey University Human Ethics Committee.

The low risk notification for this project is valid for a maximum of three years.

If situations subsequently occur which cause you to reconsider your ethical analysis, please contact a Research Ethics Administrator.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:
"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named in this document are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you want to raise with someone other than the researcher(s), please contact Professor Craig Johnson, Director - Ethics, telephone 06 3569099 ext 85271, email humanethics@massey.ac.nz."

Please note, if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to complete the application form again, answering "yes" to the publication question to provide more information for one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research. Yours sincerely

Professor Craig Johnson
Chair, Human Ethics Chairs' Committee and Director (Research Ethics)