

**School of Nursing, Midwifery and Paramedicine**

**The Development of a Self-report Measure of Covert  
Aggression and Bullying for Upper Primary School Aged  
Children**

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**This thesis is presented for the Degree of  
Doctor of Philosophy  
of  
Curtin University**

**July 2019**



## **DECLARATION**

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material that has been accepted for the award of any other degree or diploma in any university.

The research presented and reported in this thesis was conducted in accordance with the National Health and Medical Research Council National Statement on Ethical Conduct in Human Research (2007) – updated March 2014. The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EV00262), Approval Number # RDHS-38-15.

**Helen Jean Nelson**

28th May 2019



## **ABSTRACT**

### **The development of a self-report measure of covert aggression and bullying for upper primary school aged children**

#### **Background**

At preadolescence children seek to be accepted by peers, placing worth on qualities that are valued by peers and on belonging within the peer group. However, school is the central place in which many children are harmed through bullying. Bullying is aggression that is repeated in a relationship of power imbalance, the power is often distributed through the peer group. The purpose of this study was to measure the power imbalance that is associated with school-based bullying among preadolescent children. A particular research focus was the subtle and covert forms of aggression that may contribute to the experience of a power imbalance by children who are bullied. The goal was to better understand how children's experience of power imbalance contributes to harm. This will ultimately inform the design of interventions that will help children toward positive outcomes when their ability to cope is challenged.

#### **Aims**

The principal aim of this study was to develop two measurement instruments suitable for use with preadolescent children, first a reliable and valid instrument to measure self-reported experience of power imbalance, second a reliable and valid instrument to measure children's experience of teacher support after telling a teacher about aggression and bullying behaviours.

#### **Methodology**

The study used a three-phase mixed methods design. In research Phase 1, design of an instrument to measure children's experience of power imbalance was informed by a scoping review of the literature and thematic analysis of focus group discussion. In addition, thematic analysis of focus group discussion informed the design of the new instrument to measure the experience of teacher support by children who report aggression. The two new instruments were included in a questionnaire and tested for face validity by children and scale level content validity by expert reviewers.

In Phase 2 the quantitative method of exploratory factor analysis (EFA) was used to assess the psychometric fit of each new instrument. Some items were revised in each new instrument based on records made in a research diary during data collection, and on the results of the EFA. Expert reviewers assessed item content validity. In Phase 3 the quantitative methods of confirmatory factor analysis (CFA) and invariance testing were used to assess construct validity, composite reliability, and test-retest reliability. Ethics approval was received from Curtin University HREC (RDHS-38-15) and individual Independent schools involved in the study. Active written consent was obtained for all participants and each participant gave assent.

## **Results**

The results are presented in a series of five published manuscripts and a sixth manuscript that is accepted. In Phase 1, thematic analysis of focus groups with children in grades 4 to 6 ( $n = 22$ , ages 9 to 11) identified that children's experience of power imbalance was influenced by age, peer-valued characteristics, and group membership and position. These themes formed the basis for the instrument to measure children's experience of power imbalance. Factors that influenced power imbalance when children reported aggression to the teacher were friendship, behaviour that was kept secret from the teacher, and social exclusion. These themes formed the basis of the new instrument to measure children's experience of teacher support. Peer-valued characteristics, support from friends and adult support protected against the harmful influence of power imbalance.

In Phase 2 children from one school completed the questionnaire ( $n = 111$ , ages 8-12). EFA of the Scale of Perceived Power Imbalance (SPPI) resulted in two subfactors, physical power and social power ( $n = 55$ , normed chi-square = 1.25, RMSEA = .070, CF1 = .942). EFA of the Student Experience of Teacher Support Scale (SETSS) resulted in two subfactors, experience and heard ( $n = 69$ : normed chi-square = 1.31, RMSEA = .067, CF1 = .966). In Phase 3 children from four schools ( $n = 337$ , ages 8-12) completed a revised version of the questionnaire. CFA of the 8-item SPPI answered by children who reported frequent social victimization revealed adequate fit of the 2-factor model ( $n = 127$ : normed chi-square = 1.2, RMSEA = .04,

CFI = .993). CFA of the two factor SETSS revealed acceptable fit (n = 230: normed chi-square = 2.23, RMSEA = .073, CFI = .913).

## **Discussion**

This research adds to understanding the power imbalance that is experienced by children who are bullied. Aggression and bullying can be subtle, and targeted at children who do not fit the norms that are accepted by the peer group or possess characteristics that are valued by peers. These characteristics include appearance and athleticism, and owning prestigious brands of clothing, smart phones and electronic games. One complexity with bullying measurement that was identified in this study is the dual nature of peer-valued characteristics. Peer valued characteristics themselves are neutral. It is the prestige attributed to children who possess these characteristics, and the abuse of this status by children, that promotes power imbalance.

Children also attributed power to others who were 'smart'. Being smart has previously been associated with academic ability. In this study however, children also attributed being smart to the ability of some to deceive the teacher. This is consistent with a definition of covert aggression as aggression that is intentionally and deliberately hidden from adults at school. This form of aggression resulted in children experiencing loneliness and social isolation. Prolonged loneliness and social isolation are associated with increased risk to health and learning, and increased morbidity and mortality over the life course. A continuing research focus on the contribution of covert aggression to children's experience of power imbalance is recommended to inform policy and minimise the harm of bullying. This will help to develop teacher and peer environment interventions that are sustainable for children aged 8-12, an age when children become more reflective and have an increasing capacity to develop social understanding.

## **Conclusion**

The author concludes that a continuing research focus on understanding the experience of teachers, parents, and adults who support children's relational development is necessary. The ultimate aim is to build cultural patterns and belief systems in schools that support children through the normative developmental stage

of preadolescence. This is a period of development when many children begin to value status within peer relationships, and when relational aggression increases. This does not imply that relational aggression at preadolescence is acceptable. However many children will experience subtle forms of relational aggression while they are learning to understand the value of peer relationships. Adults provide a secure base helping children to develop social skills and learn alternatives to aggression. The expectation is that the research will add to the evidence to inform the development of, and measure the effectiveness of, interventions designed to reduce the prevalence of bullying in primary schools.

## **ACKNOWLEDGEMENTS**

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## LIST OF PUBLICATIONS INCLUDED AS PART OF THE THESIS

Nelson, H. J., Kendall, G. E., Burns, S., Schonert-Reichl, K. (2015). Protocol for the design of an instrument to measure preadolescent children's self-report of covert aggression and bullying. *BMJ Open*, 5:e009084.

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## STATEMENT OF CONTRIBUTION OF OTHERS

This thesis contains five published works and one work that is accepted, all have been co-authored. The description of each work and the contributions of each author are listed.

### **Paper 1.**

Nelson, H. J., Kendall, G. E., Burns, S., Schonert-Reichl, K. (2015). Protocol for the design of an instrument to measure preadolescent children's self-report of covert aggression and bullying. *BMJ Open*, 5:e009084. DOI: 10.1136/bmjopen-2015-009084

Helen Nelson conceived of the study in consultation with each co-author, developed the protocol, and drafted the manuscript. Garth Kendall, Sharyn Burns, and Kimberly Schonert-Reichl contributed to the conception of the study, development of the protocol, and critically reviewed the manuscript.

### **Paper 2.**

Nelson H. J., Kendall, G. E., Burns, S. K., Schonert-Reichl, K. A. (2017). A scoping review of self-report measures of aggression and bullying for use with preadolescent children. *The Journal of School Nursing*, 33(1), 53-63. <https://doi.org/10.1177/1059840516679709>

Helen Nelson conducted the scoping review, searched for and interpreted the data, and drafted the manuscript. Garth Kendall, Sharyn Burns, and Kimberly Schonert-Reichl contributed to the data interpretation and critically reviewed the manuscript.

### **Paper 3.**

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Helen Nelson collected and transcribed focus group data, interpreted data and drafted the manuscript. Sharyn Burns collected focus group data, interpreted data and

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#### **Paper 5.**

Nelson, H. J., Kendall, G. E., Burns, S. K., Schonert-Reichl, K. A., Kane, R. T.

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Helen Nelson collected, analysed and interpreted data and drafted the original manuscript. Robert Kane contributed to data analysis and interpretation and critically

reviewed the manuscript. Garth Kendall, Sharyn Burns, and Kimberly Schonert-Reichl contributed to data interpretation and critically reviewed the manuscript.

### **Confirmation of Permission of Contributing Authors**

To whom it may concern

I, Helen Jean Nelson, contributed to each component of the research reported in the above publications.

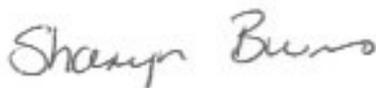


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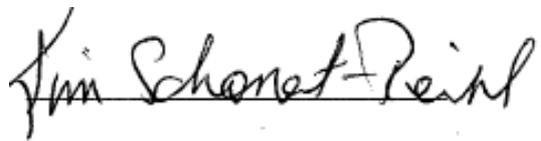
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A handwritten signature in black ink, appearing to read 'HJ Nelson', written in a cursive style.

**Helen Jean Nelson**

28th May 2019

## LIST OF ASSOCIATED PEER REVIEWED CONFERENCE PRESENTATIONS

- Nelson H., Kendall, G., Burns, S., Schonert-Reichl, K., Kane, R. (2019, June).  
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## **AWARDS**

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## **LIST OF ABBREVIATIONS**

CFA	Confirmatory factor analysis
CFI	Confirmatory fit index
DSM IV	Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition
EFA	Exploratory factor analysis
ESEM	Exploratory structural equation modelling
Fig	Figure
HPS	Health Promoting Schools
ICSEA	Index of Community Socio-Educational Advantage value
IRT	Item response theory
IUHPE	International Union for Health Promotion and Education
MANOVA	Multivariate Analysis of Variance
MPlus	Statistical analysis software package
NVivo 10	Qualitative analysis software package
PA	Physical aggression (Gremigni, Damásio, & Borsa, 2013)
PCA	Principal components analysis
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
RMSEA	Root mean square error of approximation
$\Delta$ RMSEA	Change in RMSEA fit (Desjardins et al., 2013)
RA	Relational aggression (Gremigni et al., 2013)
SEIFA	The Index of Relative Socio-economic Advantage and Disadvantage
SEM	Structural equation modelling
SES	Socioeconomic status
SPSS	Statistical analysis software package

SRMR	Standardised root mean square residual
TLI	Tucker-Lewis Index
US	United States of America
WHO	World Health Organisation

### **Measurement Instruments and Scales**

ACBPS	Australian Covert Bullying Prevalence Study (Cross et al., 2009)
APRI	Adolescent Peer Relations Instrument (Parada, 2000)
CBVS	California Bully Victimization Sale (Felix et al., 2011)
FBS	Forms of Bullying Scale (Shaw et al., 2013)
FBS-V	Forms of Bullying Scale – Victim (Shaw et al., 2013)
FBS-P	Forms of Bullying Scale – Perpetrator (Shaw et al., 2013)
FFA	Forms and Function of Aggression (Marsee et al., 2011)
MOOPV	Multidimensional Offline and Online Peer Victimization (Sumter, et al., 2015)
MPVS	Multidimensional Peer Victimization Scale (Mynard & Joseph, 2000)
OBQ	Olweus Bullying Questionnaire (Olweus, 1996)
OBVQ	Olweus Bully/Victim Questionnaire (Olweus, 1996)
PARB-Q	Peer Aggressive and Reactive Behavior Questionnaire (Gremigni et al., 2013)
PECK	Personal Experiences Checklist (Hunt, Peters, & Rapee, 2012)
PIPS	Peer Interactions in Primary School Questionnaire (Tarshis & Huffman, 2007)
SDQ	Strengths and Difficulties Questionnaire (Goodman, 1997)

SEQ	Social Experience Questionnaire (Crick & Grotpeter, 1996)
SEQ-S	Social Experience Questionnaire – Self-report (Crick & Grotpeter, 1996)
SETSS	Student Experience of Teacher Support Scale
SIBS	Social Involvement Bullying Scale (Fitzpatrick & Bussey, 2011)
SPPI	Scale of Perceived Power Imbalance
SVEX	Self-report of Victimization and Exclusion (Buhs et al., 2010)

### **Statistical Abbreviations**

$\alpha$	Cronbach's alpha
<i>CI</i>	Confidence interval
<i>df</i>	Degrees of freedom
<i>K</i>	Cohen's kappa coefficient
<i>N, n</i>	Number
<i>p</i>	Statistical significance
<i>r</i>	Pearson's correlation coefficient
$R^2$	The total variance that is explained by all variables in an equation
$\chi^2$	Chi-square
%	Percent

## **Glossary**

**Independent school.** This term is used to represent independent private schools. Independent private schools refer to fee-paying schools that are not within the government sector and that have legal status in their own right. The governing body of the school is responsible for the school, for student welfare, and to ensure that the school meets standards that are required by the Education Act (AISWA, 2018).

## **1 INTRODUCTION AND OVERVIEW**

The purpose of this study was to measure the power imbalance that is associated with school-based bullying among preadolescent children. A particular research focus was the subtle and covert forms of aggression that may contribute to the experience of a power imbalance by children who are bullied. The goal was to better understand how children's experience of power imbalance contributes to harm. This will ultimately inform the design of interventions that will help children toward positive outcomes when their ability to cope is challenged (Volk, Veenstra, & Espelage, 2017).

This introduction is structured around four key topics that outline the relevance of the research focus. First, preadolescence is defined, and the relevance of the current research to children of this age is outlined. Second, the nature of bullying as a relationship of power imbalance is discussed. Third, the effectiveness of bullying interventions is discussed. Fourth, the term covert is explained to give the context around the use of the term covert aggression. Following this, the focus of this research on measuring children's self-reported experience of power imbalance in relation to aggression victimisation, is outlined.

### **1.1 Preadolescence**

Preadolescence is broadly defined as occurring around the ages of eight to 12 years (Adler & Adler, 1998). This critical period of development encompasses many neurobiological, cognitive and social changes (Oberle, Schonert-Reichl, Guhn, Zumbo, & Hertzman, 2014). For boys and girls, these changes include the biological and physical changes associated with puberty (Japel, Tremblay, McDuff, & Willms, 2002; Tatangelo, Connaughton, McCabe, & Mellor, 2018). A major change in cognitive processing is the increasing capacity for self-reflection (Eccles, 1999). A key social change is the increasing importance that children place on peer relationships (Troop-Gordon & Ranney, 2014; Van Roy, Kristensen, Groholt, & Clench-Aas, 2009). Because of these combined changes, children's development at preadolescence is sensitive to their experience within peer relationships. This concept is key to the research study and is expanded on in the remainder of this section.

Preadolescence is the stage of development at which children begin to evaluate their own experience within the context of peer relationships. For example, at age five and six children's self-evaluations of "who I am" tend to be more positive than at age seven to nine, by which time children have begun to use social comparisons to evaluate their self-worth (Eccles, 1999; Pfeifer & Peake, 2012). Neuroimaging studies have been used to map patterns of activity in different regions of the brain as children respond to scenarios that evoke emotion (Pfeifer & Peake, 2012). In a review of these studies the authors highlighted that from eight years of age children's emotions are strongly reflected in their own self-appraisal and in the formation of identity (Pfeifer & Peake, 2012). By age 10 most children have the cognitive capacity for self-reflection and many are less confident than they were in the early years of primary school (Eccles, 1999). Children are more likely to compare their abilities, appearance, and possessions with those of other children (Eccles, 1999). At 12 years of age the experience of belonging at school is heightened for children who have a positive perception of their own personal attributes, including physical appearance and social confidence (Vaz et al., 2015).

Children's sense of identity is thus increasingly framed within their relationships with peers and by late childhood, the questions "what do others think about me" and "where do I fit in" become important (Pfeifer & Peake, 2012, p. 56). At this age children seek to be accepted by peers, placing worth on qualities that are valued by peers and on belonging within the peer group (Eccles, 1999). There is evidence that peer rejection is associated with emotional distress and negative self-appraisal and, therefore, becomes increasingly salient to the formation of identity, including body image and psychosocial development (Pfeifer & Peake, 2012; Troop-Gordon, 2017).

Optimal social, physical, and behavioural development occurs when children learn to trust within secure and nurturing relationships (Maggi et al., 2005). At primary school children relate to peers and teachers based on patterns of emotional response learned in their earliest relationships (Sroufe, 2005; Sroufe, Coffino, & Carlson, 2010). These learned patterns, however, are not an endpoint in children's social development. The increased capacity for self-reflection during preadolescence provides an opportunity for adults to support children's positive development. This is especially important for children who have experienced emotional insecurity in early

childhood (Oberle et al., 2014; Sroufe et al., 2010). Similarly, good peer relationships at school promote healthy development (Nelson, Kendall, & Shields, 2014; Seibert & Kerns, 2009). However, school is the central place in which many children are harmed through bullying (Cross et al., 2009). Bullying is discussed in the following section.

## **1.2 Power Imbalance**

Bullying is aggression that occurs in a relationship of abuse when a more powerful child repeatedly causes harm to a child who is less powerful (Rodkin, Espelage, & Hanish, 2015). Bullying has been described as a “relationship of power and abuse” (Rodkin et al., 2015, p. 311). Menesini and Salmivalli (2017) propose that within the dynamic of the bullying relationship the perpetrator experiences an increase and the victim experiences a loss of power. As a result, bullying is repeated because the victim feels overpowered and unable to resolve the situation (Menesini & Salmivalli, 2017; Rodkin et al., 2015). While aggression may occur as teasing or as a single event between children of equal power or status, bullying is repeated over time, enabled by the unequal power dynamic that exists within the relationship (Pepler, Craig, & O’Connell, 2010). Power imbalance is, therefore, the core concept that differentiates bullying from aggressive behaviour (Hymel & Swearer, 2015; Volk et al., 2017).

It is very important to adequately differentiate bullying from aggression because aggressive behaviour is a normal part of development, whereas bullying is not. Physical aggression peaks between the ages of 2 and 4 and then gradually declines between the ages of 4 to 8 years as children learn to regulate their emotions within a nurturing environment provided by parents and caregivers, including child care workers and teachers (Dodge, Coie, & Lynam, 2006; Tremblay, 2004). Children are actively socialised by their parents and others and the decline in aggression occurs as cognitive processes associated with behaviour regulation develop. These processes are coordinated by the pre-frontal cortex of the brain at approximately 3 to 9 years of age (Côté, Vaillancourt, Barker, Nagin, & Tremblay, 2007; Dodge et al., 2006; Hertzman, 2012). Bullying behaviour, in contrast to aggression, is not considered to be developmentally normal. It is proactive, and has been associated with poor developmental outcomes for the perpetrator (Rodkin et al., 2015). Bullying peaks at school in Year 5 (age 9-10) (Cross et al., 2009; Hymel & Swearer, 2015).

This peak occurs in line with the increasing value that many preadolescent children place on social status and belonging to a peer group (Moore et al., 2014; Williford, Boulton, & Jenson, 2014).

Three categories have been identified to describe children's association with bullying: children who are bullied only, those who bully others but are not bullied themselves, and those who are both bullied and bully others (Menesini & Salmivalli, 2017). The bully/bullied category represents 10-20% of all children who bully others (Volk et al., 2017). An additional role associated with bullying is that of bystander behaviour by children who do not actively defend victims, thus contributing to the experience of power imbalance (Pozzoli, Ang, & Gini, 2012; Pronk, Olthof, & Goossens, 2014). Children who bully others often draw power from the group, using aggression as a tool in the pursuit of status (Kiefer & Wang, 2016). Children who are bullied experience power imbalance as a form of control by the perpetrator, either as direct control, or indirectly dispersed through the peer group (Menesini & Salmivalli, 2017; Rodkin et al., 2015). It is the children who are bullied and who bully others, who are at the highest developmental risk (Gini & Pozzoli, 2009; Lereya, Copeland, Zammit, & Wolke, 2015; Moore et al., 2014). There is universal acceptance of the need to minimise the harm caused by school-based bullying (Choi, Johnson, & Johnson, 2011). The following section briefly discusses the effectiveness of school-based prevention strategies. The focus of the discussion is largely on the social context of power imbalance.

### **1.3 Do Bullying Interventions Effectively Address Power Imbalance?**

Extensive effort has been made to understand school-based bullying, as well as to develop, implement and evaluate prevention strategies (Cantone et al., 2015; Evans, Fraser, & Cotter, 2014; Volk et al., 2017). Despite this, mixed findings have been reported on the effectiveness of bullying interventions (Cantone et al., 2015; Evans et al., 2014; Ttofi & Farrington, 2011). A systematic review and meta-analysis of studies has revealed that many interventions that have focused on peer relationships, including formal work with peers to prevent bullying, have resulted in a significant increase in aggressive behaviour and bullying (Ttofi & Farrington, 2011). One possible explanation for these unexpected findings lies within the social network context in which bullying occurs (Garandeau, Lee, & Salmivalli, 2014). Some children who bully others have high self-esteem and social function. These children

use their social skills to achieve social status (Rodkin et al., 2015). This form of bullying relies heavily on bystander behaviour and can result in increased power over the victim and other benefits in the form of social resources and perceived popularity (Garandeau et al., 2014; Hawley, Stump, & Ratliff, 2011). However, not all children who bully others hold social status. Socially marginalised children who both perpetrate bullying and are victimised by others might still hold power, but the source of power is likely to be different, possibly through a group of similarly rejected children (Rodkin et al., 2015). In each of these social contexts bullying can be promoted by bystander behaviour.

Peers do not always promote bullying. The authors of some studies have shown that when peers actively support children who are bullied power imbalance is minimised (Garandeau et al., 2014; Menesini & Salmivalli, 2017). Interventions in Years 1 to 6 that have focused on increasing peer group empathy toward the victims of bullying, and increasing the self-efficacy of peers to act as their defenders, have been effective (Kärnä et al., 2013, 2011). The most effective interventions have been intensive and long-term, and have included a whole school approach and parent engagement (Kärnä et al., 2013, 2011; Ttofi & Farrington, 2011). However, these interventions appear to have no significant effect on perpetrators who have the greatest social power (Garandeau et al., 2014).

Socially skilled children who use aggression and deception to achieve their goals have been termed *bi-strategic controllers*. They use skillful manipulation of the peer group to perpetrate bullying (Hawley, 2003; Menesini & Salmivalli, 2017). According to Hawley (2003) who has evaluated a number of intervention studies targeted at pre-adolescent children in North America, it is likely that some interventions inadvertently equip bi-strategic controllers with tools that add to the social repertoire by which they perpetrate harm. Bi-strategic controllers commonly hide their bullying behaviour from others, and they may even be held in high regard by teachers (Hawley, 2003). This finding is consistent with Australian research in which children have spoken of covert bullying (Cross et al., 2009). This is behaviour that is intentionally hidden from, or not acknowledged by, adults (Cross et al., 2009). The next section addresses children's use of covert bullying as a potential source of power imbalance.

## **1.4 Covert Bullying**

In the context of this research that focuses on preadolescent children, covert bullying is defined as repeated aggressive behaviour by which a powerful child causes harm to another who perceives him or herself as less powerful than the aggressor, and the behaviour is hidden from adults (Nelson, Kendall, Burns, & Schonert-Reichl, 2015). By intentionally hiding the behaviour from those who can intervene, the perpetrator gains more power over the victim and this, in turn, increases the degree of harm (Cross et al., 2009). Without the emotional support of an adult who can help the victim to regulate painful emotions, these emotions can build up and cause significant stress. Through longitudinal studies and meta analyses researchers have demonstrated that the stress experienced by some students is associated with loneliness, anxiety, depression, and diminished school performance (Baly, Cornell, & Lovegrove, 2014; Lereya, Copeland, Zammit, et al., 2015; Ttofi, Bowes, Farrington, & Lösel, 2014). In contrast, the authors of a large study with Grade 4 students in Canada found that emotional support provided by an adult at school may promote positive development and resilience (McEwen & Gianaros, 2010; Oberle et al., 2014).

This thesis examined different influences on power imbalance, including the influence of covert bullying on power imbalance. While research interest in covert bullying is increasing, there remains a great deal to understand.

## **1.5 The Focus of this Research: Measuring Power Imbalance**

Grounded in the health promotion approach, the focus of this research is the measurement of power imbalance to understand how children's experience of power imbalance contributes to harm (IUHPE, 2009; Schaffer, Anderson, & Rising, 2016). The research was conducted in response to evidence that current approaches to measurement do not adequately measure power imbalance that is associated with covert bullying (Cascardi, Brown, Iannarone, & Cardona, 2014; Cornell & Limber, 2015; Evans et al., 2014; Hymel & Swearer, 2015; Rodkin et al., 2015). And yet it is clear that many children experience considerable harm due to the power imbalance that is often present in covert bullying (Cross et al., 2009). It is anticipated that validated measures of power imbalance will inform intervention strategies that purport to minimise covert bullying and promote resilience among preadolescent children.

Research in human development will ideally reflect the lives of people lived in their own environment and historical time (Bronfenbrenner & Morris, 2006; Lerner & Callina, 2013). For this reason, it is optimal to use measurement methods that are specific to the context in which data is collected (Bronfenbrenner & Morris, 2006; Lerner & Callina, 2013). The school at the centre of this research was purposively selected on the basis that it represents the middle ground in terms of the socio-economic status of families living in the catchment area in Australia. Although bullying occurs at each level of socio-economic status, the mechanism of harm is not consistent in differing social and cultural contexts (Cantone et al., 2015). The students engaged in this research represent a normative sample in the context of a major metropolitan region in Australia, encompassing the greater concentration of the population (Adler & Snibbe, 2003; Mustard, 2006).

## **1.6 Thesis Outline**

This thesis is presented as a series of five articles published in international peer-reviewed journals in which the specific findings and implications for practice are discussed. The first paper describes the research protocol for Phases 1 and 2 of the study while the second is a scoping review of the literature specific to the measurement of aggressive behaviour and bullying (Nelson et al., 2015; Nelson, Kendall, et al., 2017 respectively). Each of these papers is focused, due to necessary restrictions on the word count. Therefore, a more detailed account of previous research is provided in this exegesis to provide the reader a deeper understanding of the subject matter in the appropriate context.

### **1.6.1 The structure of the exegesis**

This exegesis begins by presenting the aim and objectives of the research. The background is presented in two parts. The first part adds context to topics that are introduced in Papers 1 and 2 (Nelson et al., 2015, 2017). First, the research framework of developmental systems theory is explained. Second, an overview of the prevalence of bullying is presented. Third, the burden that is associated with bullying is discussed.

The second part of the background adds context to understanding the research methods that are presented in Papers 3 to 6. Papers 3 and 4 present the qualitative phase of the research (Nelson, Burns, Kendall, & Schonert-Reichl, 2018, 2019).

Papers 5 and 6 present the quantitative method and findings of the research (Nelson, Kendall, Burns, Schonert-Reichl, & Kane, accepted, 2019).

The PDF or accepted version of each published paper is then presented. Following this, a discussion on the significance of this body of work is presented and concluding remarks are made.

## **2 RESEARCH AIM AND OBJECTIVES**

### **2.1 Aim**

The aim of this study was to develop two measurement instruments suitable for use with preadolescent children, first a reliable and valid instrument to measure self-reported experience of power imbalance, second a reliable and valid instrument to measure children's experience of teacher support after telling a teacher about aggression and bullying behaviours.

### **2.2 Research Objectives**

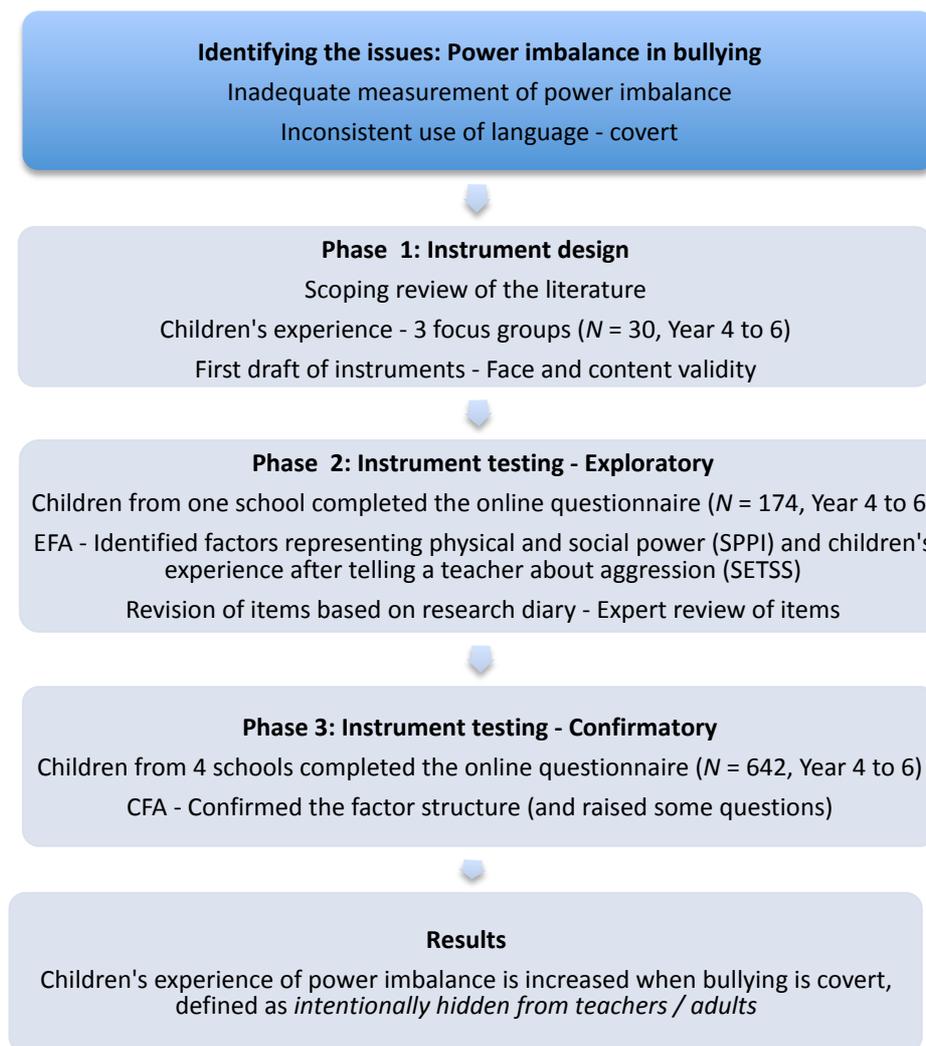
1. "To identify appropriate questions to use in a self-report questionnaire that measures aggression and bullying, including power imbalance and covert aggression, among preadolescent children" (Nelson et al., 2015, p. 5).
  - a. To conduct a scoping review of the literature, "to identify validated instruments that measure aggression and bullying among preadolescent children (age 8 to 12), and to summarize approaches used to differentiate bullying from aggressive behaviour by children's self-report of power imbalance" (Nelson et al., 2017, p. 55).
  - b. Using focus groups, "to explore the perceptions of preadolescent children regarding factors that influence and protect against power imbalance in relation to covert aggression and bullying" (Nelson et al., 2018, p. 1).
2. To explore the latent factor structure and to establish the convergent validity of a new instrument designed to measure children's experience of the power imbalance associated with bullying, and a new instrument designed to measure student's experience of teacher support, using a method of exploratory factor analysis.
3. To confirm the latent factor structure, reliability and validity of a new instrument designed to measure children's experience of the power imbalance associated with bullying, and a new instrument designed to measure student's experience of teacher support.
  - a. To confirm the latent factor structure of each new instrument using a method of confirmatory factor analysis.

- b. To establish the divergent, concurrent, and predictive validity, test-retest reliability, and measurement invariance of the scales and subscales of each new instrument.

The research aim and objectives presented above are amended from the original aim of this study. The aim stated in the candidacy proposal was “to develop a reliable and valid instrument to measure self-reported covert aggression and bullying behaviours that is suitable for use with preadolescent children. This instrument will then be included in a questionnaire used to measure covert aggression, bullying, empathy, and related behaviours and attitudes.” The reason for the amended aim was due to the findings from Phase 1 and is outlined in the following section.

### **2.3 Overview of the Research Process**

The research was conducted within a framework of developmental systems theory (Lerner & Callina, 2013), which is expanded on in section 3.1. The original aim of the study was to develop one instrument to measure covert aggression and bullying. At the outset of this research the researcher anticipated that an understanding of preadolescent children’s experience of covert aggression would help explain some of the complexity around measuring children’s experience of being bullied at school. However, in conducting a scoping review of the literature the researcher identified that current measures possibly under-represent the power imbalance that is experienced by preadolescent children (Nelson et al., 2017). The research resulted in the development and empirical validation of two new instruments to measure different aspects of power imbalance associated with bullying. An overview of the research process is presented in Figure 2.1.



**Figure 2.1 An Overview of the Research Process**

Figure 2.1 shows that in Phase 1 the design of two new instruments, the Scale of Perceived Power Imbalance (SPPI) and the Student's Experience of Teacher Support Scale (SETSS) was informed through a scoping review of the literature and thematic analysis of focus group discussions with children. Face and content validity of the instruments were then assessed. In Phase 2, exploratory factor analysis (EFA) was used to assess the statistical fit of the previously identified items to a model representing underlying dimensions (factors) of power imbalance. This provided initial evaluation of the construct validity of the new instruments. In Phase 3, a method of confirmatory factor analysis was used and exploratory structural equation modelling (Marsh et al., 2011) to: 1) confirm the fit of the previously identified model; 2) assess how consistent the factor structure remained (invariance) over different groups and time; and 3) assess the concurrent and discriminant validity of the new instruments.



### **3 BACKGROUND**

The following section provides a more detailed account of notable literature that was presented very briefly in the published articles due to imposed word limits. This discussion will place the current research in context. Topics include: developmental systems theory; causal pathways through which poor outcomes occur; the prevalence of bullying in schools; and the impact on students' health and development.

#### **3.1 Developmental Systems Theory**

Developmental systems theory has been universally adopted to guide research, policy, and practice related to human development (Belsky, 2013). This theory is based on Bronfenbrenner's ecological model of development (Bronfenbrenner, 1979), later named the bioecological model (Bronfenbrenner & Ceci, 1994). The bioecological model emphasises the process through which children interact with their environment, and the way in which this process contributes to developmental outcomes over time (Bronfenbrenner & Morris, 2006). This influence occurs through systems that surround each child and influence development. The environment includes the physical environment, microsystems of social relationships within the family, school and community, and macrosystems which represent the influences of the wider society. This includes policies and political decisions at a local and national level as these affect the resources available to children and families (Bronfenbrenner & Morris, 2006; Hertzman, 2012). Outcomes of development are most closely supported by microsystems, the systems and social relationships that are nearest to children (Bronfenbrenner & Morris, 2006). The influence can be from both directions; macrosystems influence microsystems, which in turn influence physiological systems. Physiological systems then influence microsystems and, in turn, macrosystems (Bronfenbrenner & Morris, 2006).

There is a synergy between the bioecological model and Elder's life course theory (Elder, 1998). Both relate social pathways to human development: the life course of individuals is embedded in and shaped by the historical and social influences experienced over a lifetime (Elder, 1998). The resulting social patterns affect the way people feel, think and act, and this is expressed through behaviour as

people relate to each other in their changing environment (Bronfenbrenner & Morris, 2006; Elder, 1998). Importantly, according to this framework, early adversity does not predict poor developmental outcomes; many children overcome adversity as they work through the “pain and confusion of life” within relationships (Elder, 1998, p. 9). Each model shares the concepts of agency and structure; while most people have the opportunity to make choices, they are influenced by a range of interrelated social, cultural, economic and political factors that are largely beyond their control (Bronfenbrenner & Morris, 2006; Elder, 1998).

Within the bioecological framework Hertzman (1999) highlighted how human experience affects health across the life-course, referring to the “biological embedding” of experience. This leads to systematic differences in development at a societal level, influencing health, behaviour, or learning (Hertzman, 2012, p. 17160). Indeed, a consistent finding of research is the importance of the social and emotional environment to neurobiological development: gene expression, brain plasticity, and psychoneuroendocrine-immune pathways at individual and intergenerational levels (McEwen, 2012; Yirmiya & Goshen, 2011). The neurobiological stress response and the concepts of neuroplasticity and resilience each reflect the bioecological model (Cicchetti, 2010). These are expanded briefly in the following sections.

### 3.1.1 The neurobiological response to stress

Knowledge of developmental systems at a cellular level is necessary to understand how the social context affects developmental outcomes. This is explained through the neurobiological response to stress. The response to stress involves a complex interplay between psychological, neurological, endocrine and immune system function. Hormones are released in response to physical or emotional stress that prepare the body to respond to threat, when the threat subsides the circulating hormones stabilise (McEwen, 2012). This response to stress initiates a complex adaptive response that supports brain plasticity and is protective for young children as they grow, equipping children to respond to potential threats without conscious awareness (McEwen, 1998).

This understanding of the stress response provides a framework through which to understand the harmful consequences of bullying (Ouellet-Morin et al., 2011). The neurobiological response to stress is supported when children who

experience stress can consistently return to people who provide a secure base of emotional support, for example, in secure attachment relationships (Boyce, 2017). Conversely, when emotional stress is persistent and unresolved, as it is with some children who experience bullying, the heightened neurobiological response can remain unresolved placing an overload on the stress response system. In the absence of a safe base of support the ongoing stress load can become embedded into children's neurobiology, inhibiting learning and emotion regulation, increasing maladaptive behaviour and increasing vulnerability to disease (Hertzman, 2012; Leigh-Hunt et al., 2017). An increasing body of research provides evidence that social stress can result in an overloaded stress response in some children (Almas et al., 2012). This is attributed to a gene-environment interaction (Boyce, 2017; McEwen & Gianaros, 2010).

Over the life course these consequences of stress overload place a burden on the person, the family, and society, with an effect that may carry through generations (Hertzman, 2012; Shonkoff, 2012). This potential for life course influence is recognised within the framework of developmental systems theories. For this reason, research conducted within a framework of developmental systems theories must reflect the specific context in which the data is collected. As previously stated, the context of this study is the middle-income low fee paying school environment of the metropolitan region of Perth, Western Australia.

### 3.1.2 Plasticity and resilience

Key to developmental systems theory are the concepts of plasticity and resilience (Hertzman, 1999; Lerner, 2017). Plasticity is defined as the flexibility of brain cells and pathways to change as children respond and adapt to their own environment (McEwen & Gianaros, 2011). Plasticity persists throughout the life-course (McEwen & Gianaros, 2011). Resilience is shown in adversity, and refers to growth that is successful "beyond that which is expected" given the challenges of social interaction that are faced by an individual (Ungar & Lerner, 2008, p. 136). In the process of interacting with their environment it is the feelings that children experience that drive development through neurobiological pathways (Bronfenbrenner & Morris, 2006). Children most commonly experience emotions, including threat or hope, in response to their relationships with peers and adults at the level of the microsystem, the environments in which children spend the majority of their time. At preadolescence,

this includes time spent with family and at school. The relevance of the microsystem to the research undertaken by the author of this thesis is further described in the published papers (Nelson et al., 2018; Nelson, Kendall, et al., 2019)

Bronfenbrenner and Morris (2006) proposed that children's development is expressed through behaviour in the context of their social and physical environment. Research conducted within this framework seeks to help identify connected layers of risk and protection associated with covert aggression and bullying at a population level. The prevalence of bullying is discussed in the following section.

### **3.2 The Prevalence of Bullying**

The prevalence of bullying has been found to vary considerably. The authors of a study undertaken by the World Health Organisation (WHO) in Europe reported that 13% of 11 year old children responded that they had been a victim of bullying in the last couple of months and 7% reported that they had bullied other children (2013/2014) (Inchley et al., 2016). Within individual studies there was, however, a large difference in prevalence rates of bullying (Inchley et al., 2016). The two-item measure used by Inchley et al. (2016) was preceded by a definition of bullying. Although this is the standard method for measuring prevalence rates of bullying, there is concern that the single prevalence question is not robust enough to identify true victims of bullying (Vaillancourt et al., 2010).

Prevalence is expected to vary when asking multiple questions about specific types of bullying compared to asking a single prevalence question (Huang & Cornell, 2015; Sawyer, Bradshaw, & O'Brennan, 2008; Vaillancourt et al., 2010). For example, in a two-part study students (Years 4 to 12) were asked if they had been bullied, first in response to a definition based prevalence question, second in response to a comprehensive set of definition based questions. In response to the single prevalence question 37.6% of students reported that they had been bullied, whereas 63% who answered the set of questions indicated that they had been bullied (Vaillancourt et al., 2010). This is consistent with other research which has found that approximately double the number of children report being bullied when children answer questions about specific forms of bullying in comparison a single prevalence item (Green, Felix, Sharkey, Furlong, & Kras, 2013; Sawyer et al., 2008).

Researchers have suggested that many studies that aim to differentiate bullying from aggression lack discriminant validity. This is because children's experience of power imbalance is not adequately measured, for this reason bullying may not be accurately differentiated from aggressive behaviour (Cascardi et al., 2014; Cornell & Limber, 2015; Evans et al., 2014; Hymel & Swearer, 2015). Inadequate measurement has also been attributed to imprecise use of language when the words aggression and bullying are used in an interchangeable manner, this specifically relates to the inadequate measurement of power imbalance (Hawley et al., 2011; Volk et al., 2017). The first and second peer-reviewed publications of this thesis address the potential for measurement error in relation to bullying and to aggression that was intentionally hidden from the teacher (Nelson et al., 2015, 2017).

The issue of the problems surrounding the measurement of bullying was highlighted recently by Volk, Veenstra, and Espelage (2017). These authors proposed that bullying is "a challenging behaviour to study adequately" (Volk et al., 2017, p. 34). This is, in part, due to the complex and covert nature of much bullying, and the social dynamics in which bullying occurs. Social, cultural and historical differences in the way that bullying is identified also account, in part, for difference in reported prevalence rates (Smith, Cowie, Olafsson, & Liefoghe, 2002). Nevertheless, the value of pursuing clarity in defining and measuring bullying has been highlighted because of the burden associated with this "serious topic" (Volk et al., 2017, p. 34). The burden of bullying is discussed in the following section.

### **3.3 The Burden of Bullying on Health, Learning and Society**

The impact of bullying in childhood on health and education outcomes at a population level is internationally recognised (Srabstein & Leventhal, 2010). While for many children the burden associated with bullying might be transient, for others it persists over the long term (Swearer & Hymel, 2015). For many children, involvement in bullying at preadolescence represents a developmental exploration of how to engage socially with peers (Swearer & Hymel, 2015). Other children experience ongoing harm that is attributed to a combination of existing genetic and cognitive vulnerabilities and stressors (Ouellet-Morin et al., 2011; Swearer & Hymel, 2015). In a meta-analysis of longitudinal studies, childhood bullying is reported to produce a burden over the life-course, including disorders of mental health and criminality (Klomek, Sourander, & Elonheimo, 2015). The quantitative papers that

were included in the meta-analysis were published between 1960 and 2015, and the definition of bullying as a relationship of power imbalance was first introduced by Olweus in 1983 (Olweus, 2013). It is therefore possible that measurement did not consistently represent bullying. Nevertheless, the burden differed for those who bullied others or were bullied (Klomek et al., 2015). The following section discusses the burden associated with bullying, beginning with transient issues and then discussing longer term issues.

### 3.3.1 Transient anxiety and depression

In a review of longitudinal studies, the authors found that being a victim of bullying was associated with an increased risk of anxiety and depression (Klomek et al., 2015). Similarly, in a systematic review and meta-analysis, Moore et al. (2014) found strong evidence that being a victim of bullying was associated with an increased risk of depression and anxiety disorders. The association between being bullied and anxiety disorders was not significant in children aged 12 years or less (Moore et al., 2014). While many studies have shown that this causal effect of bully victimisation on the development of anxiety and depression can persist into adulthood, others have found the effect to be transient (McGee et al., 2011). Not every child who is bullied will experience long lasting negative outcomes of learning and mental health (McDougall & Vaillancourt, 2015). This is especially the case for children who are bullied infrequently (Klomek et al., 2015; Moore et al., 2014).

Worry and sadness can be a normal and temporary response to being bullied (Arseneault, Bowes, & Shakoor, 2010). During preadolescence, mental health disorders “involve exaggerations of behaviour that nearly all children show to some degree” (Achenbach, 1984, p. 320). These behaviours or emotions that are experienced by children can emerge into adolescent and adult disorders (Achenbach, 1984; Klomek et al., 2015). However, emotionally nurturing parental and social support is protective for children and many children who are bullied do not develop long term mental health disorders (Klomek et al., 2015). Importantly, children can learn as they encounter and overcome difficulties within the support of nurturing relationships (Nelson et al., 2014; Troop-Gordon & Gerardy, 2012). Within the framework of developmental systems theory, these learning experiences contribute to plasticity and resilience (Bronfenbrenner & Morris, 2006; McEwen & Gianaros,

2011). These learning experiences are discussed further in the following section, with a focus on academic learning.

### 3.3.2 Effect on learning outcomes

Achenbach (1984) describes school as a “central arena for both success and failure” (p. 389). In addition to academic learning, preadolescent children are also learning and developing social skills. As described in Section 1.1 of this thesis, these skills are being learned by children who have an increasing capacity for self-reflection, in the context of the growing value placed on social belonging (Eccles, 1999). Poor social integration at school can impede children’s engagement in academic learning and can trigger a risk to long term learning outcomes (Achenbach, 1984).

In Bronfenbrenner’s bioecological model, classroom peer ecology is a microsystem, the system that most closely supports outcomes of development (Gest & Rodkin, 2011). Children who are repeatedly bullied feel less safe at school (Esbensen & Carson, 2009). Fear of bullying can hinder engagement in classroom activities, or even attendance at school (Esbensen & Carson, 2009; Yang, Sharkey, Reed, Chen, & Dowdy, 2018) This, in turn, predicts children’s dislike of school and poor academic outcomes (Card & Hodges, 2008). Children who are bullied are more likely to experience problems with attention, including poor concentration, daydreaming, poor study habits, and diminished work performance (McGee et al., 2011). Longitudinal analysis has shown this effect to persist into young adulthood (McGee et al., 2011).

On the other hand, school is an environment in which many children learn to overcome adversity. Most children encounter challenges and learn to overcome them, despite their experience of threat and the testing of their ability to cope (Achenbach, 1984). Teachers guide and give stability to children as they interact, providing a stable base for the development of appropriate social behaviour, and academic learning (Gest & Rodkin, 2011). Nevertheless, some children who are bullied experience poor developmental outcomes and major psychopathology, as discussed in the following section.

### 3.3.3 Potential major psychopathology

There is a large body of research conducted in predominately high income countries that shows that bullying in schools is associated with poor mental health outcomes,

drug abuse and criminality (Bogart et al., 2014; Haltigan & Vaillancourt, 2014; Klomek et al., 2015; Lereya, Copeland, Costello, & Wolke, 2015; Moore et al., 2014; Ttofi, Farrington, Lösel, Crago, & Theodorakis, 2016). For example, the authors of a comprehensive birth cohort study in Finland found that there was an association with completed suicides among girls who were frequently bullied (Klomek et al., 2009). This effect was present after pre-existing symptoms of depression were controlled for. In Australia, the authors of a recent nationally representative study found an increase in the prevalence of “serious” mental illness among youth aged 15-19 years between 2012 (18.7%) and 2016 (22.8%). Of youth who experienced serious mental illness, 34.3% reported a high concern about bullying and emotional abuse (Mission Australia, 2017). The authors of another Australian study found that 62.8% of children and adolescents with major depressive disorder (by DSM IV criteria) had been bullied in the previous 12 months (Lawrence et al., 2015). In the same study, it was found that schools play a major role in providing services for children who experience mental health problems and disorders (Lawrence et al., 2015). A limitation of the study was that the definition of bullying did not include power imbalance and therefore represented victimisation rather than bullying.

The risk of poor developmental outcomes is present for children who are bullied, and for those who bully others, however the risk is highest for those who are bullied and who bully others (Klomek et al., 2015). The authors of a large longitudinal study in the US have reported that children who are bullied have an increased risk of child and adult anxiety and panic disorder (Copeland, Wolke, Angold, & Costello, 2013). Children who bully others have been found to be at increased risk of antisocial personality disorder, violent crime, and drug misuse (Copeland et al., 2013; Klomek et al., 2015). The risk of depression, anxiety, psychosis, and suicidality is highest for children who are both bullies and victims of bullying (Haltigan & Vaillancourt, 2014; Klomek et al., 2009; Wolke, Lereya, Fisher, Lewis, & Zammit, 2014). These studies controlled for persisting factors including family hardship and psychopathology. In a British birth cohort study in which confounders were controlled for, the impact of being bullied extended throughout adult life and included persistent outcomes of poor mental and physical health and economic difficulty (Takizawa, Maughan, & Arseneault, 2014). As previously

observed, the measurement instruments for this 50-year prospective cohort study did not present a definition of bullying. However, the authors observed that the risk for poor outcomes was highest for children who were frequently bullied (Takizawa et al., 2014). Bullying is repeated when targeted children perceive that the aggressor is more powerful (Nelson et al., accepted; Rodkin et al., 2015).



## **4 RESEARCH METHOD**

The mixed methods approach of the current study was intended to promote the development of measurement instruments that are valid for the context in which they are used (Bronfenbrenner & Morris, 2006). Moreover, the trustworthiness of the research is increased as triangulation of the mixed methods allows for results to be juxtaposed, increasing the capacity to find patterns and relations between the qualitative and quantitative results (Tolan & Deutsch, 2015). The research is presented as a series of six papers. Five of the papers have been published in peer-reviewed journals, the sixth is accepted for publication in a peer reviewed journal. The method is incorporated within each paper. The research was conducted in three phases as outlined in Figure 2.1. Each paper is introduced in the following section.

### **4.1 Paper 1: A Research Protocol**

The initial aim of the research was to develop a self-report instrument that was effective in measuring covert bullying, as described in the first paper that introduces the research protocol for Phases 1 and 2 of the study (Nelson et al., 2015). The research protocol discusses the difference between aggressive behaviour and bullying in detail.

### **4.2 Paper 2: A Scoping Review of the Literature**

The second paper, a scoping review, was undertaken to identify self-report measures of aggression and bullying that are used with children aged eight to 12 years (Nelson et al., 2017). The scoping review highlights the current research gap that is present in accurately measuring preadolescent children's self-reported experience of power imbalance. This paper is written for school nurses, and discusses the internationally recognised health promoting schools framework (IUHPE, 2009; Langford et al., 2014).

### **4.3 Papers 3 and 4: Thematic Analysis of Focus Group Discussions**

Children's experience of power imbalance and covert aggression was informed by the scoping review of the literature and by thematic analyses of focus group discussions. In Phase 1 of the study the author and one supervisor (SB) conducted

focus groups with children from school Years 4 to 6 to better understand their experience of power imbalance within aggressive behaviour in the environment of the middle income independent school in Perth, Western Australia. The third and fourth papers respectively report on the focus group method and thematic analysis of focus group discussion. Themes emerged in relation to power imbalance (Nelson, Burns, et al., 2019) and covert aggression (Nelson et al., 2018). Thematic analysis was conducted based on the method recommended by Braun and Clark (2006) (see Table 1, Nelson et al. 2019).

Morse (2004) wrote that the detail in qualitative analysis could uncover problems that seem inconceivable. This level of detail can “provide insights into complexities that underlie seemingly simple surveys” (Morse, 2004, p. 4). The purpose of thematic analysis was to derive deeper meaning and understanding of children’s own experience in relation to power imbalance (Cook, 2012). To develop a measure of children’s experience of aggression without including the people who will answer the questions, for example school children, may result in irrelevant content. This is a threat to content validity and to ethical principles (Hagell, Reimer, & Nyberg, 2009). Focus group discussion was transcribed and analysed; themes emerged through an iterative process of analysis that involved listening to children’s voice again and again (See Figure 1, Nelson, Burns, et al., 2019).

While some authors call for reliability assessment similar to quantitative methods, including inter-rater reliability (Morse, 2015), others have proposed that the assessment of reliability is at odds with the process of qualitative analysis (Cook, 2012; Law, 2004). Because qualitative analysis is subjective, it is likely that each reviewer might find different meaning and this is part of the richness of qualitative analysis (Rolfe, 2006). Steps were, however, taken to avoid bias through repeated review of themes and subthemes against the original data set by the author of this thesis and supervisor (SB) (Nelson, Burns, et al., 2019; Nelson et al., 2018). Children who participated in the first round of focus groups also completed the questionnaire in the second round of focus groups and assessed the face validity of each item. This gave credibility to the qualitative research (Morse, 2015).

The results of the scoping review and thematic analyses informed the context specific design of items (or questions) that were included in two new self-report

measurement tools or instruments. It was anticipated that the first instrument would measure the self-report of power imbalance by children who reported frequent victimisation and that the second would measure children's report of their own experience after telling a teacher that another student had been mean. It was also intended that the second instrument might capture something of children's experience of covert aggression. The design of each instrument is discussed in the peer-reviewed articles that report the factor analysis. Additional considerations concerning instrument design are outlined in the following section.

#### 4.3.1 Instrument design

Each instrument was designed to be completed as a confidential self-report of children's own behaviour using Qualtrics™ online survey software. Anonymous self-report is recommended by Rigby (2007) because children may not be willing to identify that they have been bullied, or that they have bullied others. Each instrument was included in an online questionnaire and evaluated for content and face validity.

#### 4.3.2 Scale level content validity

The Scale-level Content Validity Index (S-CVI) was used to rate the clarity and relevance of each subscale with a four-point response of 'not' (1), 'somewhat' (2), 'quite' (3), and 'high' (4) (Polit & Beck, 2006). Rating by at least two reviewers is recommended; the S-CVI was determined by the proportion of experts who scored the relevance of the scale as 'quite' or 'high', a minimum S-CVI index of 0.8 was accepted (Polit & Beck, 2006).

#### 4.3.3 Instrument pre-test

The children who participated in the initial focus groups assessed face validity. Children were invited to complete the online questionnaire and to comment on the language, clarity, relevance of questions, and ease of use of the initial instrument (Streiner & Norman, 2008). Personal feelings or concerns about answering questions regarding bullying in an online survey format were also explored.

### **4.4 Papers 5 and 6: Exploratory and Confirmatory Factor Analysis**

Phases 2 and 3 of the study included participants from a purposive sample; one non-government school in Phase 2, and four non-government schools in Phase 3 (Nelson, Kendall, et al., 2019; Nelson et al. accepted). In each phase, children answered an online questionnaire on a tablet device or computer (Nelson et al. accepted). Data

collection occurred at school, during school hours. The researcher met with one teacher from each participating school prior to data collection, at this meeting ethical considerations were discussed. For example, to ensure confidentiality during data collection, children were seated at a distance from each other and asked not to talk while answering the questionnaire.

In phases 2 and 3 of the study the factor structure of each instrument was explored using factor analyses. Factor analyses show how the identified items fit or group together as constructs (factors), each representing a specific influence of power imbalance. Each construct contains a set of items that covary, showing how items share common properties (Achenbach, 2013). Statistical analyses began in SPSS and were continued using MPlus statistical software (Muthén & Muthén, 2015). MPlus contains built-in syntax that allows for non-normal distribution of data (Muthén & Muthén, 2015). This is relevant because the assumption of normality is violated when low levels of victimisation in schools result in positively skewed data. Moreover, analysis in MPlus is based on the covariance matrix in addition to the correlation matrix and takes measurement error into account, including error specific to each indicator variable, and error associated with the prediction of factors (Byrne, 2012). Another strength of MPlus is that observed outcome variables can be categorical or continuous, including dichotomous variables and combinations of variable types (Muthén & Muthén, 2015, p. 7). For binary variables the WLSMV estimator is recommended, and the ML estimator is also acceptable (Muthén & Muthén, 2015).

Each new instrument was evaluated for reliability and construct validity, beginning with exploratory factor analysis in Phase 2 ( $N = 174$ ), and confirmatory factor analysis in Phase 3 ( $N = 642$ ).

#### 4.4.1 Exploratory factor analysis

EFA was initially run in SPSS to explore how items in each instrument grouped together to form factors. The method included principal axis factoring (PAF), the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, and scree plot to explore the number of underlying dimensions within each set of items. PAF is recommended for accuracy of factor extraction rather than principal components analysis (PCA). PCA is limited in that it is based on the correlation matrix and

assumes that all of the variance in an item is explained by the factor (Fabrigar, Wegener, MacCallum, & Strahan, 1999; Russell, 2002). PAF, on the other hand, is based on the covariance matrix and allows for an estimate of the association between each item in the factor analysis to be made (communality), thereby allowing for measurement error (Russell, 2002). The eigenvalue refers to the amount of variance that is explained by a factor, and is calculated by squaring factor loadings and summing them together (Russell, 2002). Eigenvalue criteria of greater than or equal to 1 indicated a potential factor (Yong & Pearce, 2013). Because the eigenvalue criteria greater than or equal to 1 can result in the identification of too many factors, parallel analysis was used to confirm the optimum number of factors to be extracted (Russell, 2002). Following initial identification of a factor structure in SPSS, EFA was continued in MPlus to confirm the previously identified factor structure of the two new instruments. The fit of items to each subscale was assessed and decisions made on initial items to be discarded (Brown & Moore, 2012; Williams, Brown, & Onsmann, 2012). This established the initial construct validity of the scales.

#### 4.4.2 Item-level content validity

Item content validity was assessed to determine how well each item captured the meaning of each identified subscale (Polit & Beck, 2006). A minimum of five experts is recommended to control for agreement by chance significant at 0.05 level (Lynn, 1986). Reviewers were selected from the context in which data collection was to take place (Imle & Atwood, 1988).

#### 4.4.3 Confirmatory factor analysis

As recommended by Marsh et al. (2011), Phase 3 of this research used a method of exploratory structural equation modelling rather than an independent clusters model of confirmatory factor analysis. An independent cluster model allows each item to load only onto one factor by constraining items that belong to other factors to zero. Constraining factor loadings to zero can result in an overestimation of the correlations between factors. ESEM reviews modification indices (MI's) to show how items covary (share in common) between different factors and this allows increased understanding of the nature of power imbalance associated with bullying (Marsh et al., 2011). MI's above 10.0 are reported in MPlus, however MI's are incorporated sparingly in ESEM to avoid over identification of model fit, and that they are theoretically plausible (Muthén & Muthén, 2015).

As reported in the protocol paper, a high correlation is found between aggression and bullying, meaning that they are not effectively differentiated (Marsh et al., 2011; Nelson et al., 2015; Olweus, 2013). In ESEM the factor loading of all items are estimated and each item is free to cross-load onto other factors, this shows how items vary and cross-load onto factors other than the one that they are originally intended to fit (Marsh et al., 2011). The statistical capacity to investigate how items share common properties with other factors reveals potential influences of behaviour on children's experience of power imbalance. The effect is most powerful when it is supported by the qualitative method of the focus group discussions, and by the reviewed literature (Tolan & Deutsch, 2015). Thus, in addition to resulting in a truer estimation of correlations between factors, ESEM contributed to our understating of the influences of power imbalance within bullying by investigating the cross-loadings of items between factors (Byrne, 2012).

The results of the quantitative research are published in two papers. The fifth paper reports the results of the quantitative analyses of the new instrument designed to measure children's experience of covert aggression, defined as aggression that was intentionally hidden from teachers at school (Nelson, Kendall, et al., 2019). The sixth paper reports on the psychometric evaluation of the new instrument designed to measure the power imbalance that is perceived by victims of bullying (Nelson et al., accepted).

The questionnaires that were used for Phase 2 and Phase 3 of the study are included as Appendix J and Appendix R respectively. A detailed discussion on the scales used in each questionnaire is included as Appendix K and Appendix S.

## **5 PUBLISHED PAPERS**

Each published paper is presented, beginning with a cover page. Paper 1 and Paper 4 were published in Open Access format and the PDF of each is included. The accepted version of papers 2, 3 and 5 is included in accordance with the permission obtained for manuscripts to be included in this thesis in which the copyright was held by the publisher. Please see Appendix A for permission letters.



## PAPER 1. RESEARCH PROTOCOL

This is the published version of the article.

Nelson, H. J., Kendall, G. E., Burns, S., Schonert-Reichl, K. (2015). Protocol for the design of an instrument to measure preadolescent children's self-report of covert aggression and bullying. *BMJ Open*, 5:e009084.

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# BMJ Open Protocol for the design of an instrument to measure preadolescent children's self-report of covert aggression and bullying

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## ABSTRACT

**Introduction:** Covert bullying in schools is associated with a range of academic, social, emotional and physical health problems. Much research has focused on bullying, but there remains a gap in understanding about covert aggression and how to most accurately and reliably measure children's own reports of this behaviour. This paper reviews relevant literature and outlines a research project that aims to develop a self-report instrument that effectively measures covert aggression and bullying. It is anticipated that this research will result in a standardised instrument that is suitable for exploring preadolescent children's experiences of covert aggressive behaviour. The data collected by the instrument will enhance health and education professionals understanding of covert bullying behaviours and will inform the design and evaluation of interventions.

**Methods and analysis:** Relational developmental systems theory will guide the design of an online self-report instrument. The first phase of the project will include a critical review of the research literature, focus groups with children aged 8–12 years (grades 4–6) in Perth, Western Australia, and expert review. The instrument will be explored for content and face validity prior to the assessment of convergent and discriminant validity, internal consistency and test-retest reliability.

**Ethics and dissemination:** The study has been approved by the Curtin University of Human Research Ethics Committee (RDHS-38-15) and by the Executive Principal of the participating school.

## INTRODUCTION

Bullying is widely recognised as a health issue in schools as it is associated with a broad range of social, emotional and physical health problems and poor school achievement.<sup>1–3</sup> Health problems associated with being a victim of bullying range from loneliness; low self-concept; fear; and somatisation to anxiety, depression and suicidal behaviour.<sup>3–5</sup>

Children who bully others are also more likely to experience poor health and developmental outcomes, such as depression, increased alcohol and substance use,<sup>3</sup> future school dropout, criminal arrest, and teen parenthood.<sup>6</sup> Evidence suggests that bullying among school children peaks between the ages of 9 and 13 as children find their social position among their peer group.<sup>3,7</sup> At this age and in the school context, support from adults within the school is paramount to nurturing children's emotional well-being as they encounter new social relationships.<sup>8</sup> In reality, however, adult support is often not forthcoming because adults are simply not aware of bullying behaviour that is deliberately or intentionally hidden. Furthermore, when adults are observing children interacting and actively looking for evidence of bullying it is very difficult for them to differentiate between the playful teasing that is common with children of equal power and the 'systematic abuse of power' that constitutes bullying (ref. <sup>9</sup>, p.174). There is a widely documented need for continuing research into the reliable and valid measurement of bullying that is covert or intentionally hidden.<sup>10–12</sup> This paper describes the design of research that seeks to develop an instrument to measure the self-report of covert bullying among preadolescent children aged 8–12 years (grades 4–6). It is proposed to include the instrument in a questionnaire to measure covert aggression, bullying, empathy, and related behaviours and attitudes. This will help inform the development of interventions and measures of their effectiveness.

Bullying research has typically focused on physical and verbal behaviour, particularly that of boys.<sup>11</sup> Recently, it has been emphasised that some children with a good understanding of group dynamics and social



environments may develop subtle forms of aggressive behaviour that are purposely hidden from adults.<sup>13</sup> Children involved in covert bullying often hold high social status not only with their peers, but also with their teachers, making it unlikely that it will be recognised or acknowledged.<sup>13 14</sup> This is a plausible explanation for why bullying continues to be such a major issue in schools despite the policies and programmes that have been widely implemented to prevent it.<sup>15–18</sup> It is perplexing for many parents and teachers to suggest that children who appear to be well adjusted and successful at school may be causing other children harm.<sup>13</sup> And yet, it is entirely realistic and understandable as bullying is essentially a means of attaining social dominance.<sup>17</sup> Harm is caused through the perceived imbalance of power between the perpetrator and the victim, and is perpetuated when adults are either unaware of the behaviour or insensitive to children's reports of bullying.<sup>17 18</sup>

Evidence suggests that for interventions to effectively prevent covert aggression and bullying, they must be based on understanding children's behaviour and experience.<sup>10</sup> However, the factors which influence this behaviour during preadolescence are not well understood.<sup>3 11 17</sup>

Existing research has investigated the different types of behaviour within aggression, including relational aggression,<sup>13 19</sup> and the repeated harm and power imbalance associated with bullying.<sup>13 20</sup> However, there has been inconsistent measurement of bullying behaviour.<sup>10 11</sup> For example, imprecise language is an important issue for research in this field.<sup>10</sup> While the terms bullying and aggressive behaviour are often used interchangeably, they are different concepts that should be measured differently.<sup>11</sup> In addition, there is a gap in understanding how to most accurately and reliably measure: (1) the imbalance of power between the perpetrator and the victim; and (2) covert aggression that is intentionally hidden from adults.<sup>3 10 12</sup> This limits understanding of factors that contribute to the development of bullying and contributes to difficulty in implementing and evaluating school-based interventions.<sup>3 21</sup>

It is recommended that bullying research begin with the administration of a self-report questionnaire by children as a baseline.<sup>1 11 20 22</sup> An understanding of the concepts which differentiate bullying from aggression is central to the effective design of an instrument that will measure covert bullying.<sup>10 11</sup> There are two common features of aggression: (1) an *intent to harm* the victim *physically* or *psychologically* by the perpetrator<sup>23</sup>; and (2) the behaviour is perceived negatively as 'a feeling of hurt' by the victim (ref. <sup>10</sup>, p.278). Bullying happens when aggressive behaviour is carried out *repeatedly*, in a relationship that has an *imbalance of power* between the perpetrator and the victim.<sup>10 11</sup> Based on findings from qualitative research with children aged 8–13 years in Australia, Cross *et al*<sup>13</sup> defined covert bullying as any form of bullying 'that is 'hidden', out of sight of, or

unacknowledged by adults' (p.xxi). For this study with preadolescent children covert bullying is defined as happening when children behave repeatedly with aggression that is deliberately or intentionally hidden from adults, with the intent of causing harm to a victim, who feels hurt, in a relationship that involves an imbalance of power. Aggression, bullying and covert behaviour form the three scales of the proposed model which was informed by the research<sup>10 11 13 14 19 23</sup> (see figure 1).

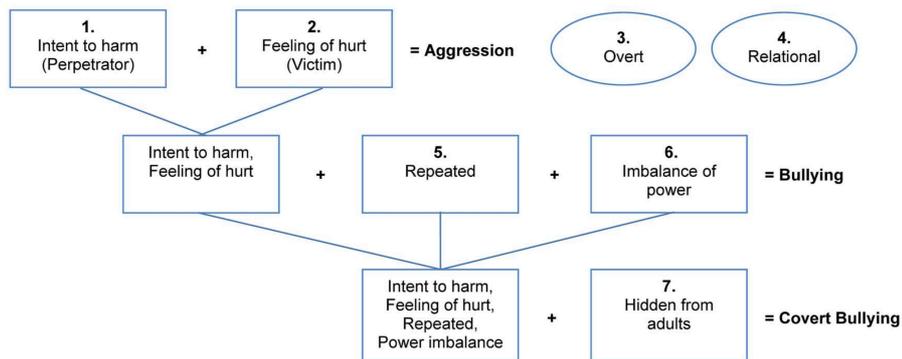
It is recommended that instruments used to measure bullying behaviour will ideally: assess the intent to harm another by the perpetrator and the report of harm by the victim at the same time<sup>11 23</sup>; differentiate between overt physical or verbal behaviour and relational forms of aggressive behaviour.<sup>14 19 23</sup>; differentiate between aggressive behaviour and bullying<sup>10 11</sup>; and include a measure of covert behaviour.<sup>13</sup> The aim of the proposed research will be to facilitate these recommendations by designing an instrument with the intent of measuring seven subscales of behaviour as shown in figure 1. The subscales are: (1) intent to harm (perpetration), (2) feeling of hurt (victimisation), (3) overt aggression, (4) relational aggression, (5) repetition of behaviour, (6) imbalance of power between the perpetrator and the victim, and (7) covert behaviour. Statistical analysis will be conducted to explore which scales and subscales of behaviour, or factors, can be reliably measured. The following section of the background summary addresses the measurement of aggression, bullying and covert behaviour; the three scales of the proposed model.

### Statement of hypotheses

We hypothesise that: (1) focus group analyses will support the premise that children perceive an increase of hurt when adults are either unaware of, or insensitive to, children's reports of bullying; and (2) exploratory factor analyses (EFA) will provide preliminary support for the seven factors of the proposed model, including covert aggression defined as aggression that is *deliberately or intentionally hidden from adults*.

### Aggression

Aggressive behaviour is an intentional act towards another with the goal of inflicting harm or injury. Physical aggression is a normal part of development and peaks between the ages of 24 and 48 months, either as a response to frustration or for the purpose of achieving a goal.<sup>24</sup> As children grow many learn to inhibit physically aggressive behaviour. While most learn prosocial behaviour within nurturing relationships, others may learn subtle forms of aggressive behaviour.<sup>24 25</sup> Researchers have identified multiple forms of aggressive behaviour and the outcomes predicted by each differ.<sup>25</sup> Meta-analytic review of aggression research has, however, supported two overall forms of aggressive behaviour.<sup>26</sup> The first includes physical acts and overt verbal aggression, often termed overt aggression; the second includes hurtful manipulation of relationships causing relational



**Figure 1** This model, which was informed by the research,<sup>10 11 13 14 19 23</sup> proposes a factor structure that will differentiate aggressive behaviour (line 1) from bullying (line 2), and will include a subscale indicating covert behaviour, behaviour that is deliberately or intentionally hidden from adults (line 3). Intent to harm (factor 1) and feeling of hurt (factor 2) are the accepted common features of aggressive behaviour. Aggressive behaviour may be overt physical and verbal behaviour (factor 3) or it may be directed at causing harm through social relationships (factor 4). Bullying is a form of aggressive behaviour that is repeated (factor 5), and in which there is an imbalance of power of the perpetrator over the victim (factor 6). At preadolescence, covert bullying (factor 7) contributes to harm to the victim while reducing the risk of the perpetrator being seen or found by adults. Statistical analyses will be conducted to explore which factors can be reliably measured.

and social harm.<sup>26 27</sup> The second form of aggressive behaviour may be termed *indirect*,<sup>28 29</sup> *social*<sup>30 31</sup> or *relational aggression*.<sup>32</sup>

Existing research does not consistently define and measure indirect, social and relational aggression, but each term has a common theme of confronting the social relations of the victim.<sup>6 26</sup> *Indirect* aggression is generally considered to occur 'behind-the-back' of the victim, the perpetrator causing harm without being identified.<sup>28 29</sup> *Social* aggression aims to damage the self-esteem or social standing of another and includes direct or 'face-to-face' forms of negative facial expressions or gestures.<sup>30 31</sup> *Relational* aggression is harm caused through hurtful manipulation of peer relationships, encompassing indirect and socially aggressive behaviours.<sup>19</sup> For the purpose of this research, and consistent with the literature, the term *relational aggression* will be used to distinguish between overt aggressive behaviour and psychologically aggressive behaviour aimed at causing harm through social relationships.<sup>19 26 27</sup> Research suggests that relational aggression may result in more psychological harm than overt behaviour.<sup>6 13</sup>

The Social Experience Questionnaire (SEQ)<sup>19</sup> is most commonly used to measure overt and relational forms of aggressive behaviour in preadolescent children.<sup>1 33</sup> The SEQ was first used to measure the self-report of relational aggression by the victim (children in grades 3–6).<sup>19</sup> Three subscales were found at first to be highly reliable: relational victimisation ( $\alpha=0.80$ ), overt victimisation ( $\alpha=0.78$ ) and prosocial recipient ( $\alpha=0.77$ ).<sup>19</sup> Later research found inconclusive reliability of the SEQ self-report over a time period of one and a half years when used with children aged 5–10 years.<sup>33</sup> Additional qualitative research has been recommended to clarify

children's understanding of the items in each subscale.<sup>33</sup> Furthermore, it has been recommended that the intent to harm another by the perpetrator and the report of harm by the victim are assessed at the same time.<sup>10 11 34</sup>

The Adolescent Peer Relations Instrument (APRI) was developed to measure both perpetration and victimisation aspects of aggressive behaviour in adolescents in school grades 7–11 using subscales of verbal, physical and social aggression ( $\alpha=0.82-0.93$ ).<sup>23</sup> The APRI has also been found to be reliable with primary school-aged children in grades 5 and 6 ( $\alpha=0.81-0.90$ ).<sup>35</sup> Similarly, the Social Bullying Involvement Scales were used to differentiate between the social perpetration of aggressive behaviour ( $\alpha=0.93$ ) and social victimisation ( $\alpha=0.97$ ) in a group of adolescents aged 11–16 years.<sup>36</sup> These authors have proposed that future research include measures of verbal and physical aggression, and empathy.<sup>36</sup> Measuring perpetration and victimisation of different types of aggressive behaviour, including physical and relational aggression, will contribute to understanding the factors that influence behavioural development at this age.<sup>7 37</sup>

### Bullying

Aggressive behaviour not only occurs in different forms, it serves different functions or purposes. Aggressive behaviour may be a reactive response to perceived threat.<sup>38</sup> Reactive aggression is associated with poor regulation of emotions and internalising symptoms.<sup>27 38</sup> Alternatively, aggression may be proactive with the purpose of obtaining a goal, for example, social dominance.<sup>27 39</sup> Proactive aggression is associated with high levels of callousness, the ability to regulate emotions, a lack of remorse for the harm done to others and a lack

of empathy.<sup>27 38</sup> When proactive aggression is a strategic and goal-oriented behaviour, it is regarded as bullying.<sup>10 40 41</sup> The perpetrator, for his or her own benefit, exploits an *imbalance of power* to dominate the victim *repeatedly* and in an unwelcome way, resulting in harm or disadvantage to the victim.<sup>23</sup> Furthermore, bullying is understood to occur as a group process.<sup>41</sup> The main perpetrator is likely to have a powerful position within his or her peer group, termed the in-group, with a social network of children to assist and defend him or her in the perpetration of harm to another.<sup>41</sup>

There are many reasons why bullying remains a major issue in schools despite the widespread implementation of comprehensive whole-of-school interventions.<sup>42 43</sup> While it is argued that bullying behaviour can never be totally eliminated, many students, teachers, parents, researchers and policymakers agree that more can be done to manage it and reduce the harm that it causes. From a research point of view, there are major issues associated with the inconsistent use of terminology in instruments that are commonly used to measure bullying behaviour, including differing definitions of bullying.<sup>3 10 11 44 45</sup> For example, many self-report instruments that measure bullying do not specify how bullying is differentiated from aggression. In addition, there is a gap in understanding how to effectively measure the behavioural component of a power imbalance between the perpetrators and the victims of bullying.<sup>11</sup> Furthermore, the accuracy of self-reported bullying is unknown and agreement between different informants is low.<sup>26</sup> The value of self-report may be limited by bias, especially when teachers, parents and peers are not aware that bullying is taking place.<sup>45</sup> Thus, despite many developments over the past 50 years of bullying research, the factors that influence the development of bullying are not well understood.<sup>34</sup> The following section reviews the measurement of perceived power imbalance by the victim, a proposed key to increasing the accuracy of bullying assessment.<sup>11 20 34 46</sup>

### Power imbalance

Without a report of power imbalance *by the victim*, there is likely to be an artificially high correlation between bullying perpetration and victimisation as well as between aggressive behaviour and bullying.<sup>11</sup> Although perpetrators might report on aggressive behaviour to themselves, in some cases it may be reactive aggression in response to being hurt rather than the proactive aggression that is considered part of bullying. Such perpetrators will, however, still report that they have been exposed to aggressive behaviour even though they are dominant in terms of power, resulting in increased correlations between behaviours. For example, when asked why they bullied other students in a qualitative study (n=51) all indicated they bullied others because they were provoked in some way. For some students, this was reactive as a result of being bullied; however, these bully victims often targeted other children to gain a sense of

power.<sup>47 48</sup> Ideally, research will differentiate between three outcome groups: victim, perpetrator and bully victim based on self-report of power imbalance.<sup>11 46</sup> The aim of including these outcome groups is to address the overlap between aggressive behaviour and bullying, between perpetration and victimisation, and to give more clarity to the different behaviours within these groups.<sup>11</sup> Understanding these behaviours is important because the behavioural and health outcomes differ for each group, with the poorest outcomes in the bully victim group.<sup>3 20 49</sup>

Reviews of bullying research have recommended that factors associated with power imbalance are likely to include physical strength, group size, older age, popularity, smartness in schoolwork and differences in self-confidence.<sup>11 45 46</sup> There is, however, a need to continue investigating the method for measuring aggression in comparison to bullying, including the use of specific individual items to assess power imbalance within self-report.<sup>11 20 46 50</sup> For example, victims' perception of power imbalance has been measured using individual items to ask how popular, smart in school and physically strong the other person was.<sup>20</sup> The authors reported test-retest stability ( $r=0.80-0.83$ ,  $p<0.001$ ), but concluded that 'smart' may not be a beneficial word to assess power imbalance.<sup>20</sup> Similarly, the perception of power imbalance may differ by gender. Physical size and group size were found to be significant individual predictors of threat appraisal for boys ( $R^2=0.074$ ,  $p<0.01$ ), whereas physical size and popularity power imbalance predicted poorer function for girls ( $R^2=0.075$ ,  $p<0.01$ ).<sup>46</sup> A limitation of the study was the reliability of the measure of threat appraisal ( $\alpha=0.63$ ). The authors proposed further research to assess types of power imbalance by gender, ethnic group, socioeconomic status (SES) and success in romantic relationships.<sup>46</sup> Phase I of the proposed research will use focus groups to explore children's perception of what influences and protects against power imbalance to determine relevant language and question structure. In addition, covert behaviour as a source of harm will be explored. Covert behaviour is discussed in the following section.

### Covert behaviour

Covert behaviour as a source of influence in bullying is little understood, in part because covert aggression and bullying are not clearly or consistently defined in the literature. Crick and Grotpeter<sup>19</sup> differentiate relational aggression from overt physical and verbal aggression, suggesting that relational aggression is considered to be covert behaviour. Others have used the term 'covert' as an alternative to the term 'indirect' when referring to a victim who is unaware of the identity of the perpetrator.<sup>36 51 52</sup> Such categories of direct versus indirect social or relational aggression, however, are not supported in comprehensive empirical analyses.<sup>25 36</sup> Current research discusses relational aggression as a specific type of indirect aggression that may be both overt and covert.<sup>53</sup>

Furthermore, beyond relational aggression, children's understanding of covert aggression includes physical and verbal behaviour,<sup>13</sup> a view supported by an expert panel of researchers.<sup>34</sup> In qualitative research with children (n=85, school grades 4,6,7 and 8), it was found that while covert is not a term that would be used by children, it adequately describes behaviour that is *not seen or acknowledged by adults*.<sup>13</sup> This research underscores the point that children's perspectives are crucial as it is children who have the current lived experience of bullying at school.<sup>54 55</sup> The harmful effects of aggressive behaviour and bullying are compounded when adults either do not see or fail to acknowledge the behaviour.<sup>1 56</sup>

Covert behaviour is a potential influence within power imbalance. To this end, children have reported that one way of hurting others without being seen by the teacher is to 'lie to the teacher' (ref. 13, p.149). The group nature of bullying may contribute to harm through covert means as members of the in-group assist and defend the perpetrator.<sup>41</sup> Targets of covert aggression in middle childhood are likely to remain unidentified when there is uncertain evidence of harm and the source is not clearly identified, for example, when the in-group of the bully participates in a lie.<sup>52 57</sup> Furthermore, children with leadership skills and a good understanding of social situations may be covertly aggressive, but seen by teachers as mature and socially able.<sup>13 58</sup> The findings of one study showed that even at preschool age, when much aggression is visible to teachers (n=60), verbal aggression was positively associated with teacher-rated prosocial behaviour,  $r(26)=0.43$ ,  $p<0.05$ , and with teacher-rated peer acceptance for girls,  $r(26)=0.68$ ,  $p<0.001$ .<sup>59</sup> It has been proposed that the teacher's understanding of harm caused to the victim is masked when the perpetrator holds high social status.<sup>57</sup>

Elder (ref. 60, p.9) talks of 'the maturing experience of working through the pain and confusion of life'. Importantly, this comment is framed within a life-course perspective and understood through the links between people who are important in the child's life. Children's perception of support from adults and connectedness with peers at school are key 'resources' in middle childhood.<sup>8</sup> Understanding the development of covert aggression in childhood is important for supporting the development of prosocial behaviour.<sup>61</sup> As previously mentioned, poor agreement between informants has been a common research finding.<sup>26 42</sup> This is to be expected when covert bullying is deliberately hidden from teachers and perpetrators give socially desirable responses. Despite widespread acknowledgement that bullying research will ideally include measurement from multiple informants to reduce bias, child self-report is recommended as a starting point.<sup>49 62</sup> Self-report allows victims of covert bullying to report on their own perceived experience.<sup>11</sup> For this reason, this research will begin with the development of a self-report measure as a baseline, with the intention of the later inclusion of peer, teacher and parent report instruments.<sup>34</sup>

To the authors' knowledge, there are no self-report measures of aggression and bullying that include each of the defined elements of: intent to harm, feeling of hurt, physical and relational aggression, repetition, power imbalance, and covert behaviour that is *deliberately or intentionally hidden from adults*. An instrument that provides for children to report on their own experience of covert aggression and bullying will contribute to a greater understanding of the harm that children cause to others and their reasons for doing so, as well as helping to inform the design and evaluation of prevention and intervention strategies.<sup>27</sup> The ultimate goal is to reduce covert aggression and bullying by bringing it to the attention of students, parents, teachers and other members of a school community.

## METHODS AND ANALYSIS

### Research objectives

This study aims to work with children to develop an online self-report measure of covert aggression and bullying for upper primary school-aged children, and to validate the instrument. The research objectives are: (1) to identify appropriate questions to use in a self-report instrument that measures aggression and bullying, including covert aggression among preadolescent children (purposive sample, n=70); and (2) to establish the test-retest reliability, and convergent and discriminant validity of a new instrument designed to measure covert aggression and bullying (purposive sample, n=140).

### Study design

Instrument development will consist of qualitative and quantitative methods and will be conducted within a theoretical framework of relational developmental systems theory.<sup>63</sup> Phase 1: Focus groups with children from grades 4–6 will inform the development of the instrument, in conjunction with a critical review of the literature and instruments. Preadolescent children, as members of the target population, are considered 'experiential experts' (ref. 55, p.38). The perspectives of children are therefore a critical part of the development, evaluation and validation of the measure.<sup>54 55</sup> Phase 2: The instrument will be completed in online format by a purposive sample of students from grades 4–6 (8–12 years). Quantitative analysis will include EFA, internal consistency, convergent and discriminant validity, and test-retest reliability. Phase 3: A subsequent quantitative study will be conducted with a larger sample of children to further evaluate the model for fit, interpretability, strength and statistical significance, and to assess the criterion validity of the new instrument. This paper focuses on phases 1 and 2 of the proposed research.

### Research setting

Phases 1 and 2 of the study will comprise a purposive sample of students enrolled in grades 4–6 at one independent school in the Perth metropolitan region of Western Australia (n=210). The population in this fee

paying school is represented by families from a wide range of cultural and ethnic backgrounds who bring to the school an influence of educational advantage because of the parents own level of education and occupation. This is reflected by the 2012 Index of Community Socio-Educational Advantage (ICSEA) value for the school of 1073, placing it within one SD above the median of socioeducational advantage in Australia.<sup>64</sup> Bullying occurs across sociodemographic levels and the middle class represents the greater concentration of people in Australia, the focus on the middle class therefore promotes a normative perspective to the research.<sup>65 66</sup> The school has three classrooms in each grade. Children will be purposefully selected from one classroom in each grade 4, 5 and 6 (n=70) for focus groups in phase 1 of this study. Phase 2 of the study will comprise a purposive sample of students from the remaining two classrooms of each grade 4, 5 and 6 (n=140). To avoid a potential testing effect, students from classrooms that participated in phase 1 will not be invited to participate in phase 2. Active written consent will be obtained from parents, and written assent will be obtained from children prior to data collection.

#### Phase 1: instrument development

This study will use *relational developmental systems theory* as the theoretical framework. This theory represents development as a result of mutual 'person ↔ context relations', indicating that all levels of development are integrated within: neurobiological and physiological processes; social relationships; physical processes; ecology, culture and history (ref. 63, p.374). This is an important consideration in research design, which must allow for the context of people's life, as it is lived in their own environment and historical period, to be adequately represented.<sup>67</sup> The discovery phase of instrument design will be informed by children because children best understand their own experience.<sup>68</sup>

#### Literature review

A critical review of the literature will be undertaken to identify existing self-report tools and instrument items that measure each of the seven subscales of behaviour as previously outlined (see figure 1). Psychinfo, MEDLINE and Science Direct databases will be used. The search will include combinations of the following terms: aggression, bullying, covert, relational, indirect, social, report, instrument, childhood, pre-adolescence. Items relevant to each of the subscales will be identified and listed, along with the reported reliability of each item. The following limits will be applied to the search: peer-reviewed journal, human, English language, tests and measures, 6–12 years. The initial review will include publications between 1995 and 2015 and a manual reference list search will be conducted to locate original articles where relevant. Adult-focused scales will be excluded.

#### Focus groups

A purposive sample of children aged 8–12 will be asked of their perception of aggression and bullying through a series of focus groups. The aim of the focus groups will be to clarify issues experienced by children, to explore children's understanding of power imbalance and of bullying that is hidden from adults, and to clarify the language children use. Three focus groups will be conducted, it is anticipated that each group will include six to eight children with equal numbers of males and females.<sup>69</sup>

Focus group data will be audio taped, transcribed verbatim and will be reviewed by two researchers, one who has extensive experience in this field, to maintain dependability and determine credibility.<sup>70</sup> Descriptive codes will be generated, and words and phrases will be explored to elicit shared meanings and perceptions across interviews using a thematic analyses approach. Themes that are commonly presented by children will be identified. The content of existing scales will then be adapted to be consistent and relevant to the findings of the focus groups, and incorporated into the design of the instrument. The qualitative data will be managed using software package NVivo V.10.

#### Expert review

A panel of people with expertise in the areas of psychology, education, health promotion, behavioural research and statistics will review the questions in each subscale. For content validity, a minimum of seven experts will be consulted.<sup>71</sup> The Content Validity Index<sup>72</sup> will be used to rate item relevance and clarity and the relevance of each subscale.

#### Instrument format

The instrument will be completed as an anonymous and confidential self-report of children's own behaviour using an online survey format. Perpetration of bullying may be under-reported by self-report and this needs to be considered when framing research design.<sup>12</sup> There is little consensus on the influence of social desirability bias on children's own report of bullying others;<sup>50 73</sup> however, Ahmad and Smith<sup>74</sup> found that children were more likely to report bullying others by anonymous self-report questionnaire than when they were identified by name. Anonymous self-report is similarly recommended by Rigby<sup>75</sup> because children may be unwilling to identify themselves as victims or perpetrators of bullying.

#### Instrument pretest

Face validity will be assessed by recruiting a purposive sample of children from the target group (n=10) to complete the instrument and to comment on the language, clarity, relevance of the questions and ease of use of the instrument.<sup>76</sup> Personal feelings or concerns regarding participation in the completion of an online questionnaire regarding bullying will also be explored.

The wording of items will be changed as indicated. The resulting measure will then be reviewed by another purposively selected group of children (n=10), the process will continue until the language, content and reading ease of the instrument are considered acceptable by the researchers.

### Phase 2: construct validity and reliability testing of the proposed instrument

The self-report instrument will initially be administered to students from one primary school as previously described. EFA will be used to determine which questions within the instrument fit different subscales of behaviour.

### Sample size

Recommendations of sample size for EFA vary between 10 per variable (mid range) and 20 per variable (upper range).<sup>77</sup> Each factor or subscale of behaviour represents one variable; therefore, for the seven subscales being explored a minimum of 70 participants will represent the midfield of the proposed ratios and 140 students will represent the upper range of 20 children per variable.

### Data collection

The online instrument will be completed in a classroom using Qualtrics online questionnaire software. The researcher will administer the instrument. To ensure confidentiality during administration, children will be seated at a distance from each other and asked not to talk while completing the instrument. Children will be informed that there are no right or wrong answers, will be assured that their answers will be anonymous<sup>75</sup> and will not be seen by their parents, peers or teachers.<sup>36</sup> There is a degree of homogeneity associated with SES within schools in the Perth metropolitan region of Western Australia; SES will therefore be recorded by the ICSEA value alone, supporting the anonymity of data collection.<sup>78</sup>

### Analysis

The first step in data analysis will be to conduct a split-half test to assess the consistency of children's responses.<sup>79</sup> The second step will be to find initial subscales of behaviour, or factors.<sup>77</sup> The Pearson correlation coefficient (r) between variables will be calculated to find items that have a correlation over 0.30 indicating items that share enough properties to be potential measures of the same factor. The initial construct validity of the instrument will be established through EFA; the fit of items to relevant subscales will be assessed and decisions made on items to be discarded.<sup>80-81</sup> Convergent validity will be supported when items that are similar or strongly correlated load onto the same factor.<sup>81</sup> Discriminant validity is the extent to which each factor or subscale is well differentiated and will be supported if theoretically different constructs are not highly intercorrelated.<sup>81</sup> The results will be interpreted to give names

to each subscale. The fourth step will assess the internal consistency of the instrument and its subscales using Cronbach's  $\alpha$ , an  $\alpha \geq 0.7$  will be considered adequate.<sup>82</sup> In the fifth step, the instrument will be administered to the same children 2 weeks after the initial questionnaire for assessment of test-retest reliability. Spearman's r will be calculated; a correlation coefficient between 0.7 and 1.0 will indicate agreement between scores (reliability). Data analysis will be conducted using M-Plus.<sup>23</sup> Questionnaires with missing data will be excluded from the analysis.

### ETHICS AND DISSEMINATION

Prior to participation in the study, informed written consent will be obtained from parents and informed written assent will be obtained from each participating child. Children will be able to withdraw from the research at any time without negative consequence.<sup>83</sup> The school psychologist will be available for children to be referred to if they are distressed by the discussion in the focus groups, or if they become distressed during completion of the instrument. A de-identified report of study findings from phase 1 and a report of findings from phase 2 will be given to the School Executive for dissemination to families and staff. Results will also be disseminated through conference presentations and peer-reviewed journals.

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## PAPER 2. A SCOPING REVIEW

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## **A scoping review of self-report measures of aggression and bullying for use with preadolescent children**

### **Abstract**

Bullying in schools is a major health concern throughout the world, contributing to poor educational and mental health outcomes. School nurses are well placed to facilitate the implementation and evaluation of bullying prevention strategies. To evaluate the effect of such strategies it is necessary to measure children's behavior over time. This scoping review of instruments that measure the self-report of aggressive behavior and bullying by children will inform the evaluation of bullying interventions. This review aimed to identify validated instruments that measure aggression and bullying among preadolescent children (age 8 to 12). The review was part of a larger study that sought to differentiate bullying from aggressive behavior by measuring the self-report of power imbalance between the aggressor and the child being bullied. The measurement of power imbalance was therefore a key aspect of the scoping review.

### **Introduction**

Bullying in schools is a leading health concern worldwide (Craig et al., 2009; Fleming & Jacobsen, 2009; Hilton, Anngela-Cole, & Wakita, 2010; Owusu, Hart, Oliver, & Kang, 2011). The Health Promoting Schools (HPS) framework seeks to promote behavioral, social, and cognitive health through the whole school environment with the aim of fostering behaviors that will persist into adulthood (Langford et al., 2014). The framework enables schools to plan, implement and evaluate health promotion strategies using an organizational change approach. HPS focuses on three key domains: Curriculum, Learning and Teaching; School Organization, Ethos and Environment; and Partnerships and Services (Burns, Crawford, Cross, & Comfort, 2014; World Health Organization, 1996). Within the HPS framework (IUHPE, 2009), school nurses are well situated to facilitate the implementation and evaluation of interventions. A review of bullying assessment has, however, identified the need for continued research into the development of psychometrically sound measurement tools; specifically children's self-report of power imbalance (Nelson, Kendall, Burns, & Schonert-Reichl, 2015). Aggressive behavior includes two features; the intent to harm another by the perpetrator, and a feeling of hurt by the victim (Marsh et al., 2011). Bullying is aggressive behavior

that is repeated over time in a relationship by a perpetrator who holds a position of power over the victim, and from which the victim feels unable to escape (Olweus, 2013). Power imbalance is the most important characteristic that distinguishes bullying from aggressive behavior (Olweus, 2013).

Scoping reviews identify and analyze literature to map a topic and find research gaps (Pham et al., 2014). This scoping review is part of the formative research of a larger study, the aim of which is to develop a new measure of power imbalance (Nelson et al, 2015). It is intended that the new measure will sit within a model of bullying assessment that includes repetition of aggressive behavior and intent to cause harm, thus differentiating bullying from aggression. For this reason the research began with a scoping review of the literature to identify previously validated measures of aggressive behavior and bullying, and to summarize methods used to measure power imbalance by children's self-report.

### **Background**

School nursing practice is centred in a public health approach, therefore along with early intervention, school nurses also aim to prevent health problems through health promotion and through contributing to the evaluation of interventions (Schaffer, Anderson, & Rising, 2016). Likewise, the Health Promoting Schools (HPS) framework is an international framework that recognizes the strong link between health and learning and seeks to support both, and reduce inequity (IUHPE, 2009; Langford et al., 2014). The HPS framework aims to: 1) educate students at an individual and group level through formal learning in the classroom, 2) promote and reinforce what children learn about health within the whole school environment through informal learning, for example, the values promoted by the school, and 3) to engage with the wider community (Langford et al., 2014; Stewart-Brown, 2006). Key to the success of the HPS approach is that education and health professionals, families, the wider community, and political bodies work in unity to build an environment in which children understand health related behavior as a social norm (IUHPE, 2009; McIsaac, Hernandez, Kirk, & Curran, 2016). The aim is to support outcomes of health, behavior, and economic stability into adulthood and across generations (Suhrcke, Paz Nieves, & World Health Organization, 2011).

School nurses fit within the HPS framework as members of the school community who provide public health interventions at a population level through school programs and policies and in conjunction with community organizations (Council on School Health, 2008; Schaffer et al., 2016). In addition, children who experience health problems, anxiety, depression, school stress, and those who are victims or perpetrators of aggressive behavior and bullying, present frequently to school health centres (Shannon, Bergren, & Matthews, 2010; Vernberg, Nelson, Fonargy, & Twemlow, 2011). School nurses liaise between the student, the education team, the home, and the wider health community to promote outcomes of wellbeing at an individual level (Pigozi & Jones Bartoli, 2016; Schaffer et al., 2016). The involvement across the school community places the school nurse in an ideal position to work with school communities to facilitate the HPS framework.

The HPS framework seeks to demonstrate improvement in outcomes of health and wellbeing through the evaluation of interventions and through sound scientific evidence (IUHPE, 2009). Evaluation of the school social, emotional, and behavioral environments is, however, complex (IUHPE, 2009). For example, clearly defined policies and programs have been implemented within schools to promote mental health and to address the harm caused by aggressive behavior and bullying (Langford et al., 2014; Stewart-Brown, 2006). Mixed results have been reported on the success of bullying interventions; short term education focused interventions have shown little change in the frequency of bullying behavior (Hallford, Borntrager, & Davis, 2006; Hunt, 2007). Bullying prevention is most successful when it uses a whole school approach, including parents, over an extended time period and when it is supported by governing bodies (Cross et al., 2012; Fox, Farrington, & Ttofi, 2012; Midthassel, Bru, & Idsoe, 2008; Swearer & Hymel, 2015). It has been proposed, however, that the assessment of bullying following interventions may reflect children's increased knowledge of what bullying is rather than their actual behavior (Hallford et al., 2006).

Bullying is a form of aggressive behavior, but the aggression is intentionally repeated over time; furthermore the perpetrator exerts a power over the victim in that the victim feels unable to defend him or herself, hence exacerbating the harm (Olweus, 2013). The harm to the victim is perpetuated through the perceived power imbalance (Liu & Graves, 2011). The social, emotional and physical stress

associated with the ongoing harm places a burden on the victim that hinders school success and is associated with poor educational, health, and economic outcomes (Landstedt & Persson, 2014; Nelson, Kendall, & Shields, 2014; Takizawa, Maughan, & Arseneault, 2014). There is, however, a gap in understanding how to accurately measure this power imbalance (Cascardi, Brown, Iannarone, & Cardona, 2014; Cornell & Limber, 2015; Rodkin, Espelage, & Hanish, 2015; Vivolo-Kantor, Martell, Holland, & Westby, 2014). For this reason bullying may not be consistently differentiated from aggressive behavior (Olweus, 2013).

Two methods have been used to differentiate bullying from aggressive behavior by children's report of their own experience. The first provides a definition of bullying before asking children to answer questions about their own experience based on the definition. The most widely used definition is concise in that it accurately differentiates bullying from aggression; to do so the definition is 176 words in length (Olweus, 2013). This definition is precise and accurate in that it describes that bullying is repeated and that the student being bullied has difficulty defending him or herself. In addition, the definition includes a list of potential behaviors that might be associated with bullying including verbal, physical, and socially aggressive acts. The length of the definition makes it potentially difficult for preadolescent children to comprehend and apply as they answer questions in a survey. For example, in one study 40% of children (age 9 to 11) were able to comprehend questions with 20 or more words, whereas 80% comprehended questions of one to 9 words (Breton et al., 1995).

The second method of bullying assessment, known as the behavioral method, does not include a definition and seeks to measure power imbalance through individual items or questions (Felix, Sharkey, Green, Furlong, & Tanigawa, 2011; Hunter, Boyle, & Warden, 2007). For example, by asking if the aggressor was stronger, more popular, or in a bigger group, than the child making the self report (Hunter et al., 2007). The behavioral method has strength in that bullying is not referred to, children are therefore unlikely to answer based on their own preconceived idea of what bullying is, resulting in more uniform reporting among populations. However, more research is required to demonstrate the validity of this method (Cornell & Cole, 2012; Felix et al., 2011; Olweus, 2013).

Overall, the aim of bullying measurement is to inform bullying prevention thereby reducing the burden associated with poor outcomes of development, of which mental health is frequently cited (Scott, Moore, Sly, & Norman, 2014). A relevant consideration is that mental health problems in childhood until the age of 12 include behavioral and emotional categories such as aggression, fear and anxiety (Zahn-Waxler, Klimes-Dougan, & Slattery, 2000). These are all associated with bullying, thus the ongoing analysis of prevention strategies is key to health promotion within schools. The identification of psychometrically valid self-report measures of bullying assessment is relevant to school nurses who may be involved with the implementation and evaluation of mental health prevention and promotion programs, including the management of bullying (Council on School Health, 2008).

### **Research Objective**

The research objective of this scoping review was to identify validated instruments that measure aggression and bullying among preadolescent children (age 8 to 12), and to summarize approaches used to differentiate bullying from aggressive behavior by children's self-report of power imbalance.

### **Research Method**

#### **Literature Search**

A scoping review of the literature identified self-report instruments and scales that measure the intent to harm and feeling of hurt associated with aggressive behavior, and scales that measure the repetition and power imbalance that differentiate bullying from aggression. The purpose of the scoping review was to map and analyze literature that is relevant to the research objective and to present an overview of key concepts and gaps in the research (Pham et al., 2014). Psychinfo, Science Direct, and Medline databases were used. The search included combinations of the following terms: aggression, bullying, relational, social, indirect, covert, report, tests, measure, instrument, childhood, pre-adolescence. Relevant instruments and scales were identified and listed, along with the reported reliability. The following limits were applied to the search: peer-reviewed journal, English language, human, tests and measures, 8 to 12 years. The preliminary selection criteria included publications between 1995 and 2015, a manual reference list search was conducted to locate relevant original articles to obtain the largest pool of measures possible. Adult-focused scales were excluded (Nelson et al., 2015).

### **Analysis of instruments and scales**

The following criteria were used to report on the psychometric properties of instruments. Reliability is generally reported by Cronbach's alpha, an alpha greater than or equal to 0.7 was considered adequate (Allen & Bennett, 2010). Studies using a method of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) reported goodness-of-fit indices to show the fit of collected data to a hypothesized model. Goodness of fit statistics reported for these analyses are the Root-mean-square error of approximation (RMSEA); the confirmatory fit index (CFI); the Tucker-Lewis index (TLI), and Chi-square. RMSEA values less than 0.05 indicate the close fit of a set of items answered by participants to a hypothesized model, and values as high as 0.08 reflect reasonable fit to the data (Marsh et al., 2011). RMSEA values greater than 0.1 indicate a poor fit to the data (Byrne, 2012). The CFI and TLI range from zero to one, with values greater than 0.95 indicating acceptable fit to the data (Byrne, 2012), it has been proposed, however, that values above 0.90 suggest reasonable fit (Marsh et al., 2011). Chi-square is the most commonly reported fit statistic; there are nevertheless problems associated with the statistic (Byrne, 2012), thus it is reported but not relied upon as a measure of fit in this study. Correlations are reported in different capacities. For example a low correlation is desirable between sets of questions that each measure a different concept, forming a measure of divergent validity. Conversely, correlations between two different tests that both measure the same concept are expected to be high, demonstrating convergent validity (Brown & Moore, 2012). Correlations are reported on a scale between zero (no correlation) and one (perfect correlation) in relation to a significant p value (usually reported as significant at  $p < 0.05$ ).

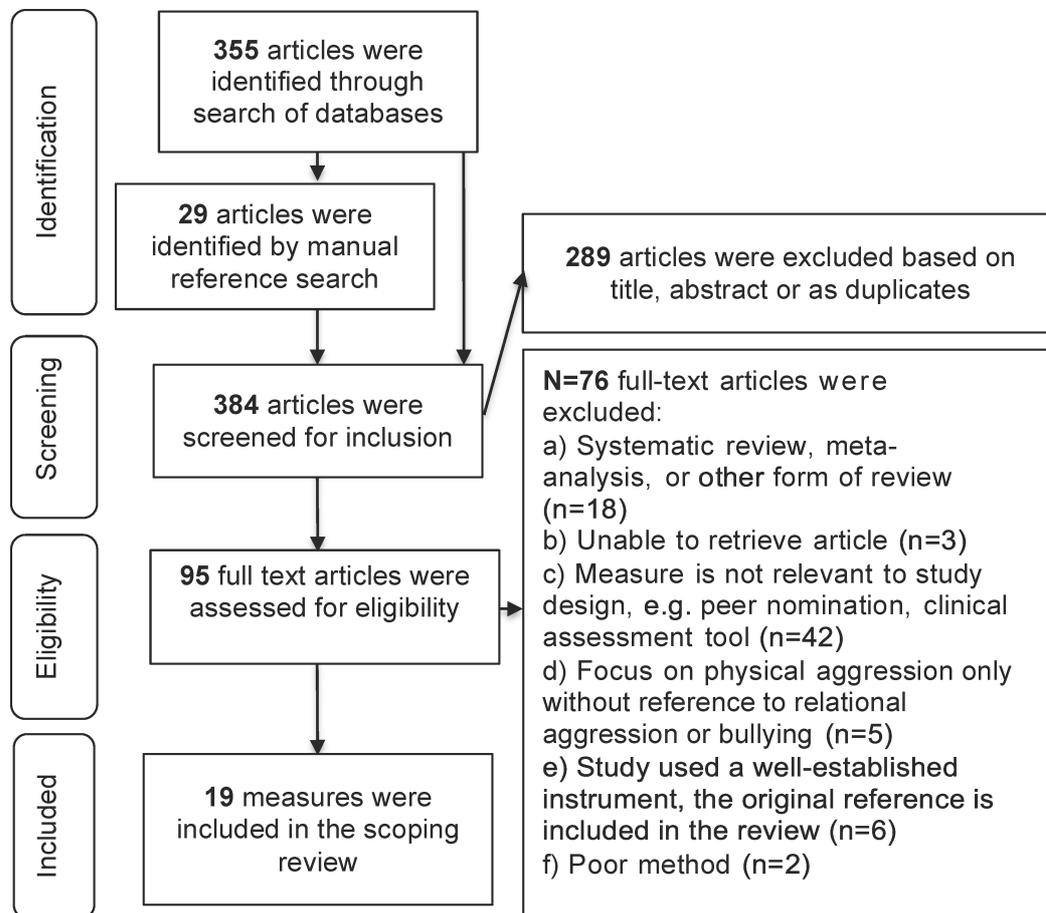
## **Results**

### **Literature search**

Review of Psychinfo, Medline, and Science Direct using the previously stated criteria resulted in 355 journal articles of potential relevance. There was, however, some repetition between databases. An additional 29 original articles were located by manual reference search. Following review of the title and abstract a total of 95 articles were assessed for eligibility.

Of the 95 articles referred to, the first author excluded 76 articles from further analysis (see Figure 1). Instruments and scales from the remaining 19 articles were

reviewed by the research team based on their relevance to bullying research with children aged 8 to 12 (see Table 1). The analysis of instruments and scales below includes the 19 measures identified for scoping review.



**Figure 1. PRISMA flow diagram of the literature selection process for the scoping review of the 95 articles referred to.**

#### Analysis of instruments and scales

Four types of self-report instruments were identified. The following measures were included: 1) Five measures of aggressive behavior only, with no reference made to bullying (Buhs, McGinley, & Toland, 2010; Crick & Grotpeter, 1996; Desjardins, Yeung Thompson, Sukhawathanakul, Leadbeater, & MacDonald, 2013; Gremigni, Damásio, & Borsa, 2013; Marsee et al., 2011; Sumter, Valkenburg, Baumgartner, Peter, & van der Hof, 2015). 2) Three measures of aggressive behavior that were referred to as bullying but did not measure power imbalance (Finger, Yeung, Craven, Parada, & Newey, 2008; Hunt, Peters, & Rapee, 2012; Marsh et al., 2011); Tarshis & Huffman, 2007). 3) Five measures of bullying that asked children to read a definition before answering the items (Cross et al., 2009; Fitzpatrick & Bussey, 2011;

Kyriakides, Kaloyirou, & Lindsay, 2006; Mynard & Joseph, 2000; Olweus, 1996; Shaw, Dooley, Cross, Zubrick, & Waters, 2013). 4) Two measures that differentiated aggressive behavior and bullying using individual questions to measure intent, repetition, and power imbalance (Felix et al., 2011; Hunter et al., 2007).

The following instruments measured aggressive behavior. The *Peer Aggressive and Reactive Behavior Questionnaire* (PARB-Q) (Gremigni et al., 2013) demonstrated good model fit of *overt physical and verbal aggression* (RMSEA = 0.001, CFI = 0.99, TLI = 0.99), and of children's *reaction to peer aggression* (RMSEA = 0.06, CFI = 0.93, TLI = 0.92). The PARB-Q, however, did not measure relational aggression. The *Self-report of Victimization and Exclusion* (SVEX) (Buhs et al., 2010) included measures of relational aggression, the fit was adequate Chi-square (104) = 283, ( $p < 0.05$ ), RMSEA = 0.08, CFI = 0.89. The *Personal Experiences Checklist* (PECK) (Hunt et al., 2012) used simple language, relevant to children aged eight, and measured victimization in four scales (a four-factor model), *relational-verbal*, *cyber*, *physical*, and *cultural*. The four-factor structure of the PECK showed acceptable fit (RMSEA = 0.07, CFI = 0.88). The standard fit indices of the *Peer Interactions in Primary School Questionnaire* (PIPS) were not reported; however the design was tested at a third grade reading level and showed face validity and internal consistency ( $\alpha = 0.90$ ). The *Adolescent Peer Relations Instrument* (APRI) (Marsh et al., 2011) showed good model fit from grade five to grade 11 and measured victimization and perpetration of aggressive behavior in three scales; physical, verbal, and relational. Model fit for children in grade five and six was good, Chi-square = 1542.46 ( $df = 579$ ), RMSEA = 0.043, TLI = 0.98, CFI = 0.99 (Finger et al., 2008). Analysis of the APRI was very comprehensive, and allowed correction of measurement error (Marsh et al., 2011). Similarly the *Multi-dimensional Offline and Online Peer Victimization Scale* (MOOPV) showed an acceptable fit of the two offline and two online scales when errors were allowed to correlate across each scale for items that mirrored each other, e.g. "called names offline" and "called names online," Chi-square ( $df = 153, n = 726$ ) = 613,  $p < 0.005$ , RMSEA = 0.06, CFI = 0.94 (Sumter et al., 2015). The *Forms and Functions of Aggression* (FFA) accounted for measurement of intent, and callous unemotional traits, a four-factor model showed good fit with adolescents aged 12 to 19, Chi-square (154,  $N = 848$ ) = 759, RMSEA = 0.07, CFI = 0.9 (Marsee et al., 2011).

The instruments named in the previous paragraph did not include a measure of power imbalance. Items in the following two instruments were answered by children in response to a definition of bullying, each instrument showed good model fit. Using a method of Item Response Theory, the fit of the one-factor model of the *Olweus Bullying Questionnaire* (OBQ) was demonstrated as good when used by children from grades four to ten, RMSEA = 0.031, CFI = 0.99, all factor loadings were between 0.71 and 0.84 (Breivik & Olweus, 2015). In a comprehensive analysis, the *Forms of Bullying Scale* (FBS) showed good model fit with children aged 12, Chi-square = 1445 ( $p < 0.001$ ), RMSEA 0.047 [95% CI = 0.044, 0.049]; CFI = 0.960; correlation between factors 0.463 (Shaw et al., 2013).

An additional instrument compared four methods of measurement: the use of the word bully with a definition; without a definition; a definition without the word bully; and neither a definition or the word bully (Ybarra, Boyd, Korchmaros, & Oppenheim, 2012). The internal consistency of items was not reported and there was no measure of power imbalance in methods that did not define bullying. Children, however, answered in a similar way when the word ‘bully’ was included either with or without a definition, suggesting that the definition did “not yield a more rigorous measure of bullying victimization” (Ybarra et al., 2012, p.57). Based on their findings the authors recommended the inclusion of specific items to measure power imbalance to differentiate bullying from aggressive behavior.

The measurement of power imbalance by individual items was explored by Hunter et al. (2007) and Felix et al. (2011). The internal consistency and fit of the power imbalance items were not reported by Hunter et al. (2007). Further research into the measurement of power imbalance was recommended (Hunter et al., 2007). The *California Bully Victimization Scale* (CBVS) (Felix et al., 2011) also used individual items to measure power imbalance, however the internal consistency and fit of the power imbalance items was not reported. The psychometric properties of instruments and scales are presented in (online Appendix 1). Table 1 presents an overview of the reported reliability and validity of reviewed instruments.

**Table 1: Reliability and Validity of Reviewed Instruments**

Author	Name of Instrument	Measures Power Imbalance	Establishment of Reliability	Establishment of Validity
(Breivik & Olweus, 2015)	Olweus Bullying Questionnaire (OBQ) (1996)	Yes, by a definition first method.	+	+
(Buhs et al., 2010)	Self-report of Victimization and Exclusion (SVEX)	No	+	+
(Crick & Grotpeter, 1996)	The Social Experience Questionnaire (SEQ)	No	+	+
(Cross et al., 2009)	Australian Covert Bullying Prevalence Study (ACBPS)	Yes, by a definition first method.	+	+
(Desjardins et al. 2013)	SEQ-S (Crick and Grotpeter, 1996)	No	+	+
(Felix et al., 2011)	California Bully Victimization Scale (CBVS)	Yes, by asking individual questions.	+	+
(Finger et al., 2008)	Adolescent Peer Relations Instrument (APRI)	No	+	+
(Fitzpatrick & Bussey, 2011)	The Social Involvement Bullying Scale (SIBS)	Yes, by a definition first method.	+	+
(Gremigni et al., 2013)	The Peer Aggressive and Reactive Behavior Questionnaire (PARB-Q)	No	+	+
(Hunt et al., 2012)	Personal Experiences Checklist (PECK)	No	+	+
(Hunter et al., 2007)	No name	Yes, by asking individual questions.	-	+
(Kyriakides et al., 2006)	Olweus Bullying Questionnaire (OBQ) (1996)	Yes, by a definition first method.	+	+
(Marsee et al., 2011)	Forms and Functions of Aggression (FFA)	No	+	+
(Marsh et al., 2011)	Adolescent Peer Relations Instrument (APRI) (Parada, 2000)	No	+	+
(Mynard & Joseph, 2000)	Multidimensional Peer Victimization Scale (MPVS)	Yes, by a definition first method.	+	+/-
(Shaw et al., 2013)	Forms of Bullying Scale (FBS)	Yes, by a definition first method.	+	+
(Sumter et al., 2015)	Multi-dimensional Offline and Online Peer Victimization Scale (MOOPV)	No	+	+

Author	Name of Instrument	Measures Power Imbalance	Establishment of Reliability	Establishment of Validity
(Tarshis & Huffman, 2007)	Peer Interactions in Primary School Questionnaire (PIPS)	No	+	+
(Ybarra et al., 2012)	No name	A mixed method was used	+/-	+/-

*Note:* Code for reliability and validity: + established, - not established, +/- unclear.

## Discussion

Knowledge of bullying has been described as “as critical domain” for nurses who work with school aged children (Liu & Graves, 2011, p. 2). Within a HPS framework, knowledge of bullying is supported by understanding methods through which intervention strategies might be evaluated (Langford et al., 2014). Analysis of measures of aggressive behavior and bullying resulted in the identification of four categories of instruments: 1) Measures of aggressive behavior without reference to bullying; 2) Measures of aggressive behavior without measurement of power imbalance but still referred to as bullying; 3) Measures of bullying by a definition first method; and 4) Measures of bullying by a behavioral method. These are discussed by category.

### Measures of aggressive behavior without reference to bullying

Aggressive behavior is characterized by two primary features: an intent to harm another by the perpetrator, and a “feeling of hurt” by the victim (Bovaird, 2010, p. 278). Furthermore, aggressive behavior is often classified as overt physical and verbal aggression, or relational aggression (Buhs et al., 2010, Crick & Grotpeter, 1996). Relational aggression seeks to damage the relationships and social reputation of the victim (Liu & Graves, 2011). The SEQ-S was one of the first instruments to measure relational aggression in addition to physical aggression (Crick & Grotpeter, 1996). The SVEX was described as “similar” in design to the SEQ-S, but included more items measuring social exclusion (Buhs et al., 2010, p. 172). In a recent analysis, the SEQ-S demonstrated adequate psychometric properties but the evidence for consistent responses across time was inconclusive (Desjardins et al., 2013). Furthermore, the SEQ-S and the PARB-Q (Gremigni et al., 2013) did not demonstrate the three-factor fit that was shown with the APRI, including verbal, physical, and social behaviors (Finger et al., 2008; Marsh et al., 2011). The measurement of all three factors is recommended (Fitzpatrick & Bussey, 2011).

Proactive aggression is planned and is associated with callous intent (Marsee & Frick, 2010). Similarly bullying is a proactive form of aggression that is strategic and goal oriented (Huitsing, Snijders, Van Duijn, & Veenstra, 2014). The language used in each item of the proactive aggression scales of the FFA (Marsee et al., 2011) encompassed intent to harm, and some items included language that potentially reflected a power differential. For example, “I gossip about others to become popular”, and “When I hurt others I feel like it makes me powerful and respected” (Marsee et al., 2011, p. 799). Popularity was similarly included as a measure of power imbalance in scales that used a behavioral method (Felix et al., 2011; Hunter et al., 2007). The callous intent, power imbalance, and lack of empathy associated with bullying highlights the importance of differentiating bullying from aggressive behavior when designing interventions in schools. For example, empathy training is used to address proactive aggression whereas a more effective intervention for reactive aggression is to help children learn to regulate emotions (Marsee et al., 2011).

With the rapid and constant change in technology, increased online bullying is of specific relevance. The MOOPV measured online forms of aggressive behavior and demonstrated a reasonable fit of the data when errors among the online and offline items were allowed to correlate (Sumter et al., 2015). The measurement of power imbalance associated with online bullying requires further investigation.

**Measures of aggressive behavior without measurement of power imbalance but still referred to as bullying.**

The PECK measured aggression using simple language, in addition it included a scale related to aggression based on cultural difference (Hunt et al., 2012). No measure of power imbalance was obtained; in support of the method, the authors observed, “It is arguable whether (power-imbalance, intent, and frequency) are adequately assessed in any current measures of bullying” (Hunt et al., 2012, p. 164). The strength of the PECK is the simplicity of language, and the relevance of items to preadolescent children. Similarly the PIPS was designed for use with children in grades three to six, the language in the victim scale reflecting children’s feeling of hurt (Tarshis & Huffman, 2007). Children with higher scores on the PIPS victim or bully scale were likely to report higher levels of depression and anxiety (Tarshis & Huffman, 2007).

The APRI demonstrated adequate fit of a model that included physical, verbal, and social aggression (Marsh et al., 2011). Within the 32-item instrument there was no specific measure of power imbalance, however the method was very comprehensive. Furthermore, the APRI has been found to be reliable with children in grades five and six (Finger et al., 2008). The rigor of the research supported previous research showing correlations between perpetrator and victim factors, reflecting that some children are both perpetrators and victims of bullying (Marsh et al., 2011). The poorest outcomes of mental health are associated with being both a bully and a victim, making this an important consideration in the measurement of bullying (Moore et al., 2014).

### **Measures of bullying by a definition first method**

The ACBPS (Cross et al., 2009) and the FBS (Shaw et al., 2013) were largely based on the OBQ. The OBQ (Olweus, 1996) is the most widely used measure of bullying behavior, and has been found to be most accurate for those at the higher end of bullying perpetration (Kyriakides et al., 2006). Two screening questions of the OBQ are used globally to compare prevalence rates of bullying (Craig et al., 2009; Scott et al., 2014; Vaillancourt et al., 2010). In a two-part study, students first answered the screening questions, and then questions that named specific types of bullying; their responses were based on the definition of bullying (Vaillancourt et al., 2010). The screening questions of the OBQ were found to be good at classifying students who are neither a victim or perpetrator of bullying (specificity was 94.3% for victimization and 91.5% for perpetration). The accuracy of identifying children who were true cases, however, was poor (sensitivity was 56.3% for victims and 55.7% for perpetrators) (Vaillancourt et al., 2010). Furthermore, children were found to answer in a similar way to questions that included the word ‘bully’ either with or without a definition, suggesting that a definition first method may not give the most accurate measure of bullying assessment by children’s self-report (Ybarra et al., 2012). Additional research has been recommended to explore the accuracy of the behavioral method of bullying measurement (Olweus, 2013). Because of the widespread use of the OBQ, including by the World Health Organization, continued inclusion of the prevalence questions in bullying assessment is important to provide consistency to bullying measurement at an international level.

### **Measures of bullying by a behavioral method**

Individual items that have been used to measure power imbalance include: 'smart in school', 'physically strong,' and 'popular' (Felix et al., 2011); and 'physically stronger,' 'in bigger groups,' and 'more popular' (Hunter et al., 2007). Following analysis, the phrase 'smart in school' was questioned as good measure of power imbalance (Felix et al., 2011). However the internal consistency and fit of the above named items used to measure power imbalance were not reported in either study. Furthermore, the research of Ybarra and colleagues was limited by no inclusion of items that specifically addressed power imbalance (Ybarra et al., 2012). The need for further research into the behavioral method of bullying research is widely acknowledged because current measurement methods do not adequately account for the difference between bullying and aggressive behavior (Felix et al., 2011; Olweus, 2013; Rodkin et al.2015; Ybarra et al., 2012). The unequal power relationship between the bully and the child being bullied differentiates aggressive behavior from bullying, and this is where the gap in bullying measurement lies (Rodkin et al., 2015).

### **Implications for School Nurses**

Bullying is aggression that occurs in a relationship of power (Rodkin et al., 2015). In the school environment the stress response to the ongoing harm is associated with poor outcomes of health and learning over the life-course, and a subsequent public health burden (Gini & Pozzoli, 2009; Nelson et al., 2014; Pigozi & Jones Bartoli, 2016; Swearer & Hymel, 2015). School nursing is grounded in a public health approach and bullying represents a significant public health burden. School nurses are, therefore, ideally situated to work with other school-based professionals to facilitate bullying interventions (Pigozi & Jones Bartoli, 2016). Furthermore, within the HPS and public health approach, continuous improvement of health promoting strategies is sought through evaluation (IUHPE, 2009; Langford et al., 2014; Suhrcke et al., 2011). Ideally evaluation will differentiate between bullying and aggression by including a measure of power imbalance (Rodkin et al., 2015).

Beyond assessment of health promoting strategies, understanding the relational power imbalance that is present within bullying will inform nurse's clinical practice. Adults in the school provide a protective role for children who encounter emotional stress, helping children to interpret their experience and alleviate self-

blame (McDougall & Vaillancourt, 2015). Children who are bullied are at increased risk of poor psychological health, poor adjustment to school, and increased rates of presentation to school health centres (Gini & Pozzoli, 2009; Shannon et al., 2010). The nurse, as a clinician, is in a position to assess for harm associated with bullying and to work with the family and school personnel to provide emotional support, appropriate intervention (Norwalk, Hamm, Farmer, & Barnes, 2016), and/or appropriate referral (Shannon et al., 2010).

## **Conclusion**

This scoping review of measures of bullying assessment informs school nurses understanding of bullying, and of the evaluation of bullying intervention and prevention strategies. Analysis of the literature shows that bullying is often subtle, leaving the victim feeling powerless. A gap is identified in research pertaining to the measurement of bullying by children's self-report, in understanding how to most accurately and reliably measure the power imbalance between the perpetrator and the victim. It is recommended that further research explore the psychometric soundness of items used to measure power imbalance by the behavioral method of bullying research. It is through this power imbalance that harm is perpetuated. Students are likely to present to school health centres when they feel hurt associated with bullying, physical or emotional, either to seek help or to avoid the harm associated with the school environment. These behaviors result from the environment that children live and study in (Nelson et al., 2014). For this reason, school nurses work at a population level, with other key stakeholders, toward facilitating strategies that build safe and nurturing environments in which this generation can thrive. Effective strategies will provide hope for ongoing generations through the children of today.

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## Online Appendix 1: Analysis of reviewed articles

Author	Age	Domains and method	Number of items	Definition used in instrument	Is power imbalance measured	Reliability	Effect sizes	Validity	Confounders /Bias
(Breivik & Olweus, 2015)	Grade 4 - 10 (n = 48926)	Bullying perpetration	39 items in the complete questionnaire including victimization, perpetration, teacher awareness, bystander behavior.	Yes	Yes	Cronbach's alpha for the full scale = 0.83	The fit of the one factor solution in CFA was good, CFI = 0.99, RMSEA = 0.031, all factor loadings were between 0.71 and 0.84.	Differential item functioning was reported by gender and age.	Strength of the study was the large sample size.
* Olweus Bullying Questionnaire (OBQ) (1996)	(Norway)	<b>Method</b> EFA, CFA, and IRT							
(Buhs et al., 2010)	Grade 5,6 (n = 270)	Two: Overt victimization, relational aggression	Overt victimization = 7 items, Relational victimization = 5 items	No definition of bullying was used in the instrument.	No	Relational aggression (total scale) ( $\alpha = 0.91$ ).	The two-factor model fit was Chi-square (104) = 283, ( $p < 0.05$ ), CFI = 0.89, RMSEA = 0.08, SRMR = 0.05.	Construct validity was supported using peer report of victimization and a self-report of internalizing symptoms (reported Cronbach's alpha's were above 0.7).	Results controlled for ethnic group, gender, and grade.
Self-report of Victimization and Exclusion (SVEEX)	(USA)	<b>Subdomains</b> Relational victimization, and social exclusion.	Social exclusion = 5 items.	The authors referred to victimization not bullying		Subscales: Relational victimization ( $\alpha = 0.84$ ), Social exclusion ( $\alpha = 0.86$ ).			
(Crick & Grotpeter, 1996)	Grade 3-6 (n = 474)	Three factor model: Overt aggression, relational aggression, prosocial behavior	Overt aggression = 3 items, Relational aggression = 5 items, Prosocial behavior = 5 items.	No definition of bullying was used in the instrument.	No	Internal consistency: ( $\alpha = 0.80$ ), overt victimization ( $\alpha = 0.78$ ), prosocial recipient skills ( $\alpha = 0.77$ ).	Correlation coefficient between overt and relational ( $r = 0.57$ , $p < 0.01$ ).	Validity was supported by measures of loneliness ( $\alpha = 0.91$ ), depression ( $\alpha = 0.85$ ), social anxiety ( $\alpha = 0.69$ ), social avoidance ( $\alpha = 0.74$ ), and peer nominations.	Gender and grade differences were controlled for.
The Social Experience Questionnaire (SEQ)	(USA)			The authors referred to victimization not bullying.					
(Cross et al., 2009)	Age 8-14 years (N = 13330)	2 factor model: Bully, victim (bullying others, being bullied)	A very large set of questions. The questionnaire was adapted from previously validated scales including the OBQ.	Yes	Yes	This was a very large data set; a mixed method approach was used.	The results of models were presented as odds ratios and corresponding confidence intervals.	Items were adapted from the previously validated scales, including the OBQ, and were found to have moderate levels of reliability (Cross et al., 2009, p. 169)	Data analyses accounted for gender differences; the extent to which students experienced or engaged in bullying; school level clustering; socioeconomic status; and school size.
Australian Covert Bullying Prevalence Study (ACBPS)	(Australia)	<b>Subdomains</b> Power imbalance, frequency, and covert (relational)							
(Desjardins et al., 2013)	Age 5 -10 years (n = 830)	3 factor model: SEQ-S (Crick and Grotpeter, 1996)	Overt aggression = 5 items, Relational aggression = 5 items, Prosocial behavior = 5 items.	No definition of bullying was used in the instrument.	No	Cronbach's alpha (3 time periods): overt ( $\alpha = 0.77-0.80$ ), relational ( $\alpha = 0.80-0.82$ ), prosocial acts ( $\alpha = 0.73-0.78$ ). A three-factor model was supported ( $p < 0.05$ ).	Model fit at time one: Chi-square = 175.12, ( $df = 87$ , $p < 0.00$ ), CFI = 0.98, and RMSEA = 0.04. Adequate model fit across sex and grade at each time point, but CFI across time was low (Time 3 CFI = 0.92 to 0.95).	Parent reports of children's victimization were significantly correlated with children's reports.	Model fit suggested inconclusive evidence of the stability of the SEQ over one and a half years by school year (first to third grade) and between girls and boys (CFI = 0.86 to 0.90, $\Delta$ RMSEA = 0.00).
SEQ-S (Crick and Grotpeter, 1996)	Canada	<b>Method</b> Used CFA whereas previous studies with the same age group had only used EFA.		The authors referred to victimization not bullying					
(Felix et al., 2011)	Grade 5-12 (n = 463)	1 factor: Victimization	Victimization = 6 items, Intent = 1	No definition.	Yes, Individual items:	Reported test-retest stability ( $r = 0.80 - 0.83$ , $p < 0.001$ ).	A backward stepwise hierarchical log-linear analysis showed "a remaining significant interaction for grade by victimization", Chi-square = 0.71, $df = 4$ , $p < 0.0001$ (Felix et al., 2011, p.241).	Item level test-retest validity at two weeks	The authors' reported a possible confound between frequency of victimization and power differential: several students reported frequent victimization without reporting a power imbalance.
California Bully Victimization Scale (CBVS)	(USA)	<b>Subdomains</b> Non-victim, peer-victim, bully-victim. Measured: Repetition (Likert scale); Intentionality Power imbalance	item, Power imbalance = 3 items		Popular, Smart in school, Physically strong.				
		<b>Method</b> Hierarchical log-linear analysis.							

Author	Age	Domains and method	Number of Items	Definition used in instrument	Is power imbalance measured	Reliability	Effect sizes	Validity	Confounders/Bias
(Finger et al., 2008)	Grade 5-6 ( <i>n</i> = 894)	A six factor structure: Bully-physical, Bully-verbal, Bully-social, Target-physical, Target-verbal, Target-social.	Total of 36 items (6 items for each factor).	No definition of bullying was used in the instrument.	No	Reliabilities of the six factors ranged from 0.81 to 0.90.	The model resulted in good fit: Chi-square = 1542.46 ( <i>df</i> = 579), RMSEA = 0.043, TLI = 0.98, CFI = 0.99.	Invariance across groups was not tested.	High correlations (bully scales 0.78 to 0.88, <i>p</i> < 0.001), (victim scales 0.79 to 0.84, <i>p</i> < 0.001), suggested two factors, bully and target: RMSEA = 0.044, TLI = 0.98, CFI = 0.99.
Adolescent Peer Relations Instrument (APRI)	(Australia)	Method CFA			There was no reference to power imbalance within the article.				
(Fitzpatrick & Bussey, 2011)	Age 11-16 years ( <i>n</i> = 636)	4 factor model with 2 level two subdomains and 8 level three subdomains: Social victim, social bully, social witness, social intervener.	94 items	Yes	Yes	EFA established a four-factor model: social victim ( $\alpha = 0.97$ ), social bully ( $\alpha = 0.93$ ), social witness ( $\alpha = 0.96$ ), social intervener ( $\alpha = 0.97$ ).	Model fit: Social victim CFI = 0.99, TLI = 0.98, RMSEA = 0.08; Social bully CFI = 0.99, TLI = 0.98, RMSEA = 0.07; Social witness CFI = 0.99, TLI = 0.98, RMSEA = 0.08; Social intervener CFI = 0.99, TLI = 0.98, RMSEA = 0.07.	Validity was based on relationship between the scales within the measure and child- and parent-report measures of social anxiety, depression, and externalizing behavior.	Analysis controlled for clustering within schools, age and gender. MANOVA was used to control for Type 1 error. Subdomains of direct and indirect loaded onto one factor.
The Social Involvement Bullying Scale (SIBS)	(Australia)	Method EFA, CFA.							
(Gremigni et al., 2013)	Age 7-10 years ( <i>n</i> = 587)	(PA) Overt aggression, (RPA) Reaction to peer aggression: Reactive aggression (RA), Seeking teacher support (STS), Internalizing reaction (IR).	Overt aggression = 3 items, Reaction to peer aggression = 12 items	No definition of bullying was used in the instrument.	No	PA ( $\alpha = 0.82$ ), RPA ( $\alpha = 0.75$ ). Subscales of RPA: RA ( $\alpha = 0.86$ ), STS ( $\alpha = 0.84$ ), IR ( $\alpha = 0.82$ ).	CFA demonstrated fit of two factors: PA (verbal and physical behaviors) RMSEA = 0.001, CFI = 0.99, TLI = 0.99; RPA (RMSEA = 0.06, CFI = 0.93, TLI = 0.92).	Analysis controlled for gender and age. Demonstrated preliminary criterion validity. Test-retest reliability over a six-week period was acceptable (intraclass correlation coefficient values were above 0.80).	This instrument does not measure relational aggression. There was a strong correlation between PA and RA ( $r = 0.72$ , $p < 0.001$ ). Strength is that it does take into account children's reactions to peer aggression.
The Peer Aggressive and Reactive Behavior Questionnaire (PARB-Q)	(Italy)	Method EFA, CFA.		The authors referred to aggression not bullying					
(Hunt et al., 2012)	Age 8-15 years ( <i>n</i> = 647)	4 Factors: Relational-verbal bullying, Cyber bullying, Physical bullying, and Bullying based on culture.	32 items	No.	No	Relational-verbal bullying ( $\alpha = 0.91$ ), Cyber bullying ( $\alpha = 0.90$ ), Physical bullying ( $\alpha = 0.91$ ), Bullying based on culture ( $\alpha = 0.78$ ).	Goodness of fit: RMSEA = 0.07, CFI = 0.88, Correlations between the PECK and the OBV were reported (Physical $r = 0.46$ ; relational-verbal $r = 0.50-0.53$ ).	Correlations with PECK and peer nominations were reported (physical $p < 0.01$ , $r = 0.32$ ; relational-verbal $p < 0.001$ , $r = 0.24$ and 0.35).	A small number of the items from the physical factor loaded highly on the verbal-relational factor. The participation rate was low (20%). Strength is the comprehensive method.
* Personal Experiences Checklist (PECK)	(Australia)	Method EFA, CFA. Later comparison with peer report		There was no measure of repetition, intent or power imbalance.					
(Hunter et al., 2007)	Age 8 - 13 years ( <i>n</i> = 1429)	Victimization Subdomains Non-victim, peer aggression (one off), peer victim (repeated), bullied (victim + intent + power imbalance).	Aggression = 8 items, Perceived Intent = 1 item, Power imbalance = 3 items, Frequency = 1 item, Duration = 1 item	No definition.	Yes, Individual items: Physically stronger, In bigger groups, More popular	Internal consistency of the self-report of victimization was not reported.	Regression analyses for predicting threat appraisal and depressive symptoms from physical power imbalance and popularity were statistically significant ( $p < 0.05$ ).	Discriminant validity of peer victimization and bullying was supported by measures of threat appraisal, coping strategies, and depressive symptoms (effect size was generally small).	The measure used to assess threat appraisal had a low Cronbach's alpha ( $\alpha = 0.63$ ), and as did the measure used to assess problem focused coping ( $\alpha = 0.67$ ).
No name	(Scotland)	Method Multiple regression analysis							

Author	Age	Domains and method	Number of Items	Definition used in instrument	Is power imbalance measured	Reliability	Effect sizes	Validity	Confounders /Bias
(Kyriakides, Kaloyirou, & Lindsay, 2006)(Kyriakides et al., 2006)	Age 11, 12 (n = 335)	Each 8-item subscale of bullying others and being bullied clustered into three levels, physical, verbal, and indirect.	16 items	Yes	Yes	Reliability of each scale was reported as higher than 0.85 indicating satisfactory separability of each scale, (0.90 would indicate excellent separability).	A strongly positive Pearson correlation coefficient comparing the difficulties of perpetration and victimization scales (r = 0.98, N = 8, p<0.001).	Using Rasch modelling the instrument demonstrated "satisfactory" (but not high) construct validity and reliability and supported two aspects of bullying perpetration and bullying victimization.	A limitation was that the number of items on each scale was small.
Olweus Bullying Questionnaire (OBQ) (1996)	Rasch analysis								
(Marsee et al., 2011)	Age 12-19 years (n = 855)	4-factor model: Reactive overt aggression, reactive covert aggression, reactive relational aggression, and proactive relational aggression.	Total of 40 items (10 measuring each factor)	No definition of bullying was used in the instrument.	No	Coefficient alpha was good for each scale: proactive overt = 0.82, proactive relational = 0.80, reactive overt = 0.89, reactive relational = 0.79.	A four-factor model showed the best fit, Chi-square = (154, N = 848) = 759, CFI = 0.9, RMSEA = 0.07.	An association was found between overt aggression and callous unemotional traits (partial r = 0.25, p < 0.01), and proactive relational aggression and callous unemotional traits (partial r = 0.17, p < 0.01).	All scales were significantly correlated with each other in the full sample: (r = 0.45 to 0.77) (all p values < 0.001). Strength is the comprehensive method.
* Forms and Functions of Aggression (FFA)	(USA)			The authors referred to aggression not bullying	Some items potentially measure power imbalance, for example, "I gossip about others to become popular" (p. 794).				
CFA									
(Marsh et al., 2011)	School grade 7-11 (n = 4082)	6 factor: model Bully, victim	Total of 36 items (6 items for each factor).	No definition of bullying was used in the instrument.	No	Coefficient alpha: Bully-verbal (α = 0.89 - 0.92). Bully-social (α = 0.82 - 0.90). Bully-physical (α = 0.85 - 0.90). Victim-verbal (α = 0.92 - 0.93). Victim-social (α = 0.87 - 0.92). Victim-physical (α = 0.89 - 0.92).	ESEM provided a good fit (CFI = 0.963, TLI = 0.955, RMSEA = 0.025), and resulted in lower correlations between factors than CFA. Correlations among the bully factors and victim factors ranged from 0.72 to 0.84 using CFA, and from 0.42 to 0.53 using ESEM (p. 707).	Construct validity of bully/victim factors shown by a well-defined model with every item loading more substantially on the item it was designed to measure than on other factors. Convergent and discriminant validity over time (year at school, gender, psychological correlates).	The method was very comprehensive.
* Adolescent Peer Relations Instrument (APRI) (Parada, 2000)	(Australia)	<b>Subdomains</b> Verbal, physical, social		The authors referred to measured behavior as bullying.					
Method Exploratory Structural Equation Modelling - items are free to cross-load onto other factors (in CFA cross-loadings constrained to zero)									
(Mynard & Joseph, 2000)	Age 11-16 years (n = 340)	4 factor model: Physical victimization, Verbal victimization, Social manipulation, Attacks on property	16 items	Yes	Yes	Cronbach's alpha Physical victimization (α = 0.85); Verbal victimization (α = 0.75); Social manipulation (α = 0.77); Attacks on property (α = 0.73).	Principal Components Analysis with Obilmin rotation to account for intercorrelated scores. Eigenvalues were > 1, and loaded >0.45 on their proposed factor and < 0.38 on all other factors.	Convergent validity was assessed by asking children "have you ever been bullied" and based on a definition (yes/no), however the definition was also presented before the questionnaire	Frequency of behavior was measured on a three-point scale (0="Not at all", 1="Once", 2="More than once" during the school year). This measure of repetition is not consistent with recent methodology.
Multidimensional Peer Victimization Scale (MPVS)									
(Shaw et al., 2013)	Age 12 (the first study only is reported on)	2 factor model: Bully, victim.	Bully = 10 items, Victim = 10 items	Yes	Yes	Cronbach's alpha: FBS-V (α = 0.87, item to total correlations 0.48-0.71); FBS-P (α = 0.85, item to total correlations 0.44-0.67).	Chi-square = 1445 (p < 0.001), RMSEA 0.047 [95% CI = 0.044, 0.049]; CFI = 0.960; correlation between factors 0.463.	Face validity was assessed in focus groups. Construct validity, convergent and concurrent validity were assessed.	A very comprehensive method.
Forms of Bullying Scale (FBS)	(n = 3496)	<b>Subdomains</b> verbal, threatening, physical, relational, social domains.							
Method CFA.	(Australia)								

Author	Age	Domains and method	Number of Items	Definition used in instrument	Is power imbalance measured	Reliability	Effect sizes	Validity	Confounders/Bias
(Sumter et al., 2015)	Ages 9-18 ( <i>n</i> = 799)	4 factor model: <b>Domain</b> Victimization  <b>Subdomains</b> Offline direct, Offline indirect, Online direct, Online indirect.	Total of 20 items (5 items measured each factor)	No definition of bullying was used in the instrument.  There was no measure of power imbalance but the authors referred to victimization.	No	All subscales had Cronbach's alpha estimates above 0.80 showing good internal reliability estimates.	With errors allowed to correlate across subscales for items that mirrored each other the four-factor model fit was acceptable Chi-square ( <i>df</i> = 153, <i>n</i> = 726) = 613, <i>p</i> < 0.005, CFI = 0.94, RMSEA = 0.06.	Construct validity: Higher peer victimization was associated with lower reported life satisfaction, higher loneliness, and lower self-esteem.	
(Tarshis & Huffman, 2007)	Grade 4-6 ( <i>n</i> = 270)  (USA)	2 factor: Bully, victim  <b>Method</b> EFA	Bully = 10 items, Victim = 12 items	No definition.  The authors referred to measured behavior as bullying.	No	The overall raw Cronbach's alpha was 0.90	There was a clear split with no item loading on both factors using scree test and Kaiser-Guttman rule. The standard fit indices were not reported.	Face validity (grade 3 children). Concurrent validity using items from the OBQ ( <i>r</i> = 0.63 to 0.77, <i>p</i> < 0.0001) and the SDQ ( <i>p</i> < 0.0001).	CFA was not conducted.
(Ybarra et al., 2012)	Ages 6-17 recruited online	1 factor: Bullied  <b>Method</b> Survey from an online community,  CFA	10 items	Compared: Use of the word bully  with a definition; without a definition; a definition without the word bully; and neither a definition or the word bully.	Yes	Cronbach's alpha was examined but  not reported.	CFA suggested that the items loaded onto one factor, fit indices were not reported.	The authors recommended that a follow up question to query a difference in power was needed.	The authors removed the fourth approach from the final study; thus they did not investigate the value of a behavioral approach for differentiating aggressive behavior and bullying.

**Note:** Measures marked with \* were included in ongoing research to assess their psychometric properties with the target population;  $\alpha$  = Cronbach's alpha; *r* = Pearson's correlation coefficient; K = Cohens' kappa coefficient, values of 0.81 to 1.0 indicate "almost perfect" fit (Landis & Koch, 1977, p.165); SRMR = Standardized root mean square residual, fit is acceptable with a value < 0.10 (Buhs et al., 2010); *df* = degrees of freedom; EFA = exploratory factor analysis; CFA = confirmatory factor analysis; IRT = item response theory.

## PAPER 3. COVERT BULLYING: A THEMATIC ANALYSIS

This is the accepted version of the published article.

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## **Abstract**

In this article, the perceptions of preadolescent children (ages 9 to 11) regarding factors that influence and protect against power imbalance associated with covert bullying are explored. In bullying research, the term covert has been typically used to describe relational, indirect, and social acts of aggression that are hidden. These behaviors contrast with overt physically and verbally aggressive behavior. Children have previously conveyed their belief that covert aggression is harmful because adults do not see it even though children, themselves, are aware. We used focus groups to explore children's understanding of covert bullying and to identify children's experience and perception of adult support in relation to bullying. Thematic analysis supported the definition of covert bullying as that which is intentionally hidden from adults. Friendship, social exclusion, and secret from teacher were identified as factors that influence power imbalance, while support from friends and adult support protected against power imbalance.

## **Background**

Optimal development occurs when children learn to trust within secure and nurturing relationships, including those with peers and adults at school (Oberle, Schonert-Reichl, Guhn, Zumbo, & Hertzman, 2014). While school is a context in which protective relationships can be fostered, it is also the central place in which many children are harmed through bullying behaviour (Cortes & Kochenderfer-Ladd, 2014). Bullying is a form of aggressive behavior that is repeated in a relationship in which the perpetrator is perceived as having more power than the victim, that results in hurt or harm to the victim (Rodkin, Espelage, & Hanish, 2015). The harm associated with bullying is effected by the power the perpetrator holds over the victim. One potential form of power associated with bullying in the school environment is through aggression that is deliberately hidden from adults by the students who perpetrate the harm (Cross et al., 2009). For this reason, for the purpose of this research, we define covert aggression as that which is intentionally hidden from adults or respected others (Nelson, Kendall, Burns, & Schonert-Reichl, 2015). The aim of this research was to explore the perceptions of preadolescent children regarding factors that influence and protect against power imbalance in relation to covert aggression and bullying.

### **Covert Aggression and Bullying**

Aggression is often categorized as overt or covert. Overt aggression is uniformly defined as direct harm caused through physical acts and verbal threats (Bradshaw, Waasdorp, & Johnson, 2015; Grotzinger & Crick, 1996). Covert aggression, in contrast, has been defined in a number of context specific ways. Covert aggression is often referred to as non-physical aggression that causes harm through damage to relationships and social status, equated with indirect, social, and relational forms of aggression (Bradshaw et al., 2015; Cross et al., 2009) and with cyberbullying (Spears, Slee, Owens, & Johnson, 2009). The term covert is also used to refer to aggression that is disguised so that it is not obvious to the target (Morrow, Hubbard, & Swift, 2014), or others, including peers (Closson & Watanabe, 2016) and teachers (Barnes et al., 2012). In the context of bullying, however, the great majority of children who are bullied by any means know who the main aggressor is (Craig, Pepler, & Blais, 2007). Bullying is almost always a group process, involving peers as bystanders, and this is consistent across traditional and cyber forms of bullying (Rodkin et al., 2015; Spears et al., 2009).

Cross et al. 2009 (p. 21) comment that restricting the definition of covert bullying to behavior that is “disguised,” or not obvious to the target and peers, negates research showing the role that bystanders play in reinforcing bullying. Children have reported in qualitative research, for example, that covert bullying is harmful because other children can see it but adults can not (Cross et al., 2009; Houghton, Nathan, & Taylor, 2012). Children themselves have defined covert bullying as that which is “hidden” from adults and other respected people (Cross et al., 2009, p. 21). This finding is consistent with other observations that adults rely on children to report covert bullying (Hymel & Swearer, 2015; Pepler, Craig, & O’Connell, 2010). Cross et al. (2009, p. 334) reported a sixteen percent prevalence rate of covert bullying in response to children’s report of being bullied in ways not easily “seen by others.”

### **Covert Aggression and Social Isolation**

Covert aggression is often perpetrated through social manipulation by children who use aggression as a strategy to achieve status (Cross et al., 2009). Social manipulation and social exclusion are relationally aggressive forms of behavior, aimed at damaging relationships and diminishing acceptance by others (Berger &

Caravita, 2016). Morrow and colleagues (2014) contrasted social manipulation (indirect behavior) from social rebuff (direct exclusion), however the correlation between the two forms of victimization was very high (0.94) suggesting that they are the same construct. Furthermore, empirical analyses have not supported categories of indirect versus direct social aggression (Fitzpatrick & Bussey, 2011; Verona, Sadeh, Case, Reed, & Bhattacharjee, 2008). Children skilled at social manipulation draw power from others, enlisting the support of the group to perpetuate social exclusion and covert aggression while hiding their harmful behavior behind an image of social acceptance (Huising, Snijders, Van Duijn, & Veenstra, 2014). For this reason, the victim is *isolated* from trusted peers and adults (Cross et al., 2009; Rodkin et al., 2015).

Due to neurobiological mechanisms that occur in response to social deprivation and toxic stress, social isolation has negative impact on children's health and developmental outcomes (Danese & McEwen, 2012). Social isolation places a burden of stress on victims of bullying when they are unable to access support from peers and adults that are trustworthy (Eisenberger, Taylor, Gable, Hilmert, & Lieberman, 2007; Pepler et al., 2010). Furthermore, prolonged social isolation is associated with decreased self-acceptance and internalizing problems, predisposing children to depression and anxiety (Troop-Gordon & Ladd, 2005), and suicidal ideation (Bonanno & Hymel, 2010). Social isolation associated with cyberbullying has resulted in children's experiencing strong feelings of fear, helplessness, and disruption to education (Spears et al., 2009). The risk to mortality that exists with social isolation is similar to that of smoking, and higher than the risk that exists with obesity and lack of exercise (Holt-Lunstad, Smith, & Layton, 2010). However, neuroimaging has shown that social support moderates the neural response to threat, decreasing the harmful effects of the stress response (Eisenberger et al., 2007).

### **Learning Resilience within an Environment of Social Support**

Although stress is often considered to be negative, learning how to overcome stressful situations in a positive way leads to adaptation and resilience (Danese & McEwen, 2012). For example, social striving among peers is a normal developmental process by which children learn social understanding, and children mature as they learn to resolve conflict and practice compromise with friends (LaFontana & Cillessen, 2010). Resilience is shown in adversity, and is learnt in an

environment that moderates the harmful effect of stress, for example, within secure relationships (Seibert & Kerns, 2009). Social support provided by teachers and adults within the school, including school nurses, provides a level of interaction that acts as a resource for children who are experiencing adversity. This gives a secure base for children, thereby supporting neurobiological development and resilience and promoting positive development (Brendgen et al., 2011; Oberle et al., 2014). However, persisting social exclusion occurs in peer groups, restricting children's access to the relationships and resources that support development (Buhs, Ladd, & Herald, 2006). It is anticipated that covert aggression increases the power of the perpetrator over the victim by limiting children's access to secure relationships.

Within the framework of *relational developmental systems theories*, children's development is most closely supported by microsystems, these include social relationships with peers and teachers in the school environment (Bronfenbrenner & Morris, 2006). This research was conducted within this framework and was guided by the question: do children experience an "increase of hurt when adults are unaware of, or insensitive to", children's reports of victimization (Nelson et al., 2015, p. 2). Article 12 of the United Nations Convention of the Rights of the Child highlights the right of all children to talk about their own experience and to be heard ([www.unicef.org/crc/](http://www.unicef.org/crc/)). It is fundamental that children participate in research that measures and reports on their own wellbeing (Ben-Arieh, 2005), children were invited to participate in this research through focus group discussions. This article reports on covert aggression, exploring the perceptions of preadolescent children regarding factors that influence and protect against power imbalance in bullying.

### **Method**

Focus groups were used to explore children's understanding of aggression that is intentionally hidden from adults, and to identify children's experience and perception of adult support in relation to bullying. Participants were invited from a purposive sample of children enrolled at an independent school in a metropolitan region of Perth, Western Australia. Families enrolled in the school represent a population of socio-educational advantage (Nelson et al., 2015). Thirty children were invited to participate in the focus groups, the principal worked with teachers to purposively select children who would engage in group discussion (Gibson, 2007). Active written

consent was sought from parents and children gave written assent, received for 22 participants (73.3%). Three focus groups were conducted by school grade (see Table 1). Two students were not at school on the day of data collection, ethnicity data was collected from school records and was available for 18 of the participants, identified as Australian (n=17) and British (n=1), one of these families spoke a language other than English at home. Ethics approval was obtained from the relevant university Human Research Ethics Committee and the participating School.

**Table 1.** Demographics of focus group participants

	Participants ( <i>n</i> )		Total number of participants
	Girls	Boys	
Grade 4 (age 9)	5	2	7
Grade 5 (age 10)	4	3	7
Grade 6 (age 11)	3	3	6

### **Focus Group Procedure**

Focus groups were conducted in the school in an environment that was familiar to children and were facilitated by the first two authors. Children were given time to get to know the researchers with an informal discussion about children’s favorite subject at school (Morse, 2015). The literature informed the topic of a vignette that was developed to start the discussion, the vignette told of a child named Olivia who was socially excluded by others at school after a popular peer told a lie about Olivia. The name Olivia was chosen for the victim, consistent with findings that girls are likely to attribute self-blame in response to victimization (Troop-Gordon & Ladd, 2005). Furthermore, qualitative research in Western Australia has found that covert aggression is particularly salient to preadolescent girls in their attempt to maintain social centrality (Houghton et al., 2012). Popularity is a “well suited” measure of the social dominance that is associated with bullying at preadolescence (Witvliet et al., 2010, p. 288). The perpetrator was named Jordan, a name used for boys and girls in Australia. The vignette was used to then generate third person discussions about covert aggression and bullying. The questions were informed by the literature (see Table 2). Research suggests that children are unlikely to differentiate bullying from aggressive behaviour, children were therefore asked about bullying rather than aggression (Vaillancourt et al., 2008). Two audio recorders were used to record focus

group discussions. Data were managed using the software package NVivo 10 for Mac.

**Table 2. Focus group questions**

<b>Focus Group Question</b>
"Tell how you think Olivia might be feeling" (Gibson, 2007)
"Why do you think Jordan did this to Olivia?" (Burns et al., 2008)
"Do you think this is a type of bullying? Why/why not?" (Vaillancourt et al., 2008)
"What would you do if you knew this was happening at your school?" (Prompt: what would other kids think?) (Burns et al., 2008; Houghton, Nathan, & Taylor, 2012)
"Do you think some bullying happens without many people knowing? Tell us about this sort of bullying." (Prompt – "hidden bullying.") (Barnes et al., 2012; Cross et al., 2009, p. xxi; Morrow, Hubbard, & Swift, 2014)
"What would you do if you were Olivia?" (Craig, Pepler, & Blais, 2007; Cross et al., 2009)
"What would you do if you were Olivia's friend?" (Houghton, Nathan, & Taylor, 2012; Morrow et al., 2014; Pepler, Craig, & O'Connell, 2010)
<b>Additional questions presented to explore patterns of meaning in children's comments.</b>
"Who would students talk to if bullying was happening at school?"
"What types of bullying happen without other people knowing?"

Table 2. Each focus group question that related to covert aggression is referenced to the literature that the question was informed by.

The validity of the research is supported by the transparency of the underlying assumptions about the data analysis in relation to the theoretical framework (Braun & Clarke, 2006). Methods used to support the credibility of the research include triangulation of questions, initial data was collected in three focus groups, thus converging data sources to enable crosschecking (Morse, 2015). This began in the structure of questions within the focus group moderator guide, and was furthered by the review of transcribed data and subsequent thematic interpretation by the two researchers who facilitated the focus groups (Spears et al., 2009).

### **Data Analysis**

Data were transcribed verbatim and coded manually; the authors read and re-read manuscripts and made notes of initial ideas, descriptive codes were generated; words and phrases were explored to find shared meanings and perceptions across focus group participants using a thematic analysis approach (Braun & Clarke, 2006). Thematic coding began with a list of ideas that were anticipated based on the critical review of the literature. This method is consistent with researchers who advocate

knowing and using the literature to increase the possible lenses through which the data is analyzed, thereby building on existing knowledge (Braun & Clarke, 2006). It was, however, necessary to be aware that categories derived from prior theory might represent the concepts of prior research rather than the views of the participants (Maxwell & Chmiel, 2013). For this reason analysis also included a search of prevalent attitudes and opinions, and in addition, a search for alternate views expressed by participants that might be key to the research topic (Braun & Clarke, 2006). Themes were discussed and refined until agreement was reached.

## **Results**

Analysis of the data revealed two major themes: 1) what influences power imbalance related to covert bullying, and 2) what protects against power imbalance in relation to covert bullying. Subthemes of friendship, social exclusion, and secret from teacher were identified as factors that influence power imbalance through covert behavior, and subthemes of support from friends and adult support were identified as protecting against power imbalance in covert bullying. These are illustrated in a thematic map (see Figure 1) and in the results of thematic analysis that follow. Pseudonyms, gender and grade at school have been used to differentiate between participants.

### **Major Theme One: What Influences Power Imbalance Related to Covert Bullying?**

**Subtheme one: Friendship.** Friendship was identified as both an influence and protective characteristic of power imbalance. Friends were seen as being stable and people not to hurt, “cause like, they’re for you forever” (Ruby, grade 6 girl). However children recognized there was sometimes dissonance between the ideal and the reality as described by Vashti (grade 5 girl), “It’s really hard to tell someone like that your best friend is actually bullying you on purpose.” Within the subtheme of friendship children spoke of: few friends, and misplaced trust.

**Few friends.** Being alone was identified as a subtheme associated with power imbalance among grade 4 and 5 children. Children considered that without friends a child is left to fend for him or her self, resulting in increased power imbalance, which was simply stated by Lucy (grade 4 girl), “Because they don’t have many people to stand up for them.” In the grade 4 focus group Stefan (boy) asked, “What would be the best way to solve bullying if it’s by more than a couple of

people?” Daisy (girl) responded that it is important to have a friend, however Antony (boy) replied, “What if they’re away?” and Stefan asked “But what if when they’re lonely they get bullied?” demonstrating the value of having a group of friends. Daisy’s reply confirmed this, “Yeh, mostly when they’re lonely they get bullied but if you have a friend you’re alright.” Likewise Walter (grade 5 boy) gave an example that a group targeted a child who was alone, the group blocked the door to ensure that the teacher did not see.

**Misplaced trust.** Misplaced trust was identified as a subtheme of friendship among children in each grade. Stefan (grade 4 boy) observed that children are likely to trust a friend and not differentiate a joke from misuse of power, stating, “When you’re someone’s friend, you put a lot of trust into them, . . . so more like, you could push them around a lot more because they know it could be just a joke or something.” Vashti (grade 5 girl) indicated four times of bullying in the form of repeatedly harming a friend and then saying “it was just an accident.” Grace (grade 5 girl) spoke of a friend who twisted Grace’s story to side with the bully “and they get more rude to you and, I don’t, because it’s been twisted a few times, a lot of times.”

Many girls and boys in each grade spoke of gossip and rumors as an example of misplaced trust, for example, telling a friend’s “most valuable secret” (Ella, grade 6 girl). Among girls this was often in the context of using friends to increase popularity or to get into a desired group by intentional and predetermined social climbing, without true regard for the friend. For example, Ruby (grade 6 girl) referred to being “used” by a friend to get into the popular group.

**Subtheme two: Social exclusion.** Social exclusion was identified as an influence of power imbalance in each focus group, seen to occur in peer relationships or through the internet in the form of cyber-bullying through social media and online games, attacking identity and taking away friends. Social exclusion was described by Gayle (grade 4 girl), “Bullying, bullying is a way to bring someone’s self esteem down and make them feel bad about themselves. Take away all their friends and feel like there’s nobody with them.” In response to the vignette, Maria (grade 5 girl) suggested that the victim of the bullying was left feeling “lonely and insecure.” Hope (grade 6 girl) said that bullying “makes them feel like they don’t belong anywhere.” Gayle (grade 4 girl) explained how children are isolated from friends as a powerful

bully manipulates children, expressing feelings of hopelessness regarding resolving the situation; “It felt like she was keeping all my friends away because she was telling them false things about me and I just felt like there was no one who could resolve it.” Anthony (grade 4 boy) gave a similar example, “They all agree with the person that’s being the big bully and so then the person that’s by themselves can’t really do anything till he gets, or they get, someone on their side.” Within the subtheme of social exclusion children spoke of: exclusion by peers, and cyber exclusion.

**Exclusion by peers.** Girls from the grade 4 focus group spoke of hidden bullying referring to indirect behavior, as “physical and secret, like not telling them” (Eliza, grade 4 girl). The behavior was labeled as “gossip” by children in grades 4 and 5, and as “talking behind peoples backs” and telling “lies,” by those in grade 5 and 6. Ella (grade 6 girl) described how the victim is disempowered, “You can also do like, saying behind people’s backs, and they, the person might not even know it, and everyone would be laughing at them.”

In contrast, other students talked of the hurt caused by direct untrue accusations and lies (said to the face rather than behind the back), and Vashti (grade 5 girl) spoke of the power of a *look*: “Some bullying is people who . . . look at you in that way.” Ruby (grade 6 girl) gave an example of direct lies, “They say “oh, you hit me” . . . like you didn’t really hit them.” Importantly in the context of bullying Ruby added that it “just keeps on carrying on and they just like be mean to you for weeks and weeks and weeks.” The repetition suggests the powerlessness of the victim in her inability to address the situation. Kailey spoke of a similar experience:

“They say something like “well you’re doing this and that.” “Well I’m not” and like . . . you, you can’t explain things again and they say the same thing and they’re like and you can’t just get them to know how you’re feeling.” (Kailey, grade 4 girl)

One subtheme that was identified in relation to social exclusion was that a portion of the power imbalance was associated with keeping the bullying hidden from the teacher “so they won’t get in trouble” (Grade 4 girl). When the teacher is told about bullying and the perpetrator/s get into trouble, blame can be laid on the one who told the teacher resulting in exclusion by peers as indicated by Arthur

(grade 6 boy) and Ella (grade 6 girl) respectively, “They try and have a go at you because they’ve been in trouble so they’re gonna get you in trouble.” “If you tell the teacher sometimes, the whole group will get like in way more trouble than it should have been.”

**Cyber exclusion.** Whereas children in grade 4 were unlikely to have Internet access at home, children in grades 5 and 6 referred to the power imbalance associated with exclusion via the internet. Grace and Hope spoke of indirect online bullying, Grace (grade 5 girl) said that children use online forums to tell lies, Hope (grade 6 girl) said, “Some people don’t, may not realize that they’re being bullied . . . because they might not have messaging.” Roland (grade 6 boy) spoke of direct online aggression through messaging, “they just keep being mean.”

**Subtheme three: Secret from the teacher.** Adults were seen as a source of support however all children in each focus group perceived that bullying often happens without the teacher knowing, a grade 4 girl attributed this especially to “best friends.” Maria spoke of the importance of maintaining a friendship despite bullying:

“I sometimes find if your friend (is bullying) that you don’t want (to tell) a teacher because they might then, may not talk to you . . ., but they might give you nasty looks and not be your friend any more and cannot be your friend.”  
(Maria, grade 5 girl)

A consistent theme across focus groups was that lies and hurtful rumors exclude children from adult help and limit children’s trust in the teacher and the trust of the teacher in the child. Arthur (grade 6 boy) gave this example, “Whenever he did something wrong he would blame it on me, and he would always tell rumors.” Stefan gave a similar example:

“The person that (bullied us), um, told his dad and his dad told our teacher and now our teacher thinks that that person who’s been doing it to us isn’t the person that causes it and that we’re being the person that - and that’s why I don’t usually tell the teacher because I just sort it out myself.” (Stefan, grade 4 boy)

Luke and George (grade 5 boys) said that smart children could get away with bullying because “the teacher wouldn’t exactly expect one of them to do it” for this reason the teacher would be most likely to believe “the smarter kid.” These

reflections imply that lies told to the teacher are an influence on power imbalance. Children might subsequently perceive that the adult is supporting the perpetrator resulting in a feeling of being dismissed or excluded by the teacher. Ruby (grade 6 girl) gave the following example in response to a discussion about rumors and secrets, implying that she included the teacher in the victimization, “I was involved in one of those things and the reason why I moved to (this school) is because it happened at my old school with my teacher and kids I got bullied.”

Grace and Hope spoke of a lack of support when talking with teachers about bullying. Grace (grade 5 girl) said that when she tells the teacher “it doesn’t normally get solved,” Grace had previously said that bullying behavior is kept secret from the teacher thus taking away the potential for adult support, saying “even when you tell they don’t stop bullying but they secretly do it.” Hope (grade 6 girl) said of teachers, “They ignore me like it was my fault.”

Another form of exclusion involving adults is children’s reported feeling of social exclusion after accepting advice to ignore the bully. Stefan (grade 4 boy) spoke of feeling excluded after following advice given by his mum to stay away from the bully, “Um my mum just says to go away from them but then I’ve got hardly anyone else to play with.” Vashti (grade 5 girl) spoke of her experience after telling her dad about bullying, “Sometimes my dad just says to ignore them, and stuff cause he doesn’t really do anything about it. Cause he doesn’t want to get involved.” Hope (grade 6 girl) had a similar situation in advice given by a staff member at school after feeling excluded from playing a lunchtime sport by her peers, “She told me not to worry about it but they kept on doing it every single time.”

## **Major Theme Two: What Protects Against Power Imbalance Related to Covert Bullying?**

**Subtheme one: Support from friends.** Whereas exclusion by peers influences power imbalance, peer support was identified as a protective characteristic of power imbalance. Friends were seen as those who would stick by you as described by Ella (grade 6 girl) as prompted by the vignette, “Um, when I was younger, I got like pushed out of that group but then my best friend she like stayed with me so I would like, help Olivia and make a new group then, with her.” Daisy (grade 4 girl) responded to a discussion about indirect exclusion, talking of the protection given by a friend who told her what was happening and supported her in telling the teacher:

“Um my friend was talking about me behind my back but then my other friend told me and I found out I could tell the teacher cause um at least I had a friend who could tell me.”

**Subtheme two: Adult support.** Although power imbalance increased when adults were unaware of bullying or did not assist children who reported bullying, adult support was identified as a protective characteristic of power imbalance. For example, Ruby (grade 6 girl) said that a staff member helped her to understand that “you don’t have to be friends with everybody.” Gayle (grade 4 girl) said that her mum had “some really good advice,” and Kailey spoke of protection and support provided by her mum:

“I find it’s easier to go home and tell mum, see what I can say and stuff and what should I do about it and, because if I say the wrong thing it could get even worse and it’s good, I know it’s good to stand up for yourself but I find it hard to do it right at that moment.” (Kailey, grade 4 girl)

Arthur (grade 6 boy) preferred to talk with an uncle or a family member more removed from his immediate environment, “because that way I don’t see them all the time so they won’t want to talk about it. They will just give me a few tips and then we’ll move on.”

Adults protected against power imbalance by supporting children who had been bullied, but also in helping children develop skills to deal with aggressive behavior. For example, Eliza spoke with her mother to help her understand how to approach children when she had been mean to them, and Stefan talked positively about a previous teacher’s intervention.

“I’ll know that I’ve been mean on that day and I’ll tell my mum and she’ll say “well go to that person tomorrow morning and say I’m sorry for what you did.” . . . I would do it the next morning so that I can get my words ready and be ready to do it.” (Eliza, grade 4 girl)

“Our teacher was very good and um, just like whenever something happened they would, um, they would sit down with the teacher and have a talk about it, both of them with the bullying. In fact, yeh, it happened to me once.” (Stefan, grade 4 boy)

The findings from the focus groups suggest that with perceptive support from an adult, children can learn to work through bullying with maturity and sensitivity.

### Discussion

The first major theme of focus group analysis identified influences on power imbalance in relation to covert aggression. Subthemes of friendship, social exclusion, and secret from teacher were identified as influences on power imbalance. The second major theme identified factors that protect against power imbalance in relation to covert aggression; subthemes of support from friends, and adult support were identified as protecting against power imbalance. Each theme is discussed beginning with friendship.

Within the subtheme of *friendship* children spoke of having few friends, and of misplaced trust within friendships. Within the framework of relational developmental systems theories friends act as a resource for children, indicating acceptance and building trust, optimism, and self-worth, and helping victimized children (Bronfenbrenner & Morris, 2006; Closson & Watanabe, 2016). Recent research found that lower levels of victimization were predicted for children who had a greater number of friends (Serdiouk, Berry, & Gest, 2016). This is consistent with our research, with many references made by children to having a friend to “stand up for them.” However, friendship was not always seen as a protective factor. For example, children in this study spoke of misplaced trust in terms of being “used” by friends. The *friend* holds a position of power through the trust associated with friendship, and may abuse that power for personal gain. This is consistent with previous research which found friendships of relationally aggressive children are characterized by high levels of intimacy (hearing secrets told by the friend), relational aggression, and jealousy relative to other children (age 9-12) (Grotperter & Crick, 1996). Such peer victimization is likely to increase children’s perception of the social environment as hostile, resulting in distrust of peers and contributing to internalizing and externalizing problems, low self-worth, loneliness, depression, and anxiety (Rodkin et al., 2015).

Conversely, children mature as they learn to resolve conflict with friends (Serdiouk et al., 2016). Grace spoke of best friends fighting over not liking the same thing, it is likely that this reflects aggression among children who are practicing

“cooperation, compromise, and competition” (LaFontana & Cillessen, 2010, p. 131). This is not bullying. Bullying is proactive aggression, a strategic and goal oriented behavior that occurs repeatedly within a relationship of abuse, but current research methods do not adequately distinguish bullying from aggression (Rodkin et al., 2015). There has been a recent call for research to assess power imbalance within the bully/victim relationship and children’s social networks (Rodkin et al., 2015). Power imbalance is increased when children intentionally dominate the victim by widening the social network through which the victim is isolated. This is the focus of the following discussion with regard to social exclusion, and involving adults.

*Social exclusion* was the second subtheme identified relative to factors that influence power imbalance within covert bullying; within this subtheme children spoke of exclusion by peers and of exclusion through online forums. Exclusion and belonging are at two ends of a spectrum as seen in children’s description of bullying as making children feel “bad about themselves,” “left out,” “like they don’t belong,” and “lonely.” Laursen and Hartl (2013) equate loneliness with the experience of social isolation, in the context of a lack of friends or because of exclusion by the peer group. Bullying occurs within peer-groups as skillful aggressors use intimacy with peers as a resource to dominate and unite the peer group by excluding other children (Rodkin et al., 2015). The perpetrator of bullying draws power from the peer group as children conform to peer pressure in an attempt to belong to the group (Witvliet et al., 2010). A qualitative study which found peer group to be a strong influence on the initiation and persistence of bullying suggested popularity to be a key concept within the theme of belonging and enhancing group status (Burns, Maycock, Cross, & Brown, 2008). Children’s experience of loneliness is heightened for those who interpret social isolation as a sign of unpopularity or through self-blame (Laursen & Hartl, 2013).

*Secret from teacher* was identified as a third subtheme of factors that influence power imbalance in covert bullying. In our focus groups children in each grade said that others lie to the teacher to get away with bullying. For example, Stefan’s experience was that the teacher had believed the bully rather than him, and that he and his friend were unjustly assigned blame. Children with leadership skills and a good understanding of social situations might manipulate others to achieve their own goal of social dominance, but be seen by teachers as socially mature (Cross

et al., 2009; Rodkin et al., 2015). More than the pure avoidance of discipline, this implies an intentional telling of lies to the adult to hold power over the victim, limiting hope of a resolve. Children's discussion in focus groups suggested that the lack of emotional support from teachers increased the sense of isolation and hurt felt by children. Conversely, teacher support was negatively associated with striving for dominance, power, and popularity in the grade 5 and 6 classroom environment (Kiefer, Matthews, Montesino, Arango, & Preece, 2013).

Emotionally responsive adults are a resource for children, helping children to develop new understanding of relationships, for example, by working with children who are bullied to reduce self-blame (Laursen & Hartl, 2013). However, teachers who failed to recognize popular children as perpetrators of bullying, were also likely to attribute blame to the victims of bullying (Rosen, Scott, & DeOrnellas, 2017). Furthermore, teachers considered social exclusion to be the least serious form of bullying, and had less empathy for victims of social exclusion (Bauman & Del Rio, 2006). In contrast, research has found social forms of bullying to be associated with poor academic and health outcomes (Danese et al., 2009; Morrow et al., 2014). Teacher's uncertainty about how to respond to children who report bullying is a barrier to children's adaptation. For example, some student teachers suggested that they would respond by dismissing the intent of the perpetrator or advising the victim "not to worry about it" (Bauman & Del Rio, 2006, p. 277). Research has shown the hopelessness felt by children who are victims of covert bullying highlighting the need for adults to build children's capacity to respond to bullying in a positive way, and to support the development of healthy relationships (Buhs et al., 2006; Closson & Watanabe, 2016; Craig et al., 2007).

Children spoke of feelings of exclusion when they accepted advice from adults to ignore the bully. Advice to avoid or ignore a bully has been found to place children at risk of further relational victimization, for girls avoidance was related to social withdrawal (Troop-Gordon & Gerardy, 2012). Within the relational developmental systems theories framework, development occurs in the context of children's widening experience in their environment, and is supported by the secure base of an adult who they can return to (Sabol & Pianta, 2012). The findings of this study therefore support the definition of covert as *intentionally hidden from adults*.

### **Factors that Protect Against Power Imbalance in Covert Bullying**

Support from friends, and adult support, were identified as protective factors for children in relation to covert bullying. Friends and peers, as bystanders, may assist the bully, remain silent, or intervene to support the victim. Friends who intervene provide emotional support and help each other to practice social skills and to access resources, including (but not limited to) adult help (Norwalk, Hamm, Farmer, & Barnes, 2016). Teachers are often not aware of bullying but friends are; recent studies have shown a protective factor when a friend intervenes and the teacher is receptive to the children (Norwalk et al., 2016; Serdiouk et al., 2016).

The teacher-student relationship forms the foundation for learning and for resilience as teachers listen respectfully to children and the children in turn feel heard and valued (Brooks & Goldstein, 2008). Seibert and Kerns (2009) found that children used peers and teachers as a secure base of emotional support, stabilizing the stress response and helping children adapt to the school environment. Neuroimaging has shown that high levels of ongoing social support were associated with reduced neurobiological reactivity to stress, lessening the neurobiological burden during social exclusion, even when there was no person present to give social support at the immediate time of stress (Eisenberger et al., 2007). Through these pathways, a strong teacher-child relationship was protective for children who had a genetic vulnerability to be aggressive and to be victimized by peers (Brendgen et al., 2011). In our research Ruby had moved to the school as a result of social exclusion at her old school. Ruby spoke of the teacher at the old school as part of the problem, but at the new school the resource of support from staff had helped her to overcome bullying and to even actively defend others who had been bullied.

Cortes and Kochenderfer-Ladd (2014) found less bullying when teachers took an active role in intervening to promote healthy relationships. Children were, however, less likely to tell the teacher about bullying when they believed that the teacher would simply punish the aggressor. This is consistent with our study, in which many children considered that telling the teacher would result in social exclusion as a result of disciplinary measures. The context of the classroom is molded by the teacher and school policy, and is relevant to how children interpret and respond to bullying (Bradshaw et al., 2015). This highlights the need to support teachers in promoting a positive classroom and school environment.

**Limitations.** Focus groups based on vignettes and hypothetical situations study the intended behavior of children and not actual behavior, however the use of the vignette provided opportunity to discuss bullying situations in the third person initially which then triggered discussion of experienced situations and issues. When participants view a vignette as realistic their behavioral intentions are correlated with their actual behavior (Willits, 2014). The vignette was based on extensive review of the literature and children interspersed their responses to the vignette with stories from their own experience. The use of focus groups can therefore be considered a limitation and a strength; the use of one-on-one interviews rather than focus groups would have permitted further depth of discussion with individual children, however, the focus group allowed issues to emerge in the context of children's discussion giving breadth to the research (Carey, 2016).

Lerner and Callina (2013) recommend a focus on the context of individual populations to increase research validity; our research focus was specific to the context of an urban middle class population in Perth, Western Australia. A sampling limitation of this study, however, is the lack of participants of ethnic diversity and low socioeconomic status (SES). Children from families of low SES status or ethnic minority might perceive covert bullying differently.

### **Implications for school nursing practice**

Although this research focused on the primary relationship between student and teacher, it equally informs school nursing practice. Nurses have reported a lack of confidence in identifying subtle types of bullying (Pigozi & Jones Bartoli, 2016). Covert bullying is covert aggression that is that is repeated in a relationship of power imbalance. This form of bullying is not easily identified because it is intentionally and deliberately hidden from people that might give aid to the victim (Cross et al., 2009). It is likely that children who experience covert bullying will present to the school nurse as a result of the toxic stress and the resulting neurobiological load that accompanies social isolation. This may manifest, for example, as somatization (McEwen, 2017), anxiety or school avoidance (Shannon, Bergren, & Matthews, 2010). Nurses therefore must take care not to dismiss repeated presentations to the school health as malingering without assessment of the underlying cause (Shannon et al., 2010).

Within the framework of relational developmental systems theories, development is supported when children have access to a person who provides a secure base of emotional support (Bronfenbrenner & Morris, 2006). Children in our focus groups did not seek punishment for the perpetrator of bullying. Instead children spoke of the value of having an adult with whom to discuss how they might work through the bullying toward a positive outcome. Indeed, resilience is achieved in adversity as children are heard by adults and given space to problem solve (Roffey, 2015). It is imperative that the school nurse works with teachers and parents toward assisting children who are experiencing social isolation in the school environment (Nelson, Kendall, & Shields, 2014). Moreover, assessment must take into account the risk of depression, anxiety and suicidal ideation that accompanies social isolation, along with appropriate referral. Beyond assessment and referral, the role of nurse extends to health promotion (Nelson, Kendall, Burns, & Schonert-Reichl, 2017). The aim is to build children's capacity to actively defend children who are bullied, to reduce self-blame for children who are bullied, and to support children as they learn how to overcome stressful situations in a positive way that leads to adaptation.

### **Conclusion**

This focus group study explored children's experience of covert aggression, defined as aggression that is intentionally hidden from adults. Covert forms of aggression influence children's experience of hurt or harm when adults are not aware of, or insensitive to, children's reports of victimization. This hidden form of aggression increases the power of the perpetrator over the victim, contributing to the power imbalance of bullying. However, support from an adult was identified as a protective factor for children in relation to covert bullying, diminishing the power imbalance that is present in bullying.

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## PAPER 4. POWER IMBALANCE IN BULLYING: A THEMATIC ANALYSIS

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## RESEARCH ARTICLE

## Preadolescent children's perception of power imbalance in bullying: A thematic analysis

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**Data Availability Statement:** Due to ethical restrictions, the full data set underlying this study (audiotapes and complete transcripts) is not available. We are not able to make this full data set available to other researchers because participants only gave consent for the present study's research team to have access to these materials. Per our ethical approval, these audiotapes and completed transcripts will be disposed of according to university guidelines when participants have reached 25 years of age. We can, however, provide independent researchers with more detail

## Abstract

Bullying in schools is associated with an extensive public health burden. Bullying is intentional and goal oriented aggressive behavior in which the perpetrator exploits an imbalance of power to repeatedly dominate the victim. To differentiate bullying from aggressive behavior, assessment must include a valid measure of power imbalance as perceived by the victim. And yet, to date, there remains no agreement as to how to most accurately measure power imbalance among preadolescent children. This qualitative study explored children's (age 9 to 11) understanding of power imbalance through thematic analysis of focus group discussions. Subthemes that emerged as influencing power imbalance include: age of victim, peer valued characteristics, and group membership and position. Subthemes of empathy and peer valued characteristics emerged as protecting against the negative impact of power imbalance.

## Introduction

The public health burden associated with bullying in schools has resulted in extensive research efforts toward understanding why bullying occurs and how best to mitigate the deleterious effects of bullying on child health and well-being [1]. Bullying is defined as aggressive behavior that is *repeated* and in which the perpetrator, for his or her own benefit, exploits an *imbalance of power* to dominate the victim [2]. Bullying is strategic and goal oriented behavior that can result in physical or social harm to the victim [3]. The targeted child is likely to feel less hope of a successful resolution when the perpetrator is perceived as more powerful, this in turn increases harm to the victim [4]. In comparison to students who are victimized without power imbalance, those who report frequent victimization with perceived power imbalance are more likely to experience: hopelessness, helplessness, interference with school work, and a loss of perceived support [5]; higher threat and lower perceived control [6]; lower life satisfaction and

regarding coding, working notes on the analysis, and de-identified excerpts from transcripts on request. These notes include the focus group discussion guide, notes taken on original ideas, initial memos, a record of the initial coding into nodes in NVivo, exploration of the relationship between codes and themes, and the initial thematic map. Data access queries may be directed to the first three authors of this study: Helen J. Nelson ([helen.nelson@postgrad.curtin.edu.au](mailto:helen.nelson@postgrad.curtin.edu.au)), Sharyn K. Burns ([S.Burns@curtin.edu.au](mailto:S.Burns@curtin.edu.au)), and Garth E. Kendall ([G.Kendall@email.curtin.edu.au](mailto:G.Kendall@email.curtin.edu.au)). Additionally, the Curtin University Human Research Ethics Committee can act as a contact in the event of the authors not being available: [ROC-ethicsnth@curtin.edu.au](mailto:ROC-ethicsnth@curtin.edu.au).

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poorer school connectedness [4], higher risk of anxiety, depression and low self-esteem [7]. For this reason the context of power imbalance is central to bullying research [8].

At the age of 9 to 11 years children are increasingly likely to be involved in bullying behavior as they place more and more value on the peer group [9]. At this age higher order cognitive processing in the prefrontal cortex is emerging [10]. Children of this age have a growing capacity for self-reflection and increasingly make social comparisons, placing worth on qualities that are valued by peers and on belonging within the peer group [11]. Peer rejection becomes increasingly salient to the formation of identity [12]. For this reason children in this age group are an important target group in the development and implementation of school-based bullying interventions. The accurate measurement of bullying, however, is an ongoing issue; in particular repetition and power imbalance are not consistently acknowledged or measured by children's self-report, often resulting in the incorrect reporting of aggressive behavior as bullying [8]. This has contributed to difficulty in evaluating school-based interventions and in comparing prevalence rates when different measures are used [5].

Child self-report is frequently used to obtain reports of victimization because the child's own perspective is crucial in determining the bullying behavior [2]. Self-report surveys of bullying behavior typically begin with a definition of bullying that is intended to help children differentiate between aggression and bullying [2]. This has proved to be problematic when children either do not read the statement or they do not understand it. For example, in a survey of 19 children (aged 11–15) who identified themselves as victims of bullying by a written definition, only 10 were confirmed to meet the criteria at interview [13]. Of the remaining nine children, eight did not understand the definition and apply it appropriately. Furthermore, it has been shown that children's own definition of bullying is different to that of researchers in that it rarely includes repetition and power imbalance [14]. It is possible therefore, that children who do not read or comprehend a definition will not differentiate aggressive behavior from bullying. In an attempt to overcome this problem, some researchers have used individual survey questions to assess children's report of power imbalance [4,6].

The Californian Bully Victim Scale (CBVS) measured power imbalance in terms of *physical strength, popularity, and smartness in schoolwork* [4]. Reported test-retest stability was high. Green and colleagues [15] introduced items to the CBVS to measure power differential: how *likeable, good looking, athletic, old, and how much money* the perpetrator had in comparison to the respondent. Item reliability was not reported. Power imbalance was not associated between the CBVS and the definition based prevalence item of the Olweus Bully/Victim Questionnaire (OBQ) [16]. The association with psychological symptoms was strongest for the OBQ. Based on their finding of only fair agreement between measures Green et al. [15] proposed that the OBQ item measured repeated victimization rather than the presence of power imbalance. This is in contrast to suggestions that power differential contributes to repetition and harm [8]. Hunter et al. [6] found that *group size* and *physical size* were important aspects of power imbalance for boys whereas *popularity* and *physical size* were important for girls. Further research into the measurement of power imbalance at item level by self-report has been recommended, specifically to understand the behaviors that students engage in within the ecological context of the school environment [7,8].

Furthermore, Olweus [2] has proposed that perceived power imbalance might also relate to differences in status in the peer group. Consistent with this view, in a qualitative study that involved one-on-one interviews with 12 year old children, social position in the peer group was found to include an element of power, with the majority of participants identifying bullying as a group process [17]. Taken together, these studies underline the importance of obtaining children's perspectives on bullying as a way to shed light on the ways in which children perceive bullying. Such information would not only advance the science and theoretical

understanding of bullying, this information will also provide practical information for the design of effective measurement strategies and effective practices in schools to curb bullying.

### Research framework

The research framework of relational developmental systems theories emphasizes that developmental outcomes occur in response to the interaction between children and their environment [18]. Within these theories, which are based on Bronfenbrenner's bioecological model, the *environment* includes influences ranging from children's nearest relationships to political and historical influences. These affect the material and psychological resources available to children, shaping the feelings that children experience, for example threat, doubt, comfort, or hope, and associated neurobiological development over the lifetime [19,20]. Key to relational developmental systems theories is the concept of resilience, which is shown in adversity [21]. It is anticipated that this research, which is based on the framework of relational developmental systems theories, will increase our ability to promote resilience, as we understand the experience of students who struggle to escape the cycle of bullying victimization.

Within this framework, the integrity of measurement is supported by using qualitative research to inform instrument design within a culturally specific context, supporting research validity, transparency and clarity [18]. This paper reports the qualitative findings of a study that engaged children, the experiential experts of school bullying, in focus groups to identify factors related to power imbalance experienced at school in the context of aggressive acts between peers, some of which might qualify as bullying. This study contributes to the school violence literature by informing the capture of variables of power that are relevant to the study population based on qualitative analysis. In addition to the forms of power reported in this paper, students spoke of power differential as aggression that is intentionally hidden from adults in the school environment, reported elsewhere [22].

### Materials and methods

Focus group data were obtained and thematic analysis was undertaken to explore preadolescent children's perception of power imbalance in bullying. Thematic coding built on existing knowledge, grouping data that had meaning based on the literature and on new ideas identified through focus groups [23]. Ethics approval was obtained from the Curtin University Human Research Ethics Committee (RDHS-38-15) and the Principal of the participating School.

### Sample

Focus groups comprised a purposive sample of children enrolled in grades 4 to 6 (ages 9 to 11) at one low fee paying private school in the Perth metropolitan region of Western Australia in July 2015. Consistent with nearby public primary schools, the school was placed within one standard deviation above the mean of socio-educational advantage in Australia [24]. The school has a dress code in which all children wear a formal uniform and a policy of no tolerance for physical or verbal bullying. The principal reported that, for this reason, it is more likely that bullying perpetration within the school would be subtle and relational. Subtle forms of bullying have been recognized as an issue in the context of similar school environments in Australia [25]. The principal was asked to purposively select children who would have the understanding and confidence to participate in a group without dominating or being intimidated [26]. A total of 30 children were invited to participate in three focus groups, one for each grade. Active consent was received from parents/guardians for 22 participants (73.3%), two parents/guardians declined consent and six forms were not returned. Two children were

absent from school on the day of data collection. Children gave written assent for their own participation and for the focus group discussion to be audiotaped and transcribed.

The grade 4 focus group comprised 5 girls and 2 boys, the grade 5 group 4 girls and 3 boys, and the grade 6 group 3 girls and 3 boys. Parents identified their children as Australian ( $n = 17$ ) and British ( $n = 1$ ) (ethnicity was not available for two children). One family identified that a language other than English was regularly spoken at home.

### Focus group procedure

Focus groups were conducted in the reading room of the school library; the facilitators were experienced in working with children of this age [26]. Children were able to withdraw from the research at any time without negative consequence with provision made for immediate care by the school psychologist or chaplain for any child who became distressed by the discussion. Support was not required and all children participated for the duration of the focus group. Focus group questions were informed by the literature [27]. The focus group discussion guide was tested with three children from the age group prior to administration. No changes were made to the discussion guide. Consistent with other bullying research [17] a vignette was developed to introduce children to the topic of power imbalance. The vignette was based on social exclusion, a common behavior for this age group, and popularity, a key concept in relation to bullying at the group level [9]. The name Jordan is a common name for boys and girls in Western Australia and was chosen for the perpetrator to make the scenario relevant for the mixed gender focus groups. Olivia was chosen for the victim consistent with research suggesting that relational aggression is a salient issue to girls at preadolescence [4].

Olivia arrived at school one day and the children that she normally sat with and played with were talking about her and laughing at her. When she asked why, she found out that someone who she had thought was a friend had told a lie about her and now the other children did not want to include her. The kid that told the lie was named Jordan, and Jordan was very popular with the other kids.

The vignette was used to prompt third person discussion, which then lead to discussion about the types of bullying behaviors and related issues that happened at their school for boys and girls. Questions included "Tell us how you think Olivia might be feeling?" "Why do you think Jordan did this to Olivia?" "Can you tell us what do you think bullying is?" "Do you think some kids are more likely to get bullied/bully than others? Tell us about them" [22]. In addition, children were invited to make their own reflections about bullying. Focus group discussions were recorded using two audio recorders and one facilitator made a written observation of the non-verbal behaviors of children. Data collection ended when no new patterns emerged from the discussions. The focus groups lasted for 48 minutes (grade 4), 45 minutes (grade 5) and 50 minutes (grade 6). The software package NVivo 10 for Mac was used for data management and a research diary was kept.

### Data analysis

The first author transcribed these data verbatim. To achieve credibility, planned and systematic steps of thematic analysis were followed to ensure children's views were represented (see Table 1). Rigor of the research was supported by the rich data generated from a purposive sample and collected in an environment familiar to children.

## Results

Results present the major themes identified by thematic analysis of focus group discussions: 1) influencing power imbalance, defined as factors that are influential in increasing the power imbalance experienced by children who are bullied. 2) Protecting against the negative impact of power imbalance, defined as factors that buffer against bullying.

Subthemes identified as influencing power imbalance were: age, peer valued characteristics, and group membership and position. Subthemes of peer valued characteristics and empathy emerged as protecting against power imbalance (Fig 1). Comments that support each sub-theme have been referenced using pseudonyms (children's real names are not used), grade at school, and gender.

### Major theme one: Influences on power imbalance

**Sub-theme one: Age.** Three children perceived that age represented a form of power imbalance. Walter (grade 5 boy) said, "I personally think the common type of bullying is an older kid is bullying a younger kid cause they think um they're better since, um, they're elder than them." Kailey (grade 4 girl) recounted a story remembered from grade 2 of a student who involved "all her friends and all the grade 6 friends" to intimidate Kailey. Gayle also highlights that older children are often influential in the school environment, which might impact the protective factor friends provide.

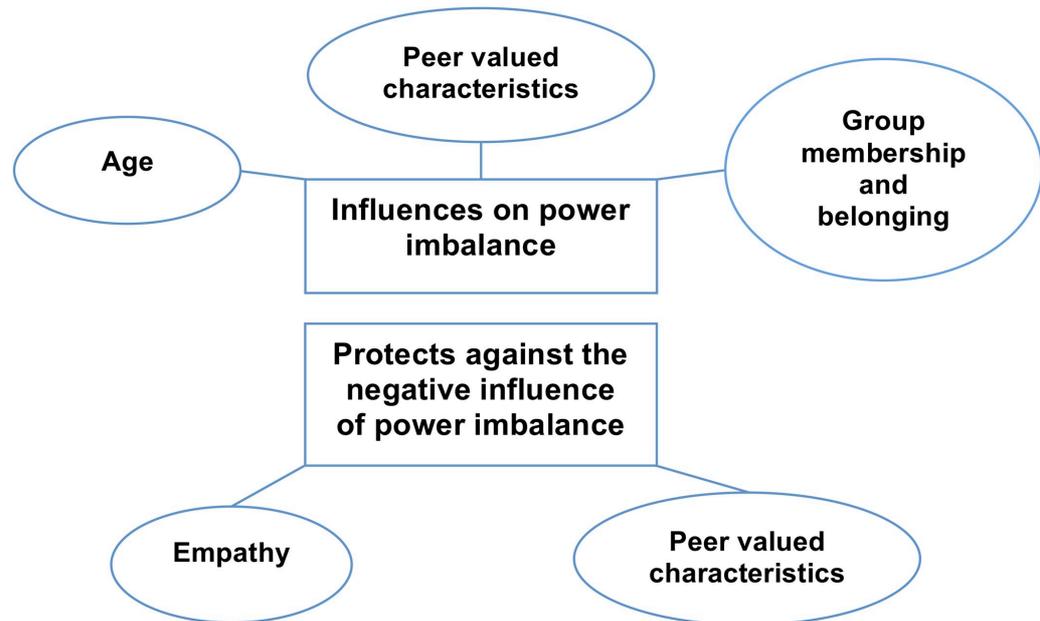
Somebody starts a rumor and then girls tell girls and girls tell girls and from grade 4 it goes all the way to grade 6 and then you, you have friends and then they're not your friends and they won't let you sit with them. (Gayle, grade 4 girl)

**Table 1. Steps of thematic analysis.**

Steps	Description of the process
1. Data collection	Focus group facilitators looked for patterns of meaning and interest during discussion, following up on comments made by children to explore meanings. Non-verbal communication was documented [26].
2. Become familiar with the data	Data were transcribed verbatim, read and re-read, and notes taken of initial ideas. Transcriptions were reviewed by the first and second authors to maintain dependability and determine credibility [28].
3. Initial codes	Codes refer to the systematic grouping of the most basic elements of the raw data that have meaning based on the literature. The raw data was grouped into codes based on new ideas identified from focus group discussion and from repeated patterns across the data set that had meaning based on the literature. Specific attention was given to children's perception of power imbalance, coding as many themes as possible while maintaining tensions and inconsistencies within the data.
4. Generate initial themes	Relationships between codes and themes were explored and initial codes that did not sit into main themes were discarded or set aside for later review [29]. Themes were identified from the analysis of the data rather than from focus group questions.
5. Review and refine themes	Confirmation that the data supported each theme around a central concept. Rereading the data set to code missed data and to ensure that themes accurately reflected the meanings relayed by children. A thematic map was built.
6. Define and name themes	The meaning captured by each theme was organized into a narrative identifying what was of interest, why, and how it fit into the overall picture in relation to the research question. Sub-themes within themes demonstrated subsets of meaning within the data. Themes were named.
7. Write the report	The story of data was written to show the merit and validity of the analysis. The plausibility of the argument was explained based on the literature, focus group data, and theoretical framework.

The steps of thematic analysis are based on Braun and Clark [23]

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**Fig 1. Thematic map of factors that influence and protect against power imbalance.** Two major themes of the thematic analysis emerged: 1) influences on power imbalance, and 2) protects against power imbalance. Subthemes of *age*, *peer valued characteristics*, and *group membership and belonging* were identified as influencing power imbalance. Subthemes of *peer valued characteristics*, and *empathy* were identified as protecting against the negative impact of power imbalance. This figure is adapted from [22].

<https://doi.org/10.1371/journal.pone.0211124.g001>

**Sub-theme two: Peer valued characteristics.** Lucy provided a firm response to the question "are some kids more likely to be the bully than other kids?"

People who are really smart and pretty and who are really popular, so they just bully the people who aren't because they are people who are easy to get. (Lucy, grade 4 girl)

Lucy talked of the people who are "easy to get" in the context of social dominance, the dominance resulting from peer valued characteristics. In each focus group *appearance*, *sport*, and *smart* occurred as subthemes of peer valued characteristics.

Almost all children identified *appearance* as a reason for being bullied. Daisy (grade 4 girl) said that children are bullied for "how they look", and Maria (grade 5 girl) said, "They might bully that person because they don't look right." Hope (grade 6 girl) said that children "judge" others on "what they look like". A few children suggested that students might also be bullied because they are popular and attractive. Vashti (grade 5 girl) gave conflicting opinions, referring to children being bullied "because they think 'oh, you're out of shape' like, oh you're ugly", but also defending popular children saying they are bullied because they are pretty. Vashti's defense of popular children was in response to an observation by Grace (grade 5 girl) that popular children are more likely than others to bully others.

Kailey (grade 4 girl) suggested that "Not being the same as everyone else and not having like what everyone else has" influenced being bullied. Luke (grade 5 boy) gave an example of needing the most up-to-date mobile phone and Grace (grade 5 girl) spoke of electronic and

online games: “They’ll say, ‘oh that’s a different game, that’s for losers’, and they’ll start laughing at you.”

Children from all three focus groups suggested that children who were good at *sport* were less likely to be bullied, however bullying could also occur on the sports field. Stefan (grade 4 boy) referred to the bully as one who tries to “rule the game”, speaking of games such as football. Antony (grade 4 boy) referred to “physical” bullying on the sport field, “They like go up to you and grab you by the t-shirt and punch you.” This was discussed in the context of using the game as an opportunity to bully as opposed to aggression, which might be as a result of the game itself. Grade 5 children discussed social exclusion based on online gaming, however George (grade 5 boy) also discussed social exclusion in association with “skills like your soccer skills and basketball skills.” Grade 6 children also recounted stories of being teased about their athletic ability.

Talent was, however, not consistently related to a position of power. For example, Stefan (grade 4 boy) said that “talented” children were more likely to be bullied, attributing the bullying to jealousy as highlighted by Antony (grade 4 boy), “The ones that can’t do as much and the ones that think they’re not good, they most likely bully the ones that are good.”

Lucy (grade 4 girl) said, “people who are more likely to bully other people are people who are really smart.” Grade 6 children similarly spoke of power imbalance in terms of high academic achievement. Ella (grade 6 girl) said “I also think like if someone’s if not like as good as a subject as you are, doesn’t mean you put them down.” When discussing what type of children are more likely to bully others and to be bullied, children from all three focus groups suggested that children who were *smart* had the skills to get away with bullying. For example, Luke (grade 5 boy) said that the teacher wouldn’t expect smart children to be the bully and George (grade 5 boy) related being smart to getting “their way out of trouble when (sic) the bullied kid tells on them.”

**Sub-theme three: Group membership and position.** The group process of bullying was the third major subtheme identified in relation to power imbalance. Within this subtheme, children referred to the power of the *big bully*, to *group membership*, and to *cyber bullying*.

When discussing the group aspect of bullying children in each grade referred to one main bully, named by Antony (grade 4 boy) and Walter (grade 5 boy) as “the *big bully*”, referring to the leader of the group as opposed to big in size. The leader of the group holds a position of power and has control over who is or is not accepted within the group as shown by Gayle (grade 4 girl), “And that girl that was bullying me never let this one girl in grade 2 play with us because she, her hair was always pretty scruffy.” Grace, and Ruby discussed how bullying occurred to secure power within the group, either through bullying other children or bullying those within the group.

I think that sometimes the really popular people. They bully the normal people um to (show) they’re the best, “I can do whatever I want and if I’m popular I can do what, a lot of things that I want and I want to tease you because I’m the best.” (Grace, grade 5 girl)

Um, my, friend, she was getting really angry with me . . . because I wasn’t telling her something about somebody else had told me not to tell anybody . . . and then her whole group started ganging up on me and telling me like “oh, you should tell her”, or “tell me, I won’t tell anybody”. (Ruby, grade 6 girl)

Gayle left the group to support the child who had been bullied and Ruby similarly “made another group of friends”, removing herself from the negative group dynamic. In doing so both girls showed empathy and a development of self. Conversely, Hope (grade 6 girl) spoke of children’s fear of exclusion, highlighting how the need to remain in the friendship group

further enhances the power of the group leader: “Just too scared (to stand up for themselves) because they don’t want to be excluded from their friends.” Vashti gave a similar example, supporting the discussion of focus groups, which suggested that some children remain in friendship groups despite being the target of aggression.

Sometimes a person is like really, really popular and a person’s like hiding in the shadows, kind of something weird, and they’re just like oh, I want to be like them, so they’re like trying to be friends and the person who’s popular is actually really nice and they’re just like “oh do this and that” and then when they do like become best friends like a really good connection the faker, the one, the person who wanted to be like them, just tells some rumors to get that person down the bottom of the popular list and they just say “oh, get it, I’m the most popular person here”. (Vashti, grade 5 girl)

In an earlier discussion Vashti said “sometimes, people think that, like when they’re the bully, they think that if we scare people those people will be nice to us”, suggesting that Vashti was engaged in a struggle for social dominance, potentially as both aggressor and victim. Similarly, grade 6 children referred to bullying as being motivated by a goal of social dominance. Carlton (grade 6 boy) stated that bullying is “Just a way that they try to win and be the top, and be on the top.” The leader holds control over the group through fear, as stated by Gayle (grade 4 girl), “I think everybody takes the bully’s side because they’re scared of being bullied.”

Grade 6 children also focused on the perceived value of *group membership*, for example belonging to the popular group. Hope (grade 6 girl) said that bullying makes others feel as if they don’t belong and “like they need to change to be with other people at school so that they’re not lonely”. Ruby (grade 6 girl) gave an example of a girl who responded to gossip by trying to “change to be just like them”. Roland (grade 6 boy) talked of children changing “everything”, “their entire personality. Their clothes, their feelings. . . just to fit in.”

The focus group discussion highlighted that bullying often happens in a group with group members playing different roles. The pressure comes from within the group but possibly also in support of one main protagonist. However other group members also play important roles. For example, Walter also highlights the role of the bystander.

Like this group of kids just comes into the toilet and some kids just block the um, block the door and then, then no one sees, and then, like they start um, and the person inside the um, the bullier (sic), starts bullying the um, kid. (Walter, grade 5 boy)

Children in the grade 5 and 6 focus groups referred to *cyber bullying* or online bullying, whereas grade 4 children said that they tended not to have access to online forums. Grade 4 children were therefore unlikely to experience cyber bullying. The focus on cyber bullying included discussion about social media and online games. Grace (grade 5 girl) spoke about the group effect of bullying through social media, “Um, telling lies about people and talking about them behind their backs to people, and like also that also happens on the internet with your friends.” Hope (grade 6 girl) gave a similar example, “They say some really rude stuff, and then it kinda gets bigger and bigger, and then more people get dragged in, like Instagram.”

Luke (grade 5 boy) spoke of “Online gaming like Minecraft and all those games, sometimes that (cyber bullying) happens.” Walter (grade 5 boy) framed online gaming in terms of bullying within or by a group, “He gets bullied um, by someone in Clash of Clans in his own team.” While Walter was talking about the online games Vashti indicated shhh putting her finger to her mouth and looking directly at Edith. Edith later moved away from Vashti and sat closer to the boys. This might have indicated an attempt to control the conversation by Vashti.

## Major theme two: Protects against the negative impact of power imbalance

**Sub-theme one: Empathy.** Children in the grade 6 focus group referred to the importance of accepting the uniqueness of each person, within this the protective factor of empathy was evident. Hope (grade 6 girl) said that children who bully others “don’t understand what (sic), how other people are”. In response to the vignette Carlton (grade 6 boy) said that he would want to help Jordan “understand how Olivia feels right now because you’ve gone and told a lie to everyone. She doesn’t feel that good”. This observation reflected empathy. On the other hand, the following reflections by George and Ella show the callousness of bullying and associated lack of empathy:

I think the worst type of bullying is when let’s say, um say someone’s um mum died, and . . . the bully’s like “oh, your mum died, hahaha” like that, I think that’s the worst type of bullying because you could hurt, basically, their feelings a lot. (George, grade 5 boy)

They might like, put one of their friends under the bus, so they like might tell one of their friends like most valuable secret to the popular group and that might like just get them in. (Ella, grade 6 girl)

**Sub-theme two: Peer valued characteristics.** Having fashionable clothing and the latest technology (e.g. phone and electronic games) were seen to be important protective factors against being bullied for both boys and girls across all focus groups. This included “shoes” among boys and “their outfits” among the girls. Arthur (grade 6 boy) thought it was “unlikely” that good-looking children would be bullied and spoke of the protective factor of having “cool” clothes and “looks.” Although the protection of these characteristics was spoken of across each focus group, conversation was framed around the harm that was experienced by children who did not have peer valued attributes or belongings. As previously stated, another protection against power imbalance was to be “good at sport,” or to be “smart.” Gayle (grade 4 girl) suggested that children who were *smart* had the skills to stand up for being bullied, “Because they always have good comebacks.”

## Discussion

This research focused on identifying factors that influence power imbalance associated with bullying at preadolescence in the context of a middle class population in Perth, Western Australia. Age, peer valued characteristics, and group membership and position were identified as subthemes of factors that influence power imbalance. These are discussed beginning with age.

Grade 6 is the final grade of elementary school in Western Australia, and children from grades 4 and 5 spoke of intimidation from children of an older age group. This is an important consideration in research design; age difference across school grades represents a form of power imbalance that will not be captured by peer reports of bullying by a classroom roster or grade group [2]. The self-report of power imbalance by the victim is therefore important to the integrity of bullying research. Consistent with Green et al. [15] our focus group findings support ‘*older than me*’ as a measure of power imbalance.

Most children indicated appearance and athleticism as sources of power imbalance associated with bullying. At preadolescence children rely on peers for social comparisons and keeping up with the accepted norms, appearance and clothing become important to goals of acceptance and status [30]. Status places a buffer around popular aggressive children and increases power because peers value the privilege, identity, and resources associated with belonging in a group with others of social status [30]. Children in our research indicated that

appearance includes fashionable clothing and belongings, including shoes and smart phones. Athletic skills were considered particularly important, this is consistent with a recent qualitative study in which teachers associated poor athletic ability with peer victimization [31]. Consistent with Green et al. [15], our focus groups support the addition of peer-valued characteristics 'good looking', and 'good at sport' into a self-report measure of perceived power imbalance.

'Smart' was identified as a subtheme of peer valued characteristics from each focus group. Felix and colleagues [4] questioned the use of 'smart' as a measure of power imbalance, finding that only a few students identified "smart in schoolwork" as the only source of power imbalance (p. 240), this item was however maintained in the CBVS [7,15]. In our research children identified the word smart with high academic achievement, and additionally related being smart to being deceptive and avoiding any association with the bullying. This is consistent with research that suggests some teachers fail to recognize bullying posed by students who hold high social status [31] and that popular students, some of whom were school prefects, bully others [32]. While qualitative research found some children justified bullying others who were academically smart, termed a "nerd" [32], this research suggests that bullied smart children are more likely to have the skills to negotiate the situation. Thus, the use of the word 'smart' in relation to power imbalance is likely to be multifaceted. Children have a right to be heard [33], and children from each focus group referred to smart children bullying others. This supports the inclusion of 'really smart' into a self-report measure of power imbalance, allowing the a priori factor structure to be empirically assessed.

Popularity was repeatedly referred to as a goal of children who bully during the grade 5 and 6 focus groups. This could be a result of the reference to popularity in the vignette, however popularity is recognized as an appropriate measure of social dominance associated with bullying [9]. Table 2 documents individual items that have been used to assess power imbalance, the item *more popular* is a consistent measure of power imbalance in each previously cited study. In contrast, focus group participants spoke of children being aggressive toward others with the goal of increasing their own status while aiming to minimize the status of more popular children. Victimized children experienced a consequent feeling of hurt or experience of harm. Children who use the bistrategic behaviors of aggressive coercion and prosocial skills to achieve a goal of social dominance are popular with peers, in part because their social power is a resource [3]. Bistrategic children tend to selectively target high status children from their own social network as victims of relational aggression. It is however, unclear if victimization in this context represents a power differential and further investigation is recommended to inform interventions specific to this target group [3]. Thematic analysis of focus group discussion supported the addition of 'trying to be more popular' to a measure of power imbalance.

The power associated with belonging to a group is another subtheme identified from the thematic analysis. Hunter et al. [6] measured power imbalance by asking if the aggressor(s) was "in bigger groups". The context of our research was a middle class fee-paying school in which a strong stance is taken against physical aggression. In this context bullying is likely to be perpetrated through the social dynamic of the group, with power exerted by the leader of the group, and through identity as a member of the group [3,17]. Members of the 'in-group' assist in the perpetration of bullying and defend others in the group to confirm a sense of belonging or as a result of peer pressure [9]. Thematic analysis supported the addition of 'in the most popular group' as measure of perceived power differential. Because this might reflect the focus of the vignette and following recommendation by an expert reviewer an additional item 'with a group of students' was included, consistent with the theme of group membership and position.

Hunter et al. [6] were the first to measure power differential using individual items; because no prior research had examined the effects of power imbalance the authors selected items to reflect potentially important types of power (see Table 2). Felix et al. [4] created the CBVS and

**Table 2. Individual items that have been used to assess power imbalance.**

Hunter et al. [6]	Felix et al. [4]	Green et al. [15]	Malecki et al. [7]	Focus groups (N = 20)
Physically stronger	Physically strong	Physically strong	Stronger	Much stronger than you <sup>a</sup>
In bigger groups				With a group of students <sup>b</sup>
More popular	Popular	Popular	More popular	Trying to be more popular
	Smart in schoolwork	Smart in school	Smarter	Really smart
		Good looking		Good looking
		Likeable		
		Athletic		Good at sport
		How much money		
		How old		Older than you
				In the most popular group
				Bigger than you <sup>a</sup>

<sup>a</sup>These items were added by students in the second round of focus groups (face validity).

<sup>b</sup>A review of identified themes supported the addition of this item following expert review.

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the clarity and wording of each item was assessed in focus groups and Green et al. (2014) added items focusing on power to the CBVS. Our research adds to the current research by identifying items through thematic analysis of focus groups discussion, recognizing children as the experts of their own experience. Consistent with Hunter et al. [6], children placed importance on the function of the group in relation to power imbalance, however, rather than group size the focus was on *group membership and position*. Consistent with the CBVS, *age and peer valued characteristics* were identified as influencing power imbalance. *Empathy* was identified as protecting against the misuse of power (Fig 1).

### Factors that protect against power imbalance

Within our research, empathy was identified as a factor that may protect against power imbalance in peer relationships at preadolescence. Empathy contributes to moral and social development as emotions are aroused in children, including emotions of guilt [34]. Conversely, children justify their bullying or bystander behavior rather than acknowledging emotions of guilt or shame, motivated by a desire to belong in the group. This is associated with moral disengagement and a lack of empathy and is shown in the callousness associated with bullying [34]. Empathy is supported by the school context of adult and peer support as children learn to negotiate relationship stress [31]. For example, Ruby who experienced bullying at her previous school, and chose not to give in to the demands of others in her group when doing so would have caused harm to a friend. This highlights the importance of comprehensive and integrated whole-school interventions that aim to build a culture of belonging and in which self-blame is alleviated for children who are victims of bullying [31].

Within our research a tension was identified in the influence of peer valued characteristic's on power imbalance. Items that have previously been attributed to power imbalance include being smart, good at sport or good looking [4,15]. In our study, thematic analysis has highlighted that characteristics including appearance, smart and athleticism can both influence and protect against power imbalance. In a recent review Volk and colleagues [8] commented on the complexity of bullying behavior, and recommended that qualitative research might help reveal different degrees of power within relationships. This gives insight into one of the complexities that underlies the measurement of power imbalance [35].

### Future directions

Bullying is complex and often hidden from those in authority, it is important to understand the social dynamics of the behavior from the perspective of children themselves, and within the cultural context, to assess causes, evaluate interventions, and implement policies [8]. There is, however, ongoing debate about how to measure the power difference of bullying in ways that are meaningful and that will inform the development of interventions [8,36]. This study is the first stage of a mixed methods study; the qualitative research has informed the design of individual survey items to measure children's experience of power imbalance. As recommended by Tolan and Deutsch [37] different quantitative methods will follow, it is anticipated that a multiple method study will provide a framework by which to inform the understanding of measurement issues. Each item will be included in an online questionnaire and displayed when children report frequent victimization. The item set will follow the stem-question "When these things happened, was the mean student . . ." The quantitative phases of the research will employ exploratory and confirmatory analysis. It is anticipated that this will provide additional assessment of the meaningfulness of the survey items [36]. In addition, the resulting survey will be tested for invariance across different contexts, for example, different age ranges or different schools [36]. To our knowledge this is unique in bullying research.

### Limitations

A limitation of this research is the use of focus group discussion rather than one-on-one interviews, which would permit the exploration of some topics in more depth. However, the focus group environment facilitated our awareness of power dynamic as children responded to each other, a relational aspect of focus group discussion that would not be apparent in interview [38]. The small focus group sizes can be considered a limitation, however group size of four to eight is recommended for children and rich data may be generated from a small group [26]. A second limitation of the research is that the reference to popularity in the vignette might have biased children's discussion; two additional items were recommended by students who subsequently assessed the face validity of the new instrument: *much stronger than you*, and *bigger than you*. However, the vignette was based on extensive review of the literature, and it can be argued that knowledge is lost by ignoring established findings [39]. The vignette also enabled good discussion in the third person. Third, the mixed gender of the focus groups could be considered a limitation however, there is not universal agreement on this [26]. The non-verbal interaction between participants in the grade 5 focus group suggested that the power dynamic was not restricted to relationships that were exclusively between girls or boys, supporting mixed gender focus group composition. A fourth limitation is that our research focuses on children's experience of power imbalance within the specific context of urban middle class Australia, representing a potential bias in sample selection. However, within the framework of developmental systems theories, development is studied within the unique ecological conditions that contribute to individual outcomes. The focus on the middle class was consistent with many public and private schools in the metropolitan region of Perth, Western Australia, supporting the context specific validity of instrument design. This gives strength to the research. A fifth limitation is that participants' experience with offending, victimization, or both were not controlled for, however it is recognized that most school students have some experience with bullying situations, either directly or as an active or passive bystander [40].

### Conclusion

Bullying is complex and often hidden from those in authority, it is important to understand the social dynamics of the behavior from the perspective of children themselves, and within

the cultural context, to assess causes, evaluate interventions, and implement policies [8]. This study used qualitative analysis to inform the context specific understanding of power imbalance in schools in which a strong stance is taken against physical bullying. Researchers have previously used individual items to measure power imbalance, and have found that items such as “smart” might not be an adequate measure of the power imbalance that is experienced by children who are bullied. In contrast, children in focus groups suggested that peer-valued characteristics including smart, appearance, and being good at sport either influence power imbalance or act as a buffer against bullying, protecting against power imbalance. This finding gives insight into one of the complexities associated with measuring power imbalance.

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## PAPER 5. STUDENT EXPERIENCE OF TEACHER SUPPORT SCALE

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**Abstract:****Background**

Social isolation of school children is increased when teachers feel unable to respond to children's report of witnessing or experiencing aggression at school. Teachers can find it difficult to respond adequately to children who report aggression when the aggression is deliberately hidden from the teacher by the perpetrator.

**Aims**

This study aimed to explore, and then confirm, the latent factor structure of the Student Experience of Teacher Support Scale (SETSS), a new instrument designed to measure children's experience when reporting aggression, including aggression that may have been cleverly hidden from school teachers.

**Samples**

This paper reports two phases of the study (Grades 4 to 6, Perth, Western Australia), Sample 1 (N = 174), Sample 2 (N = 642).

**Methods**

Qualitative methods informed instrument design. This paper describes the quantitative phases: first, exploratory factor analysis identified a 2-factor model, student experience and heard by the teacher; second, confirmatory factor analysis and construct validity was conducted.

**Conclusions**

The SETSS has a 2-factor model of sound psychometric fit. The teacher's response to children who report aggression can be experienced by children as supportive, alternatively children may experience increased harm. The harm experienced by victims of aggression is increased when aggression is deliberately and intentionally hidden from teachers by the perpetrator. This adds to the empirical understanding of factors that predict bullying, the identification of harm that results from bullying, and will help track the effectiveness of interventions, and prevention and management of this significant health threat.

**Keywords:** Elementary school; aggression; teacher support

**Introduction**

Aggressive behaviour has two features, "intent to harm" by the perpetrator and "a feeling of hurt" by the victim (Bovaird 2010, p. 278). Bullying, a subset of

aggression, is the proactive and repeated use of aggressive behavior by a powerful child over a less powerful child to achieve a goal (Volk et al. 2017). Bullying is challenging to measure. The difficulty of measurement has been attributed to the inadequate measurement of power imbalance, and the fact that children often intentionally and deliberately hide aggressive behavior from authority figures (Volk et al. 2017). This paper reports on the development of an instrument to measure children's own experience of encountering and witnessing aggression, and reporting it to the teacher (Nelson et al. 2015). The scale measures children's experience of teacher support after the teacher has been told. This scale is particularly relevant when aggression is covert, that is, it is deliberately and intentionally hidden from the teacher by the perpetrator or by peers in the form of bystander behavior (Cross et al. 2009). We contend that this form of aggression contributes to the power imbalance that is experienced by children who are bullied. Much school-based aggression and bullying is hidden from the teacher (Rodkin et al. 2015; Volk et al. 2017). For this reason covert aggression is discussed in this paper in conjunction with bullying.

The ages of 9 to 12 years are a key period for the development of relational aggression as children's goals of popularity and social dominance peak (De Laet et al. 2015). Vaillancourt and Hymel (2006) comment that the term dominance is traditionally applied to people who manipulate the behavior of others; this relates to social power. Children who achieve a goal of social dominance by manipulating the peer group are often perceived as popular. They unite peers through the strategic use of intimacy and social exclusion (Kiefer and Wang 2016). Many children who have social power are skilled at intentionally hiding aggressive behavior from others, and may even be "seen in a positive light by teachers" (Hawley 2003, p. 301). For this reason, social power is often not visible to adults, increasing the power over the bullied child (Rosen et al. 2017). For example, perpetrators of bullying have reported that their reputation was enhanced when adults in authority ignored children's reports of being bullied (Houghton et al. 2012). Similarly, children have reported increased harm when bullying was hidden from teachers by children who skillfully lied to the teacher to escape detection (Nelson et al. 2018).

Recent studies have shown improved peer support for children who are bullied when teachers provide emotional support to those who report the bullying (Norwalk et al. 2016; Serdiouk et al. 2016). However, teachers have difficulty

responding to children's reports of aggression and bullying when they have not witnessed the behavior (Mishna et al. 2006). Teachers have reported that bullying is becoming an increasingly complex behavior that often remains hidden (Cunningham et al. 2016). When teachers do try and uncover the behavior, children's skills of deception can result in the aggression going "deeper down" and teacher's efforts to resolve the situation "can actually make it worse" (Cunningham et al. 2016, p. 466). This implies that the power imbalance between the child who is bullying and the bullied child is increased as the bullied child is left exposed to continuing victimization.

The authors of one early study reported that teachers intervene in bullying situations in only 15-18% of cases (Craig et al. 2000). This may be because teachers are not aware of the bullying, but it may be that they are aware and fail to take action (Veenstra et al. 2014). In more recent studies, it has been found that students are concerned that if they report bullying, they may not be believed, or they could make the situation worse (Bradshaw et al. 2007; Cross et al. 2009). Teachers have similarly reported that their efforts to reduce bullying can actually make it worse (Cunningham et al. 2016). The failure of teachers to intervene has been attributed to the complexity of bullying (Cunningham et al. 2016); teacher fatigue (Swift et al. 2017); and a lack of awareness as to how best to intervene (Cross et al. 2011).

Importantly, most teachers understand the importance of children's social development and child-teacher relationships (Day et al. 2006). The social environment of the classroom is integral to children's learning outcomes, and to the happiness and professional identity of teachers (Day et al. 2006; Swan and Riley 2015). However, the increasing complexity of aggression and bullying places a burden on teachers as they seek to meet the social needs of children along with curriculum demands (Cunningham et al. 2016). Despite the attention given to the issue by academics and the popular press, it has been suggested that teachers' influence on peer relationships and peer aggression is understudied (Ertesvåg 2016; Gest and Rodkin 2011; Mucherah et al. 2018).

It was recently found that bullying behavior and victimization scores were lower amongst secondary school students ( $n = 2273$ ) in Kenya when teachers actively intervened (Mucherah et al. 2018). Mucherah et al. (2018) simply asked

students *if* the teacher had intervened, they did not ask *how* the teacher had intervened. We believe that a better understanding of students' experience of the support teachers provide when they are told about an incident is essential to inform interventions to help teachers effectively manage bullying. In this paper we report the empirical evaluation of the Student Experience of Teacher Support Scale (SETSS), a new instrument designed to measure the experience of children who have told the teacher about an incident of aggressive behavior.

The study was influenced and informed by developmental systems theory (Bronfenbrenner and Morris 2006). According to this theory the classroom is a microsystem in which children's development is influenced by their mutual interaction with the people in their immediate environment (Bronfenbrenner 2001). The design of the SETSS was informed by thematic analysis of focus group discussions with children aged 9 to 11 years (Nelson et al. 2018). The inclusion of children in the development of the instrument is in accord with the United Nations Convention on the Rights of the Child (UNICEF 1989). Specifically, children have the right to express their own views in all matters that affect them and to participate in processes that aim to bring about change (Davey et al. 2010).

The first objective (Phase 1) of the current research was to explore the latent factor structure of the SETSS. The instrument was designed to include items that might reflect children's experience of reporting aggression that was intentionally hidden from school teachers. The second objective (Phase 2) was to confirm the factor structure and examine the reliability and construct validity of the SETSS.

## **Materials and Methods**

### **Participants**

Participants were students in Grades 4 to 6 (aged 8 to 12) from a purposive sample of non-government schools in Perth, Western Australia where the tuition fees are set at a moderate level ( $n = 462$ , 46% male, 54% female). The schools were represented on average by families of socio-educational advantage, children from less advantaged families did however attend the schools (Index of Community Socio-Educational Advantage in Australia; ACARA, 2015). Families of cultural and ethnic diversity were represented; 13% of participants in Phase 1 and 24% of those in Phase 2 spoke a language other than English at home.

**Phase 1.** All students who had not completed the questionnaire during instrument development from Grades 4 to 6 from one school (N = 174) were invited to participate via a letter sent home by the school. Active parental/guardian consent and student assent was provided for 121 participants. Of these, 111 students (64%) were present on the day of data collection and completed an online questionnaire (41% male, 59% female). The minimum number of participants recommended for factor analysis is five per variable (Russell 2002). The instrument under investigation consisted of 13-items and was answered by 69 participants who answered “yes” to a stem question and subsequently answered the new instrument. The present sample size was therefore adequate for exploratory factor analysis. Information about instrument development is presented in the Measures section.

**Phase 2.** Schools were purposively selected for Phase 2 by approaching principals (N = 10) from moderate fee paying non-government schools in the metropolitan region of Perth, Western Australia. Of these, four principals agreed for their school to participate, four declined (three because the schools were currently participating in different research projects, one due to new appointment to the school as principal), and two principals did not respond. All students who had not previously completed the questionnaire were invited to participate (N = 642) via a letter sent home by each school. Informed parental/guardian consent was received for 351 students (55%), 14 students were not at school on the day of data collection and one student did not give assent. Therefore, in total 337 students (52% of the sample) completed the online survey (51% male, 49% female). This sample size was adequate for confirmatory factor analysis and multigroup analysis (Byrne 2012). Parental/guardian consent was given for students from one participating school to complete a retest after a 2-week interval (n = 58), the instrument was completed a second time by 50 students (86%). Students completing the test-retest were allocated an identifying number; all other data collection was anonymous.

### **Procedure**

Ethics approval was obtained from the University Human Research Ethics Committee; and the study was performed in accordance with the ethical standards as laid down in the National Statement on Ethical Conduct in Human Research (The National Health and Medical Research Council, the Australian Research Council and the Australian Vice-Chancellors’ Committee 2007). The first author met with a

nominated person from each school to explain the process and to make provisions to lessen the risk of harm to participants. Data collection took place in November 2015 (Phase 1) and June 2016 (Phase 2). The first author was present during data collection and used simple language to explain the research to children before they simultaneously answered the anonymous online questionnaire on a computer or tablet device. The questionnaire included self-report measures of aggression and power imbalance and was introduced as a survey “to find out how kids treat each other at school”. Participants were informed that the researchers would not discuss children’s answers with teachers or parents. A research assistant was present to answer questions or to help students with reading. A research diary was kept, and a record was made of any questions asked by participants.

## **Measures**

**Phase 1.** The Student Experience of Teacher Support Scale. In Phase 1 the new instrument comprised 13-items to measure children’s experiences when they told a teacher of aggressive behavior that was directed toward them or someone else. Items were identified through focus group discussion with children, thematic coding included a search of the prevalent attitudes and views expressed by participants (Nelson et al. 2018). Each item in the new instrument reflected the language used by focus group participants, for example “The other student got away with it by telling a lie” (items are listed in Table 1). The children who had participated in focus groups assessed face validity of the instrument. Expert reviewers (with expertise in psychology, education, and public health) universally agreed on the content validity of the instrument at scale level (Polit and Beck 2006). The instrument was displayed in the online questionnaire using the display logic function when children answered “yes” to the question “Have you ever told a teacher when other students have been mean to you or someone else on purpose.” The response (*Click if this has happened to you*) was coded as a binary outcome, 0 (*no*) or 1 (*yes*) as recommended by expert reviewers.

**Phase 2.** The Student Experience of Teacher Support Scale (SETSS). The SETSS was slightly modified for Phase 2, the response scale remained unchanged. In response to the research diary made in Phase 1 of data collection, and in consultation with an expert reviewer, the language of some items was changed for Phase 2 (items are listed in Table 2). Items 4 and 7 were removed from the *experience* factor, Item 4

measured the equivalent concept of Item 5, Item 7 measured the equivalent concept of Item 8. An eight-item factor resulted. In Phase 1 the eight-item *experience* factor had a strong fit ( $\alpha = .856$ , CR = .925) and the three-item *heard* factor showed adequate fit ( $\alpha = .736$ , CR = .885). A minimum of four items in each scale is recommended to identify an effective factor (Raykov 1997; Russell 2002). An item, “The teacher listened to me,” was added to the three-item *heard* factor. The item content validity index (I-CVI) was then reviewed by expert reviewers (7 teachers, 2 school psychologists), and each item was within the recommended range of .78 to 1 (Polit and Beck 2006). The SETSS was included in a broader questionnaire to which children had reported on their experience “in the last few months.”

*Middle Years Development Instrument (MDI)* (Schonert-Reichl et al. 2013). The *Supportive Adults at School* subscale of the MDI was adapted from the School Support subscale of the California Healthy Kids Survey (CHKS; WestEd, 2005) and measures children’s sense of connectedness with adults at school (Oberle et al. 2014). The statement “At my school there is a teacher or another adult,” preceded the items: “Who really cares about me,” “Who believes that I will be a success,” and “Who listens to me when I have something to say” ( $\alpha = .71$ ,  $n = 3026$ , Grade 4, Canada) (Schonert-Reichl et al. 2013, p. 354). The subscale was measured on a 4-point scale, 0 (*Not at all true*) to 3 (*Always true*). A higher answer indicated higher perceived connectedness with adults in the school environment. It was expected that children who reported a higher level of adult connectedness would have a lower score on the *experience* factor and a higher score on the *heard* factor supporting convergent validity. This subscale of the MDI was included in Phase 1 of our research and consistent with a recommendation that each scale contain a minimum of four items to identify an effective factor (Russell 2002) an additional item “Who I can talk to about my problems” was added. Results showed an equivalent internal consistency of the three and four item sub-scales:  $\alpha = .888$  (original three-item scale); and  $\alpha = .889$ , CR = .896 (four-item scale). The four-item scale was used in Phase 2.

## **Statistical Analyses**

**Phase 1.** First the fit of the items to a structure of student’s experience of teacher support was assessed. This was assessed using a method of exploratory factor analysis (EFA) in SPSS with Principal Axis Factoring (PAF) and promax rotation as recommended by Osborne and Costello (2009). Missing data were deleted listwise.

A minimum Kaiser-Meyer-Olkin (KMO) of .60 suggested sufficient shared variability among items to produce a reliable factor (Beavers et al. 2013). The 2-factor structure was confirmed by parallel analysis, scree plot, and eigenvalue criteria ( $\geq 1$ ) (Osborne and Costello 2009). Second, confirmatory factor analysis (CFA) was conducted using MPlus statistical software using the WLSMV estimator to account for small sample sizes and binary variables (Byrne 2012; Muthén and Muthén 2015). Model fit was evaluated by: normed chi-square value  $< 3$  (Kline 2005), root-mean-square error of approximation (RMSEA  $< .08$ , or a 90% confidence interval that straddles .05) (Byrne 2012), comparative fit index (CFI  $> .90$ ) and the Tucker Lewis Index (TLI  $> .90$ ) (Marsh et al. 2011). Factor loadings above .50 were considered good and were accepted if they were above .30 (Osborne and Costello 2009). Community ( $R^2 > .40$ ) supported the relatedness of an item to the other items in the factor (Osborne and Costello 2009). In the EFA, internal consistency of each scale was evaluated by Cronbach's alpha ( $\geq .70$ ); in the CFA, the internal consistency was evaluated by the composite reliability index Raykov's (CR) (1997).

**Phase 2.** Data were initially assessed using SPSS for frequencies and missing data, distribution, and tolerance (values  $< .20$  indicate multicollinearity) (Allen and Bennett 2010). First, CFA of the hypothesized 2-factor model of the new instrument was conducted in MPlus using the WLSMV estimator to account for small sample size, binary variables, and non-normal distribution of data (Byrne 2012). There were no missing data; fit indices were reported as for Phase 1. As recommended by Marsh et al. (2011) cross-loadings among subscales in measures of bullying appear to be a norm, items were therefore free to cross load onto other factors. Modification indices (MIs) were subsequently examined in order to identify cross loading of items and improve the fit of the CFA (Marsh et al. 2011). It was important to ensure that modifications to the model made sense based on the evidence based literature (Muthén and Muthén 2015).

Third, the invariance of the factor structure across grades (grade 4, and combined grades 5 and 6 to account for lower student numbers in these grades at some participating schools), schools (School 2, and School 3), and gender (female, male) was assessed with multi group analyses using robust maximum likelihood (MLM) to account for non-normal distribution of data (Byrne 2012). Consistent factor structure was implied by a corrected  $\Delta$ MLM chi-square ( $\Delta\chi^2$ ) value that was

non-significant ( $p > .05$ ) (Byrne 2012). A configural model incorporated the baseline model for each group, multiple group analysis then tested for equivalence of factor loadings, residual covariance, and factor variance.

Fourth, construct validity of the instrument was assessed by reporting the correlation between the *experience* factor and the MDI *Adults at School* factor, and the *heard* factor and the MDI *Adults at School* factor, calculated in MPlus using the WLSMV estimator. Fifth, test-retest reliability was assessed using a subset of data from one school. The scores from each scale were summed in SPSS to create new variables *experience test*, *experience retest*, *heard test*, and *heard retest*. The assumption of normality and linearity was met for the *experience* factor but not the *heard* factor, the correlation was therefore reported by the Spearman's rho ( $r_s$ ) (McCrae et al. 2011).

## Results

### Phase 1

Sixty-nine students (62%) responded “Yes” to the stem question “Have you ever told a teacher when another student has been mean to you or someone else on purpose?” These 69 students were then prompted to identify which items in a list of 13 items corresponded to the teacher's subsequent behavior. The frequency of student responses to each item of the SETTS is shown in Table 1. As Table 1 shows, the most frequent response (76.8%) was to each item “It got solved,” and “The teacher helped me.” The least frequent response (20.3%) was to the item “The teacher thought it didn't happen”.

A clear 2-factor solution emerged in SPSS explaining 42.3% of the variance among all items. The KMO of .768 suggested sufficient variability among items to produce a reliable factor solution (Kaiser 1974, p. 35). Table 1 reports the loadings of items onto their respective factor (factor loadings .508 to .771). CFA of the 2-factor structure was run on the resulting 11-item scale. A model of good fit resulted ( $normed \chi^2 = 1.31$ , RMSEA = .067 [95%CI .00 to .111], CFI = .966, TLI .957). Factor loadings were .625 to .885 for Factor 1 (CR = .925) and .729 to .906 for Factor 2 (CR = .885). The lowest communality of an item was found for Item 1 “The teacher thought it was just an accident” ( $R^2 = .39$ ), the  $R^2$  of all other items ranged

between .43 (Item 6) and .82 (Item 2). Factor 1 was named *experience*, and Factor 2 was named *heard* (Table 1).

**Table 1. EFA Frequencies and Factor Loadings of the SETSS**

	Frequency (n=69)		Factor		Item
	Frequency	Percent	<i>Experience</i>	<i>Heard</i>	
Item 1	37	53.6	.508		The teacher thought it was just an accident
Item 2	53	76.8		.771	It got solved
Item 3	41	59.4	.550		The other student got away with it by telling a lie
Item 4	22	31.9	.601		The teacher wasn't able to help
Item 5	53	76.8		.683	The teacher helped me
Item 6	26	37.7	.526		The teacher thought we should ignore it
Item 7	24	34.8	.711		Telling the teacher made it worse
Item 8	50	72.5		.657	Telling the teacher made it better
Item 9	18	26.0	.685		The teacher didn't believe me
Item 10	15	21.7	.650		Everyone just got into way more trouble
Item 11	28	40.6	.592		My friends excluded me because I told the teacher
Item 12	14	20.3	.660		The teacher thought it didn't happen
Item 13	21	30.4	.666		The student who was mean to me is popular with the teachers, so nothing was done about it

Note: EFA factor-loading in SPSS, values below 0.30 are suppressed. Children answered as many items as were relevant to their experience.

## Phase 2

A total of 230 of 337 (68%) participants answered the SETSS having reported that they had told a teacher “that another student had been mean.” The frequency of response to each item is listed in Table 2. The most frequent response (81.3%) was to the item “The teacher listened to me,” the least frequent response (13%) was to the item “The teacher said it didn’t happen.”

First, CFA revealed adequate fit of the hypothesized model (*normed*  $\chi^2 = 2.23$ , RMSEA=.073 [90%CI = .056 to .091], CFI= .913, TLI= .892). Factor loadings for the eight-item *experience* factor were between .528 and .861 (CR = 0.89), and for the four-item *heard* factor ranged between .643 and .864 (CR = .864) (see Table 2). Because the 90% CI for the RMSEA did not contain a value of .05 the Modification Indices were reviewed, revealing a regression of Item 4, “The teacher helped me” on the *experience* factor and a cross loading of the *experience* factor by Item 4 (MI =

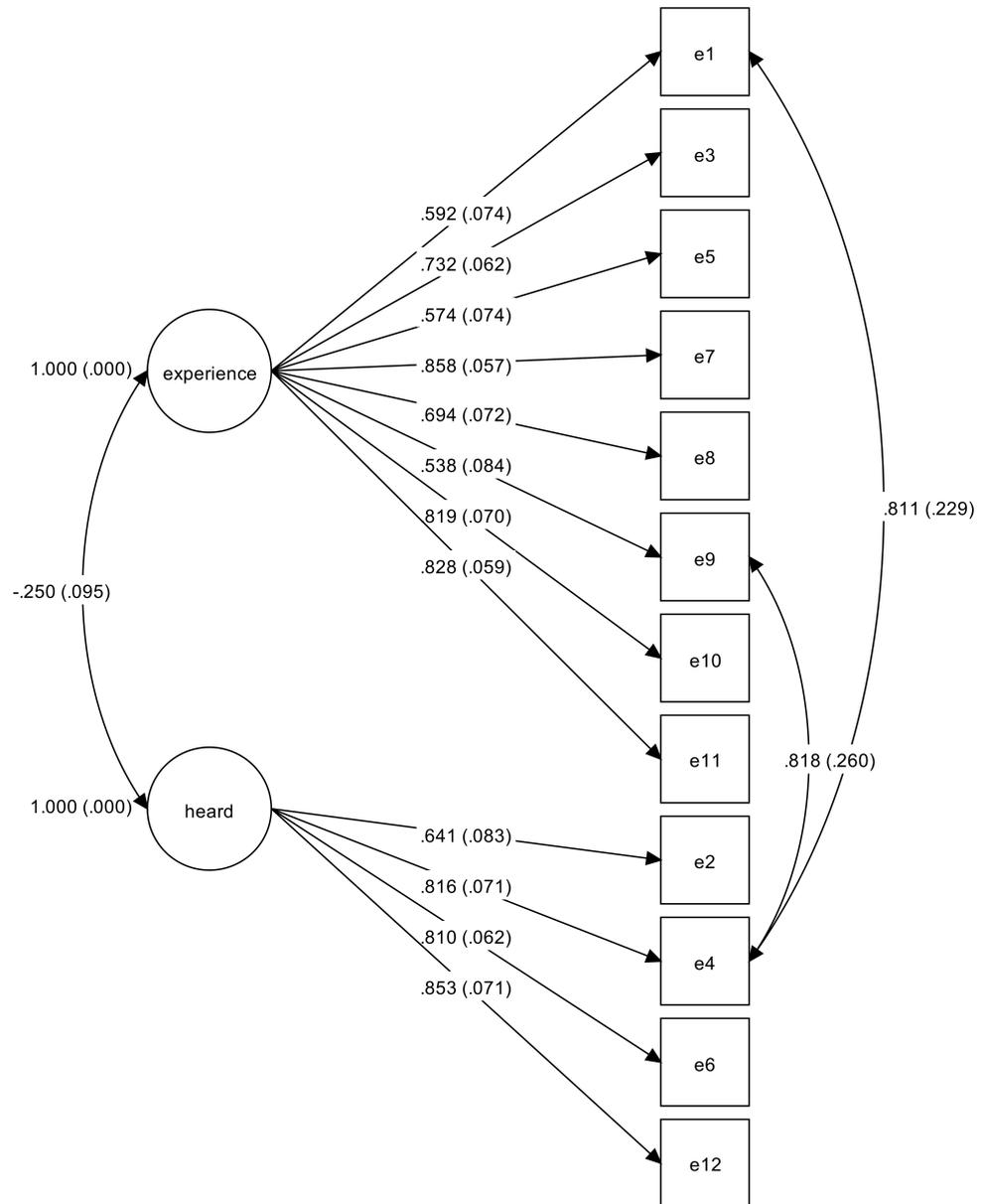
21.34). Further inspection of the MIs showed a covariance of Item 9, “My friends excluded me because I told the teacher” with Item 4 (MI = 11.84).

**Table 2. CFA Factor Loadings for the SETSS**

Item	Frequency (n=230)		Factor Loadings	
	Frequency	Percent	<i>Experience</i>	<i>Heard</i>
1. The teacher said it was just an accident	101	43.9	.582	
2. It got solved	161	70		.643
3. The other student got away with it by telling a lie	104	45.2	.731	
4. The teacher helped me	175	76.1		.795
5. The teacher said we should forget about it	96	41.7	.582	
6. Telling the teacher made it better	148	64.3		.819
7. The teacher didn't believe me	46	20	.861	
8. Everyone just got into more trouble	56	24.3	.697	
9. My friends excluded me because I told the teacher	81	35.2	.528	
10. The teacher said it didn't happen	30	13	.822	
11. The teacher really likes the student who was mean to me, so nothing was done about it	43	18.7	.828	
12. The teacher listened to me	187	81.3		.864

Note: Frequency = the number of participants who answered that they had told the teacher that a child had been mean ( $n=230$ ) and subsequently reported that this “has happened to (me)”, children answered as many items as were relevant to their experience; Standardized loadings reported, all loadings are significant at the 5% level.

Second, Item 4 was allowed to covary *with* Item 9 resulting in acceptable model fit ( $n = 230$ ): *normed*  $\chi^2 = 2.07$ , RMSEA = .068 [90% CI = .05 to .086], CFI= .927, TLI=.907. Further review of MI's revealed a covariance of Item 4 *with* Item 1 “The teacher said it was just an accident” (MI = 11.75), this covariance was added to the model resulting in improved model fit (*normed*  $\chi^2 = 1.89$ , RMSEA = .062 [90% CI = .043 to .081], CFI = .940, TLI .923) (See Figure 1). Figure 1 shows the factor loadings of each item onto the respective factor, and the correlations of Item 4 onto Items 1 and 9. The theoretical plausibility of these modifications is addressed in the discussion.



**Fig. 1. Modified Factor Structure of the SETSS.** The curved arrow on the left represents the correlation between factors, the straight arrows represent the factor loadings of each item, e1= item 1. The curved arrows on the right of the model represent the covariance of items.

Third, invariance testing was conducted on the two-factor model that was confirmed by CFA in the first step of data analysis. The model identified in CFA was used because it displayed a good fit to each configural model that was used for invariance testing. Invariance testing showed consistent results over school Grade 4 and Grades 5-6, and over Schools 2 and 3, and by gender (see Table 3). The configural model for invariance by school, however, did not include Items 2 “It got solved” and 5 “The

teacher said we should forget about it” because these items did not fit the model for School 2.

**Table 3. Multigroup Analysis of the SETSS**

Model	$\chi^2$	df	CFI	TLI	No. FParms	RMSEA	Invariance constraints	$\chi^2$ SCF	CD	$\Delta$ MLM $\chi^2$ diff	df diff	p
Total group analysis												
COVERT- CFA (n=230)	95.882	53	.908	.886	37	.059 [.040 .078]	MLM estimator					
Multiple group grade invariance (Grade 4 and combined Grades 5_6)												
Grade 4 (n=104)	73.267	53	.912	.890	37	.061 [.018 .092]						
Grade 5_6 (n=126)	70.884	53	.928	.910	37	.052 [.000 .081]						
MG Grade - M1	144.150	106	.920	.900	74	.056 [.030 .078]	Configural model	1.0792				
- M2	157.714	116	.913	.900	64	.056 [.031 .077]	Factor loadings constrained equal	1.0965	1.2799	13.57	10	.19
- M3	159.856	119	.896	.905	61	.055 [.029 .075]	Invariance of the structural model	1.0945	1.0172	1.995	3	.57
Multiple group school invariance												
<i>Experience by e1 e3 e7 e8-e11; Heard by e4 e6 e12 - model fit School 2.</i>												
School 2 (n=61)	43.242	34	0.938	.918	31	.067 [.000 .121]						
School 3 (n=106)	40.703	34	.954	.939	31	.043 [.000 .086]						
MG School - M1	83.998	70	.953	.939	60	.049 [.000 .084]	Configural model	1.0435				
- M2	84.039	77	.976	.972	53	.033 [.000 .072]	FL	1.0740	1.3790	1.8898	7	.97
- M3	86.434	80	.978	.976	50	.031 [.000 .070]	Invariance of the structural model	1.0736	1.0633	2.3865	3	.50
Multiple group gender invariance												
Girl - EFA	63.164	52	.956	.944	38	.043 [.000 .077]	No constraints C12 on C11					
Boy - EFA	64.381	52	.931	.913	38	.051 [.000 .083]	No constraints C4 on COVERT					
Girl - CFA (n=114)	73.840	53	.918	.898	37	.059 [.019 .089]						
Boy - CFA (n=115)	77.309	53	.895	.869	37	.063 [.028 .092]						
MG Gender - M1	151.033	106	.908	.885	74	.061 [.037 .082]	Configural model	1.0660				
- M2	164.893	116	.900	.886	64	.061 [.038 .081]	Factor Loadings constrained equal	1.0753	1.1739	13.8926	10	.18
- M3	176.750	119	.881	.868	61	.065 [.044 .085]	Invariance of the structural model	1.0801	1.2657	0.6253	3	.89

Note: MG = Multiple group, M1 = model 1,  $\chi^2$  indicates MLM chi-square value,  $df$  = degrees of freedom, CFI = confirmatory fit index, TLI = Tucker-Lewis index, No. FParms = Number of free parameters, RMSEA = Root-mean-square error of approximation [90% Confidence Interval],  $\chi^2$  SCF = scaling correction factor, CD = difference test scaling correction,  $\Delta$  MLM = Satorra-Bentler scaled  $\chi^2$  difference test,  $df$ diff = difference in degrees of freedom between the nested model and the comparison model,  $p$  (significant at 0.05). There were no residual invariances to constrain equal in the configural model, and no common residual covariances in M2. In the invariance model the factor variances and covariances were constrained equal.

Fourth, the *experience* factor had a significant and negative correlation with the *Supportive Adults at School* subscale of the MDI (correlation = -.224,  $p$  = .020) supporting convergent validity. In addition a significant and positive correlation was found between the *heard* factor and the *Supportive Adults at School* subscale of the MDI (correlation = .385,  $p$  < .001) (*normed*  $\chi^2$  = 1.84, RMSEA = .061 [90%CI .047 to .074], CFI = .933, TLI .920) supporting concurrent validity. Test-retest reliability of the *experience* factor was strong ( $n$ =31),  $r_s$  = 0.733 ( $p$  < .001), and was demonstrated with the *heard* factor ( $n$ =30),  $r_s$  = 0.496 ( $p$  = .005) (Allen and Bennett 2010).

## Discussion

The purpose of this research was to explore the latent factor structure of the Student Experience of Teacher Support Scale (SETSS) and assess the reliability and construct validity of the new self-report instrument designed to measure children’s experience when they tell a teacher that a student has perpetrated aggression. Our

research was premised on children's report that aggressive behaviour is harmful because it is often hidden from teachers and other adults (Cross et al. 2009). Furthermore, children report that they are not confident in telling a teacher or other adult about their experience of being victimized (Oliver and Candappa 2007).

The items included in the instrument evolved from a thematic analysis of focus group discussions with children ( $n=22$ , age 9 to 12) (Nelson et al. 2018). The two-factor model of a 12-item instrument was evaluated in Phase 2 of the research where it showed strong factor loadings and composite reliability. The first factor represents children's *experience* associated with telling the teacher and the second represents children's feeling of being *heard* by the teacher. The *experience* category reflected a range of items that, based on children's report in focus groups, could be perceived by children as a feeling of not being heard. An examination of the covariance between some items of the *heard* factor with the *experience* factor, however, revealed the multifaceted nature of those items. Being heard did not always result in a positive experience over the longer term. For example, friends subsequently excluded some children who felt "heard" by the teacher. Some children who reported an experience of being told by the teacher, "it was just an accident" also reported that the teacher had helped them. The name "heard" was chosen because a prerequisite to a positive experience after telling the teacher was to feel heard. These issues are addressed following a discussion of the model fit.

The 90% confidence interval of the RMSEA of the two-factor model of the SETSS did not include the recommended value of .05, suggesting a limitation of model fit. The two-factor model did demonstrate reliability over time and a consistent factor structure by grade at school and across two different schools. There was however, only weak invariance by gender. As expected, convergent validity was demonstrated between the SETSS and connectedness with adults at school, the correlations were however lower than anticipated. We will discuss the weak invariance of the *experience* factor by gender and the correlations between the new instrument and the MDI, first however, we discuss the fit of Item 4, "The teacher helped me" onto the two-factor model.

The two-factor model of the SETSS was explored in MPlus consistent with the method used by Marsh et al. (2011) and Item 4, "The teacher helped me" was

allowed to covary with Item 9, “My friends excluded me because I told the teacher” resulting in acceptable model fit. A strong covariance of .776 suggested that children who reported that the teacher helped commonly reported that as a result of telling the teacher they were excluded by their friends. Similarly, 45% of students who sought help from an adult found that bullying persisted or got worse, while only 25% reported that their situation improved (Cross et al. 2009). At the ages of 8 to 12, as children move into adolescence, emotions are strongly reflected in their self-appraisal and the formation of identity (Pfeifer and Peake 2012). Persisting social isolation can result in low self-worth, self-blame, and poor mental and physical health (Laursen and Hartl 2013). The task of appropriately supporting preadolescent children’s social and emotional development is placing an increasing demand on teachers (Cunningham et al. 2016). Teachers have reported that bullying is becoming more complex and challenging to detect and deal with, and that attempts to stop the behavior can actually make it worse (Cunningham et al. 2016). Cross et al., (2011) found that almost 70% of teachers wanted more training to address aggression that is intentionally hidden from teachers. The burden of this hidden form of aggression reported by children and teachers is a strong indication that greater knowledge and understanding of these complex interpersonal processes is required to inform future management strategies.

A second covariance of Item 4, “The teacher helped me” with Item 1, “The teacher said it was just an accident” was added to the model, resulting in a strong positive association between the two items and a good fit of the two-factor model (see Figure 1). In focus group discussions, children spoke of lies told to the teacher, including the lie that intentional aggression “was just an accident” (Nelson et al. 2018). It is not possible to determine if the reported child is lying or not. It may be that the aggression was intentional and purposeful, but it may be that the victim has misinterpreted the actions of the reported aggressor. Due to their past experience some children are vulnerable; they learn to become defensive and overly sensitive to rejection (Chango et al. 2012). This vulnerability predisposes children to poor mental health outcomes associated with attribution bias and low self-worth (McDougall and Vaillancourt 2015). However, social support is protective as it mediates the automatic stress response in the brain that is linked to rejection sensitivity (Chango et al. 2012; Eisenberger et al. 2007). When adults help children who have been bullied

to understand alternative scripts through which they can respond, it can lead to reduced stress and less sensitivity (Pepler et al. 2010). Thus, the covariance of the two items “The teacher helped me” with “The teacher said it was just an accident” might reflect the appropriate emotional support of teachers for children who have responded defensively to accidental hurt. This would explain the lower communality of Item 1 ( $R^2 .39$ ).

The final modification indices that warrants discussion is the cross loading of the student *experience* factor onto Item 4 “The teacher helped me” that occurred for boys in the invariance analysis, but not for girls (see Table 3). Although rates of relational aggression between girls and boys are similar, the peer group structure of girls is generally more intimate (Casper and Card 2017). Because of the status associated with belonging to the group, girls may feel that they must stay in the popular group despite being bullied (Nelson et al. 2018). Socially integrated bullies who are popular use social intimacy with peers as a resource by which they dominate and unite their peer group, increasing power over the victim and holding control over peers through fear (Kiefer and Wang 2016). For this reason, help from the teacher might seem more inaccessible to girls than it does to boys.

We found a positive and significant correlation between the *heard* factor and the Supportive Adults at School subscale of the MDI, although the correlation was in the moderate range (.385). This correlation might reflect that the measure from the MDI focused on all adults in the school whereas the *heard* factor focused only on teachers. The SETSS measures children’s own experience after reporting aggression to the teacher (reported by victims of aggression or by peers who had tried to support the victimized child). Items identified in the *experience* subscale of the SETSS had previously emerged through qualitative analysis as influencing children’s experience of power imbalance (Nelson et al. 2018). Power imbalance is the main differentiating feature between aggressive behaviour and bullying (Rodkin et al. 2015). This supports our understanding that aggression that is covert, or hidden from the teacher, will increase the power imbalance experienced by children who are bullied.

Power imbalance is relational, it occurs through social interactions within the context of the group and in response to cultural norms (Thornberg 2018). This includes the culture of the school or classroom, for example bullying victimization is

minimized when classroom teachers demonstrate respect and care for children (Thornberg et al. 2018). However, the authors of recent qualitative studies have found that some teachers consider bullying to be influenced by individual characteristics of children, either those who are bullied or those who bully others (Rosen et al. 2017; Thornberg 2018). This can result in teachers failing to be aware of aggression that is perpetrated by children of high social status, or failing to support children who report bullying (Rosen et al. 2017). Veenstra et al. (2014, p. 1141) recommend that to develop successful interventions it is necessary to understand how teachers respond to bullying “in the eyes of students,” and how this affects bullying prevalence. The SETSS provides a measure to understand how teachers respond to bullying from the perspective of students. Each question was identified through qualitative research with students. We agree with recent recommendations for interventions to focus on educating teacher and community members on the serious effects of bullying, with the aim of increasing awareness and empathy and reducing the harm of bullying (Thornberg et al. 2018; VanZoeren and Weisz 2018). The SETSS may be used in conjunction with measures of bullying to investigate this further.

### **Limitations and strengths**

Ideally, Phase 2 would have contained a larger sample of participants. However, many schools had already committed to other research and their calendars did not have room for participation in this study. The active consent rate of 55% has been described as “typical” for research in large urban schools (Kiefer and Wang 2016, p. 61). Because participants answered the new instrument in response to self-report of having told a teacher about an aggressive incident, the instrument was completed by 230 participants, limiting the ability to test the invariance model across each school grade and each participating school because of a lack of power. Invariance testing did however give support for a consistent factor structure across two different schools, and between grade 4 and combined grade 5 and 6 (children move to secondary school at grade 7 in Western Australia).

### **Conclusion**

The findings of this study support our understanding that covert aggression increases the power imbalance perceived by the victim by removing teacher support. We have demonstrated that the SETSS is a valid and reliable instrument that can be used in

conjunction with other measures to estimate the degree to which students experience teacher support in the context of covert aggression and bullying. The SETSS resulted in two subscales, experience and feeling heard by the teacher. Factor analysis demonstrated a negative correlation between each subscale. A covariance between items suggested that as a result of telling the teacher children were commonly excluded by friends. It is anticipated that the SETSS will be used in future studies so that its credentials as a useful tool can be consolidated. At the very least, we hope that this study will draw the attention of other researchers to the role that teachers play in covert bullying so that they, too, may seek to find new ways to measure this aspect of the student-teacher relationship. It is important to understand the needs of teachers, to equip teachers with knowledge and understanding of student behavior, as well as strategies to give students appropriate support (Garandean et al. 2016). The eventual goal is reduce the harm caused by bullying behavior in schools so as to maximize the health and wellbeing of all students.

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## 6 THE SCALE OF PERCEIVED POWER IMBALANCE

This chapter presents the sixth manuscript. This manuscript titled “Measuring 8 to 12 year old children’s self-report of power imbalance in relation to bullying:

Development of the Scale of Perceived Power Imbalance” is authored by Helen Nelson, Garth Kendall, Sharyn Burns, Kimberly Schonert-Reichl, and Robert Kane.

This manuscript was accepted by BMC Public Health on 26<sup>th</sup> July 2019, the formatted version is not yet available. The accepted version is included as a chapter in this thesis (please see Appendix A.5 for the permission letter).

### 6.1 Abstract

**Background.** While power imbalance is now recognised as a key component of bullying, reliable and valid measurement instruments have yet to be developed. This research aimed to develop a self-report instrument that measures power imbalance as perceived by the victim of frequent aggressive behavior.

**Methods.** A mixed methods approach was used (468 participants, Grade 4 to 6). This paper describes the exploratory ( $n=111$ ) and confirmatory factor analysis of the new instrument ( $n=337$ ), and assessment of reliability and construct validity.

**Results.** A 2-factor model represented *physical* and *social* aspects of power imbalance ( $n=127$ : normed chi-square = 1.2, RMSEA= .04, CF1= .993). The social factor included constructs of group and peer valued characteristics.

**Conclusions.** This research will enhance health and education professionals understanding of power imbalance in bullying and will inform the design and evaluation of interventions to address bullying in children.

**Keywords:** Bullying; power imbalance; measurement; school health; preadolescence

### 6.2 Background

This paper discusses the development and validation of the Scale of Perceived Power Imbalance (SPPI), an instrument designed to measure children’s experience of power imbalance associated with bullying. The definition of bullying provides a basis for the development of the measurement tool (Bauman, Underwood, & Card, 2013). For

the purpose of this study, school bullying is defined as a form of aggression that is distinguished by *repeated* physical or emotional harm within a relationship of *power imbalance* (Cascardi et al., 2014). This differs to the definition provided by Olweus (1996), who included *intent* to harm in the definition of bullying. The criteria of intent differentiates purposeful acts of aggression from accidental harm (Bauman et al., 2013). It has been proposed that intentionality is understood within the context and goals of bullying: that harm is intended by the perpetrator, is perpetrated within the social dynamic of the peer group, and is perceived by the victim of bullying (Volk et al., 2017). Based on a legal framework, it has been proposed that the judgement of intent rests on the likelihood that a reasonable person would foresee that aggressive behavior would result in harm (Bauman et al., 2013; Smith, del Barrio, & Tokunaga, 2013). This criteria is difficult to apply as intent is not easily observed (Bauman et al., 2013; Nelson et al., 2018). For these combined reasons, the criteria of intent is not included in the definition of bullying for this paper.

The concept of repetition as an essential criteria of bullying has also been questioned by researchers, because single acts of aggression can provide an ongoing threat resulting in long term physical or emotional harm (Finkelhor, Turner, & Hamby, 2012; Smith et al., 2013). However, the uniform definition of school bullying as unwanted aggression that is repeated and involves a power imbalance is accepted internationally (Gladden, Vivolo-Kantor, Hamburger, & Lumpkin, 2014; United Nations Educational, Scientific and Cultural Organization, 2019). Consistent with this, repetition of aggression has been empirically associated with an experience of significantly greater threat and harm by targeted children than those who experienced aggression without repetition (Esbensen & Carson, 2009; Hunter, Boyle, & Warden, 2007; Ybarra, Espelage, & Mitchell, 2014). Children who are bullied perceive that they do not have the power to stop repeated aggression, contributing to an increase in harm (Ybarra et al., 2014). The repeated acts of aggression that occur in a power imbalanced relationship place a load on neuroendocrine pathways that respond to stress, increasing the risk of poor health, learning and developmental outcomes (Swearer & Hymel, 2015). Outcomes associated with bully victimisation include fear, loss of hope, anxiety, depression and suicidal ideation (Bonanno & Hymel, 2010). The core concept that differentiates bullying from aggression is, therefore, the abuse of power by the perpetrator, and the experience of a power

imbalance by the victim (Volk et al., 2017). Despite the importance of the concept of power imbalance in bullying research, it is reported in recent literature that power imbalance has not been measured effectively, resulting in the inaccurate reporting of aggression as bullying (Rodkin et al., 2015).

Reports of bullying begin to increase in grade 4 to 6 (age 8 to 12) as children develop the cognitive capacity for self-reflection and place increasing value on social hierarchies (Andreou, 2006; Eccles, 1999). The concept of power imbalance as central to the definition of bullying has been driven by researchers, and children themselves may not consider repetition or power imbalance when talking about bullying (Cuadrado-Gordillo, 2012). They are, therefore, likely to report all acts of aggression as bullying (Vaillancourt et al., 2008). With this in mind, researchers have sought to include the constructs of repetition and power imbalance in their self-report bullying instruments. Some researchers include a definition and ask children to consider the definition while answering questions (Olweus, 2013). There is evidence that many children fail to apply the definition of bullying correctly when answering the questions that follow and are prone to report aggressive behavior as bullying (Rodkin et al., 2015). Other children may avoid answering questions truthfully when they read the word *bully* within the definition because of the stigma and shame associated with being a victim of bullying (Kert, Coddington, Tryon, & Shiyko, 2010). In this way the definition-based approach is contrary to conventional self-report measurement in psychology where questions ask about very specific behaviors and experience to discourage bias associated with respondents giving socially-desirable answers (Achenbach, 2013).

A second method of assessment seeks to increase the accuracy of measurement by asking children who report frequent victimisation direct questions to assess perceived power imbalance. This is referred to as the behavioral-based method of assessment (Felix et al., 2011). For example, Hunter et al. (2007) aimed to differentiate bullying from victimisation using three individual items to determine if the aggressor was physically stronger, in a bigger group, or more popular than the child completing the survey (ages 8-13). Concurrent and discriminant validity of the instrument were supported; students who experienced power imbalance perceived more threat and loss of control, and were at greater risk of depression. Similarly, the Californian Bully Victim Scale (CBVS) included three items to measure power

imbalance from the perspective of the victim, asking “how popular, smart in schoolwork, and physically strong” the aggressor was (Felix et al., 2011, p. 240). Predictive validity was established; students who experienced power imbalance reported lower connectedness to school, life satisfaction, and hope. Five items were added to the CBVS: “how likeable, good looking, athletic, old, and how much money” the aggressor had in comparison to the victim (Green et al., 2013). These authors assessed the validity of a definition versus behavioral approach (grade 5 to 9) by comparing responses to one definition-based item from the Olweus Bullying Questionnaire (OBQ) (Olweus, 1996). Power imbalance was not significantly associated between the two measures. The authors concluded that the definition-based method might not detect some forms of power imbalance (Green et al., 2013). Notwithstanding, the accuracy of each item to detect the power differential using the behavioral approach remains unclear (Malecki et al., 2015). Cornell and Limber (2015) claim that a satisfactory method to measure the power differential is yet to be identified.

Volk et al. (2017) recommended that new instruments intended to measure bullying are based on insights gained from qualitative studies, and that specific forms of power are presented and validated. We have designed an instrument that uses this approach to measure the individual perception of power imbalance associated with repeated victimisation at the level of the dyad. Our approach was innovative in that we worked with children aged 8 to 12 years to design an instrument and used factor analysis to explore the psychometric fit of items designed to measure the power imbalance component of bullying. The new instrument was implemented in an online survey.

The aim of this research was to establish the reliability and validity of the new instrument, named the Scale of Perceived Power Imbalance (SPPI). On the basis of previous work (Burns, 2007) we anticipated a negative association between perceived peer support and perceived experience of power imbalance by children who reported frequent victimisation. We expected to find a moderate correlation of the SPPI with an existing measure of bully victimisation, and that the SPPI would demonstrate reliability over time and invariance by gender, grade, and school.

## 6.3 Methods

### 6.3.1 Participants

Quantitative data collection occurred for Phase 1 in November 2015 and for Phase 2 in May and June 2016. Participants for each phase of the research were children in Grades 4 to 6 (aged 8 to 12 years) who were purposively sampled from low fee-paying private, independent schools in metropolitan Perth, Western Australia (ACARA, 2015). In Phase 1 participants were recruited from all eligible students ( $N = 174$ ) via an information letter sent to parents from one school. Active consent was received for 121 students, of these 111 (64%) students were at school on the day of data collection and completed the online survey (59% female, 41% male). Thirteen percent of participants spoke a language other than English at home.

In the second phase of the research letters were sent to the principals of 10 primary schools inviting participation in the research. Of these, four principals agreed for their school to participate (Nelson, Kendall, et al., 2019). Participants were recruited from all eligible students ( $N = 642$ ) via an information letter sent home by the school. Active consent was received for 351 participants, 14 students were absent on the day of data collection and one student did not assent to participate, therefore, a total of 337 (52%) students completed the online survey (51% male, 49% female). 24% of participants spoke a language other than English at home. The principal from one participating school ( $N=174$ ) was asked and agreed for data collection to include a retest after two weeks, active parental consent was received for 34% of students ( $n=58$ ), retesting was undertaken after 2 weeks, 50 of 58 participants (86%) completed the instrument a second time.

### 6.3.2 Procedure

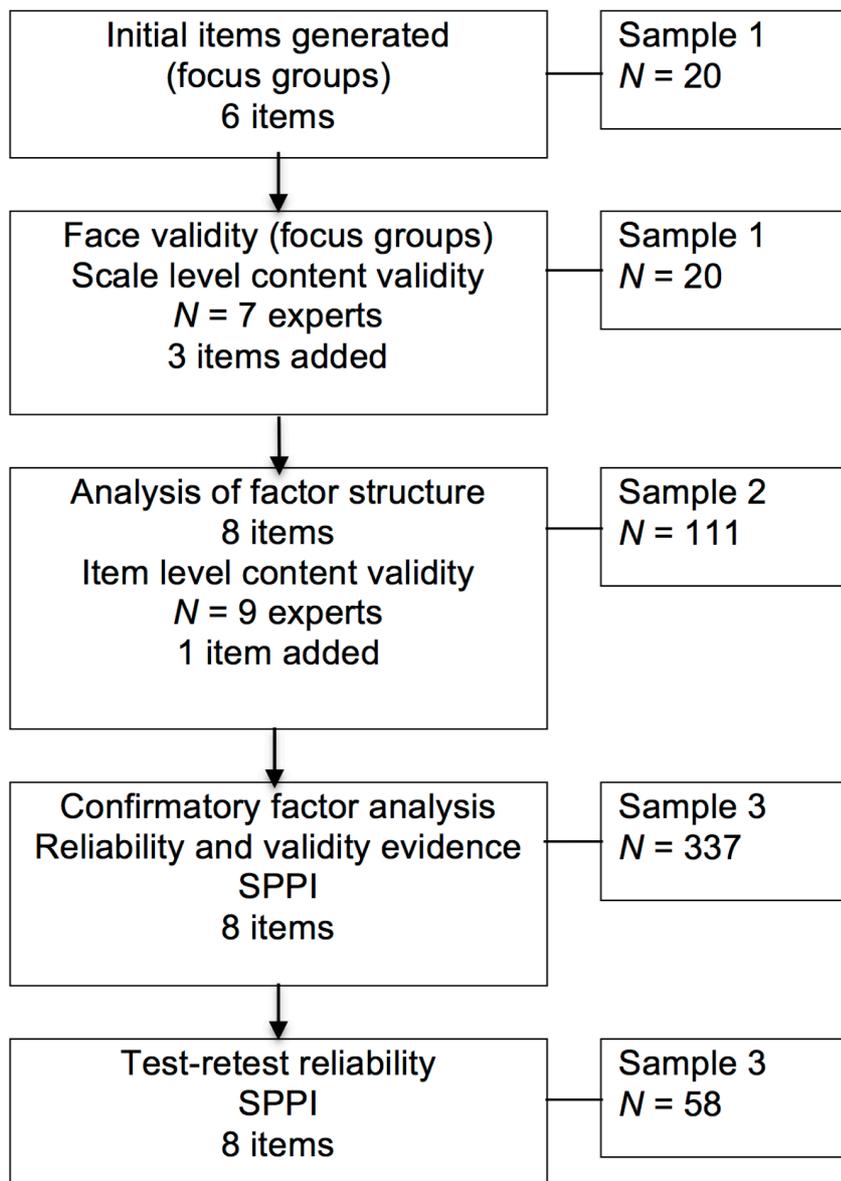
Ethics approval was obtained from the Curtin University Human Research Ethics Committee (RDHS-38-15) and the Principal of each participating school. Written informed consent was gained from the parents/guardians of the minors included in this study. Each school was informed in writing of the process, and was asked to arrange for immediate care by the school psychologist or chaplain should any child become upset as a result of answering the online questionnaire.

An online questionnaire was administered to participants in each school on one occasion in a classroom setting. On the day of data collection, the first author

explained the research and the procedure to each group of students and answered any questions. Following this, students simultaneously completed the questionnaire. A research assistant was present to help children who had difficulty with reading and comprehension. A record of student questions was recorded in a research diary. A description of the measurement instruments included in the questionnaire is presented in the following section.

### 6.3.3 Measures

*Design of the new Scale of Perceived Power Imbalance (SPPI).* The scale was developed for the local context using qualitative methodology (Nelson, Burns, et al., 2019). The scale was displayed in response to children's report of frequent victimisation and followed the stem question, "When these things happened to you was the mean student . . ." Six items were assessed for face validity by children, and for content validity by reviewers with expertise in education, psychology, social work, and public health (see Figure 6.1 and Table 6.1). Items included "good looking" and "in the most popular group." Universal agreement of scale-level content validity was given by the expert reviewers using the method recommended by Polit and Beck (2006). Two additional items were recommended by children who assessed face validity; "much stronger than you," and "bigger than you," and one additional item "with a group of students" was recommended at expert review (see Table 6.1). In Phase 1 the 9-item SPPI was displayed in response to children's report of frequent aggression by the Adolescent Peer Relations Instrument (APRI) (Parada, 2000) or the Personal Experiences Checklist (PECK) (Hunt et al., 2012) through the *display logic* function of Qualtrics™ online survey software. The binary response was 0 (*no*) or 1 (*yes*).



**Figure 6.1 Stages of Development of the New Measure. *N* = number of participants, SPPI = Scale of Perceived Power Imbalance.**

**Table 6.1 Item Development for the SPPI**

	Sample 1 <i>n</i> = 20 Thematic analysis	Sample 1 <i>n</i> = 20 Face validity	Expert review <i>n</i> = 7	Sample 2 <i>n</i> = 111 Expert review <i>n</i> = 9	Sample 3 <i>n</i> = 337
Item 1	“Really smart”			“Really clever”	
Item 2	“Good looking”				
Item 3	“Older than you”				
Item 4	“Good at sport”				Item discarded
Item 5	“Trying to be more popular”				Item discarded
Item 6	“In the most popular group”				
Item 7		“Much stronger than you”			
Item 8		“Bigger than you”			
Item 9			“With a group of students”		
Item 10				“Tougher than you”	

*Note:* Table 6.1 presents an outline the evolution of items included in the SPPI. Items 1 and 2 loaded onto the factor social power with acceptable factor loading ( $> .32$ ),  $R^2$  however suggested 17.5% of the variance of Item 1 and 22.5% of the variance of Item 2 was explained by the social power factor.

Exploratory factor analysis (EFA) ( $N = 111$ ), revealed a 2-factor solution, 3-items represented *physical power* and 5-items represented *social power*. The data analytic approach and results of EFA are documented in the statistical analysis and results section. The item “really smart” was reworded to “really clever” because the factor loading was less than 0.5. An additional item “tougher than you” was added to form a 4-item subscale representing physical power (see Table 6.1). Expert reviewers (2 psychologists, 7 teachers) assessed the item content validity index (I-CVI) of the new instrument. The I-CVI of the four-item *physical power* factor was within the recommended range of .78 and 1.0 (Polit & Beck, 2006). The I-CVI of three items of the *social power* factors were below the recommended minimum of .78: “good at sport” (.55) and “really clever,” “good looking” (.67). Items were based on theory and were designed with children, who are considered experiential experts and have a right to be heard (UNICEF, 1989). This gave a priori evidence to keep the items unless repeated empirical testing found a statistically weak relation of the item to the factor (Bollen, 2011).

In Phase 2 the SPPI was positioned in the online questionnaire following the APRI (Parada, 2000). The SPPI was included twice in the questionnaire and followed a frequency of victimisation of *2 or 3 times a month* as reported by the APRI; specifically the combined APRI verbal and physical victim scales (representing overt victimisation), and the APRI social victim scale. The items of the APRI and the stem question are worded to capture the perceived goal of intent to harm, or feeling of hurt. This differentiates aggression from playful teasing.

*Adolescent Peer Relations Instrument (APRI)*. The APRI (Parada, 2000) was developed in Australia. Each six-item scale measures verbal, physical, and social victimisation respectively and has demonstrated a clear factor structure and validity (Marsh et al., 2011). The APRI was reliable with primary school aged children (Grade 5, 6;  $\alpha = .81$  to  $.90$ ) (Finger, Yeung, Craven, Parada, & Newey, 2008). Following review of the instrument by children and an expert panel the wording of two items were adapted: “I was ridiculed” was changed to “students teased and made fun of me”, and “my property was damaged on purpose” was changed to “my property was hidden, taken or damaged on purpose.” A seventh item “a student said mean things behind my back” was added to the social victim scale to reflect language used by children in focus groups. The adapted 19-item APRI victimisation instrument was answered using a six-point scale from 0 (*never*) to 5 (*every day*), responses of 4 and 5 were coded together (*several times a week/everyday*) to match the OBQ. Cronbach’s alpha scores were acceptable for each scale (.86 to .91) in the EFA research phase.

*Personal Experiences Checklist (PECK)*. The PECK was developed in Australia to measure children’s experience of being bullied by self-report ( $n = 647$ , age 8 to 15) (Hunt et al., 2012). The PECK did not define bullying and did not include a measure of repetition, intent, or power imbalance. The authors observed “it is arguable whether these elements are adequately assessed in any current measures of bullying” (Hunt et al., 2012, p. 164). Items were simple to read and relevant to children of eight years of age. Items included, “other students said mean things behind my back” and “other students teased me about things that aren’t true” (Hunt et al., 2012, p. 164). Children who responded 0 (*sometimes*) to 4 (*most days*) to any item on the PECK verbal-relational scale answered the new power imbalance

instrument in Phase 2. Cronbach's alpha of the relational-verbal scale in this phase of the research was good ( $\alpha = .94$ ).

*Olweus Bullying Questionnaire (OBQ)*. The OBQ (Olweus, 1996) is used to report prevalence rates of bullying victimisation in schools. A definition of bullying precedes the item, "How often have you been bullied at school in the last few months?" The response is coded on a five-point scale: 0 (*I haven't been bullied at school in the past couple of months*) to 4 (*Several times a week*). The screening question classifies non-involved victims of bullying quite accurately (specificity of 94.3%) but is not good at identifying true victims (sensitivity of 56.3%) (Vaillancourt et al., 2010). Convergent validity of the new instrument was assessed with the OBQ screening question. The rates of bullying reported by multiple items are approximately double that of the single OBQ question (Vaillancourt et al., 2010). The OBQ was placed last in the questionnaire so that children were not primed to think about bullying when answering behavior-based questions (Huang & Cornell, 2015).

*Perceptions of Peer Support Scale (PPSS)*. The PPSS (Ladd, Kochenderfer, & Coleman, 1996) measures children's perception of friendships at school, and was included to measure the discriminant validity of the SPPI. Items are scored on a 3-point scale, 0 (*No*) to 2 (*A lot of the time*). A higher score indicates higher perceived peer support. The reliability of the PPSS with Grade 6 children in Western Australia was high ( $\alpha = .92$ ,  $n=1163$ ) (Burns, 2007). Perceived peer support predicted the regular bullying ( $p < .05$ ) and occasional bullying ( $p < .001$ ) of other students. For example, children who reported that they bully others were more likely to answer that someone would choose them on their team "lots of times" than "sometimes" or "never" (Burns, 2007). We therefore expected that children who report victimisation with power imbalance would experience low levels of peer support. The PPSS was placed before the APRI in the online questionnaire.

#### 6.3.4 Statistical analysis

This paper reports the EFA and CFA that followed an extensive process of item development for the SPPI that emerged through qualitative research with children ages 9 to 11. The rationale for Phase 1 was to explore the factor structure of items identified through qualitative analysis (Nelson, Burns, et al., 2019). The rationale for

Phase 2 was that CFA would confirm a two-factor structure of perceived power imbalance, measuring *physical* and *social* characteristics of power. A minimum of five cases per variable was maintained throughout factor analysis (Russell, 2002).

*Data analytic approach for exploratory factor analysis (EFA).* Data were assessed for frequency of responses to each item and missing data. EFA of the SPPI was run in SPSS using Principal Axis Factoring (PAF) with promax rotation. A Kaiser-Meyer-Olkin (KMO) value of .6 represented a minimum value for sampling adequacy (Beavers et al., 2013). Parallel analysis (O'Connor, 2000) was conducted, in conjunction with a scree plot, to determine the number of underlying dimensions (Costello & Osborne, 2005). Missing data were excluded listwise, and factor loadings less than .30 were suppressed (Costello & Osborne, 2005).

EFA was continued in MPlus to confirm the factor structure identified in SPSS. EFA was based on the weighted least mean squares (WLSMV) estimator to account for the binary data and small sample sizes with non-normally distributed data (Byrne, 2012). Goodness of fit was reported with: Normed chi-square values < 3 (Kline, 2005); comparative fit index (CFI > .90) (Marsh et al., 2011); Root-mean-square error of approximation (RMSEA < .08 [or a 90% CI that captures .08] indicates a reasonable fit; < .05 [or a 90% CI that captures .05] indicates a good fit); Standardised Root Mean Square Residual (SRMR ≤ .08) (Hu & Bentler, 1999). A minimum factor loading of .32 was accepted, .55 or higher was considered good (Tabachnick & Fidell, 2013). The fit of items to relevant subscales was assessed and decisions made on initial items to be included (Brown & Moore, 2012). Results were interpreted to give names to each subscale (Colwell, 2016).

*Data analytic approach of CFA.* Data analysis began in SPSS; data were assessed for frequency of responses to each item and tolerance (values < .10 indicate multicollinearity) (Kline, 2011). Analysis continued in MPlus Version 7 (Muthén & Muthén, 2015). Missing data were deleted listwise, affecting 4.5% to 5.2% of responses for any one analysis. Fit indices as reported for Phase 1, and communality ( $R^2 > .50$ ) suggesting that 50% of the variance of the item can be explained by the factor to which it is linked (Byrne, 2012, p. 144). Composite reliability of each factor was calculated (Raykov, 1997). Consistent with the method used by Marsh et al. (2011) items were free to cross-load onto factors in the data set.

Second, we used multi-group analysis to determine how consistent the factor structure was over gender and grade. The maximum likelihood robust estimator (MLR) was used to account for incomplete and non-normal distribution of data (Byrne, 2012). Invariance of mean and covariance structures were assessed using the method detailed by Byrne (2012). Taking into account missing data, group sizes for the analysis were for gender: *girl*,  $n = 72$ ; *boy*,  $n = 54$ , and for grade: *grade 4*,  $n = 50$ ; *grades 5-6* (combined to account for smaller classroom sizes in some participating schools),  $n = 77$ . Invariance testing began with a configural model incorporating the baseline model for each group. There were no residual covariance's to constrain equal in the configural model. Invariance analysis then tested for equivalence of factor loadings, covariance structures, intercepts, and latent factor means. The Satorra-Bentler Scaled Chi-Square (Satorra & Bentler, 2010) was used in Chi-square difference tests. Invariance was suggested by a non-significant corrected MLR chi-square value ( $p > .05$ ) (Byrne, 2012).

Third, test-retest reliability was assessed using Spearman's rho ( $r_s$ ) to account for non-normal distribution of data. Test-retest reliability was calculated for the variable *bullied total* at Time 1 and Time 2. *Bullied total* represented self-report of frequent victimisation and perceived power imbalance and was calculated by the combined ranked score of the 19-item APRI (0 – 4) and the SPPI (0 or 1): 0 (*Not bullied*) (APRI = 0 or 1, Power = 0); 1 (*Frequent victimisation without power imbalance*) (APRI = 2, 3, or 4, Power = 0); 2 (*2 or 3 times a month with power imbalance*) (APRI = 2, Power = 1); 3 (*Once a week with power imbalance*) (APRI = 3, Power = 1); 4 (*Several times a week/Every day with power imbalance*) (APRI = 4, Power = 1). Total score scales were whole numbers between 0 and 4, and matched the OBQ (Olweus, 1996).

The final stage of analysis assessed the construct validity of the SPPI. Analysis began in MPlus allowing control for measurement error by assessing validity at the latent construct level. Discriminant validity was assessed by low correlations of a 3-factor model of social victimisation (APRI), *social power*, and *physical power* (SPPI) in MPlus; and by negative correlations of a 3-factor model of children's perception of peer support (PPSS; Ladd et al., 1996), *social power*, and *physical power* (SPPI) in MPlus. Convergent validity of the SPPI with the OBQ

prevalence item was assessed in SPSS; Spearman's rho ( $r_s$ ) was used to account for non-normal distribution of data.

## 6.4 Results

### 6.4.1 Exploratory factor analysis

The following number of children reported frequent victimisation by each scale: APRI verbal ( $n = 48$ ), APRI physical ( $n = 28$ ), APRI social ( $n = 36$ ), and PECK verbal-relational ( $n = 55$ ). When missing data were deleted listwise, the number of participants who answered the power imbalance scale in response to the APRI verbal ( $n = 44$ ), physical ( $n = 28$ ), and social scales ( $n = 34$ ) was insufficient to run EFA, based on a minimum of five cases per item (Russell, 2002) or the minimum Kaiser criterion for sampling adequacy of .60 (Beavers et al., 2013). Results of the EFA are therefore reported on the power imbalance items that followed the PECK Verbal-relational scale ( $n = 51$ ). Data were normally distributed. EFA in SPSS resulted in a KMO of .576 suggesting a “mediocre” fit of the data (Kaiser, 1974, p. 35) and resulted in three eigenvalues  $\geq 1$ . Because the eigenvalue criterion can lead to the extraction of too many factors (Tabachnick & Fidell, 2013) parallel analysis was calculated, resulting in a 2-factor structure. EFA of the 2-factor model in MPlus resulted in acceptable fit ( $normed \chi^2 = 1.25$ , RMSEA = .070 [90% CI = .00 to 0.148], CF1 = .942, SRMR = .119). The 90% confidence interval was wide; it included the value of .05 suggesting that the result reflected a small sample size. Factor loadings are shown in Table 6.2, the correlation between factors was -.039. Item 5 “trying to be more popular” did not load onto either factor.

**Table 6.2 EFA of the Power Imbalance Items in MPlus**

Geomin Rotated Loadings of items			
	Factor 1	Factor 2	
Item 1	<b>0.491</b>	-0.285	Really smart?
Item 2	<b>0.905</b>	-0.125	Good looking?
Item 3	0.027	<b>0.556</b>	Older than you?
Item 4	<b>0.513</b>	0.193	Good at sport?
Item 5	0.200	0.139	Trying to be more popular?
Item 6	<b>0.764</b>	0.002	In the most popular group?
Item 7	0.013	<b>0.762</b>	Much stronger than you?
Item 8	-0.156	<b>0.902</b>	Bigger than you?
Item 9	<b>0.813</b>	0.271	With a group of students?

*Note:* bold = significant at 5% level.

#### 6.4.2 Confirmatory factor analysis

CFA of the hypothesised 9-item 2-factor model of the SPPI did not provide a good fit to the data. On examination, the item “good at sport” had a low communality when answered in response to either *physical/verbal* or *social victimisation* ( $R^2 = .183$ , and  $.034$  respectively), and did not load onto the factor when answered in response to the APRI social victim scale (standardised loading =  $.184$ ). This was consistent with a high tolerance of the item ( $.919$ ) indicating the uniqueness of the item. “Good at sport” was excluded from further analysis and an 8-item model of the SPPI was tested for fit.

Baseline model fit of the 8-item SPPI in response to *verbal/physical victimisation* was acceptable ( $n = 146$ : normed  $\chi^2 = 1.96$ , RMSEA =  $.081$  [90% CI =  $.041$  to  $.119$ ], CF1 =  $.906$ ). Standardised factor loadings ranged from  $.353$  “really clever” to  $.941$  “tougher than you”. The  $R^2$  for “really clever”, and “good looking” were low (see Table 6.3). In response to *social victimisation* factor loadings of the baseline model of the 8-item SPPI were adequate ( $n = 127$ : normed  $\chi^2 = 1.2$ , RMSEA =  $.04$  [90% CI =  $.00$  to  $.091$ ], CF1 =  $.993$ ). The communality of Items “really clever”, and “good looking” remained low (see Table 6.3). This is addressed in the discussion.

**Table 6.3 CFA of the Factor Structures of Power Imbalance Items in MPlus**

Latent factor items	Overt victimisation (n=146)		Social victimisation (n=127)	
	Factor loading	R-square	Factor loading	R-square
<u>Social power</u>				
Really clever?	<b>0.353</b>	0.124	<b>0.419</b>	0.175
Good looking?	<b>0.388</b>	0.15	<b>0.473</b>	0.224
In the most popular group?	<b>0.894</b>	0.799	<b>0.790</b>	0.625
With a group of students?	<b>0.624</b>	0.389	<b>0.680</b>	0.462
Composite Reliability	<i>0.668</i>		<i>0.689</i>	
<u>Physical power</u>				
Older than you?	<b>0.475</b>	0.226	<b>0.646</b>	0.418
Much stronger than you?	<b>0.792</b>	0.627	<b>0.891</b>	0.793
Bigger than you?	<b>0.519</b>	0.27	<b>0.877</b>	0.769
Tougher than you?	<b>0.941</b>	0.885	<b>0.974</b>	0.949
Composite Reliability	<i>0.789</i>		<i>0.915</i>	

**Note:** **bold** = p significant at <0.05. Power items were answered by children who reported frequent victimisation by the APRI victim-verbal and victim-physical scales (Overt victimisation), or by the APRI victim-social scale (Social victimisation). Standardised factor loadings are reported.

#### 6.4.3 Multi-group invariance

Multi-group analysis of the 8-item SPPI was conducted with the MLR estimator using the baseline models of best fit to assess invariance of the instrument. In each data set, the configural model of the SPPI answered in response to children's self-report of *verbal/physical victimisation* was inadmissible because of a negative residual variance for the item "in the most popular group" (gender, -.257; grade at school, -.043). The unstandardised factor loading for gender was high for *boy* (39.522, standardised = 1.451), and for *Grade 5-6* (9.647, standardised = 1.085).

Invariance was therefore assessed on the 8-item SPPI that was answered in response to self-report of social victimisation. Invariance of the mean and covariance structures was demonstrated across gender as evidenced by a non-significant corrected  $\chi^2$  between the nested model and the comparison model at each specified level of the model ( $p > .05$ ). Invariance of the mean and covariance structures was likewise demonstrated between grade at school (Grade 4, and Grades 5-6) as evidenced by a non-significant corrected  $\chi^2$  between the nested model and the comparison model at each specified level of the model ( $p > .05$ ) (reported in Table 6.4).

**Table 6.4 Multigroup Analysis of the SPPI in Response to Social Victimization**

Model	$\chi^2$	df	CFI	SRM R	No. F	RMSEA	Invariance constraints	$\chi^2$ SCF	Model Comparison	CD	TRd	df diff	p
Total group analysis (n=127)							Factor1 by items 1, 2, 6, and 9; Factor 2 by items 3, 7, 8, and 10.						
CFA (n=127)	23.152	19	.975	0.056	25	.041 [.00 - .092]							
Invariance of covariance structures - gender													
CFA girl (n=72)	23.659	19	.949	0.074	25	.058 [.00 - .125]							
CFA boy (n=54)	22.929	19	.945	0.076	25	.062 [.00 - .140]							
MGGender-M1	46.593	38	.947	0.075	50	.060 [.00 - .112]	Configural	1.0608					
-M2	53.707	44	.941	0.077	44	.059 [.00 - .108]	Factor loadings	1.0464	2 subtract 1	.9552	7.0740	6	>.20
-M3	54.086	47	.957	0.078	41	.049 [.00 - .100]	Structural model	1.0430	3 subtract 2	.9931	.2142	3	>.20
Invariance of mean and covariance structures													
-M4	54.149	46	.950	0.079	42	.053 [.00 - .103]	Factor loadings	1.0412	4 subtract 1	.9481	7.5848	8	>.20
-M5	61.099	54	.957	0.087	34	.046 [.00 - .095]	Intercepts	1.0338	5 subtract 4	.9913	6.8441	8	>.20
-M6	59.467	50	.942	0.081	38	.055 [.00 - .102]	Latent means	1.0269	6 subtract 4	.8625	4.8365	4	>.20
Invariance of covariance structures - grade													
CFA grade 4 (n=50)	14.694	19	1.000	0.067	25	.000 [.00 - .091]							
CFA grade 5_6 (n=77)	21.438	19	.977	0.063	25	.041 [.00 - .111]							
MGGrade-M1	36.274	38	1.000	0.065	50	.000 [.00 - .082]	Configural	1.0653					
-M2	38.791	44	1.000	0.070	44	.000 [.00 - .068]	Factor loadings	1.0497	2 subtract 1	.9509	2.1834	6	>.20
-M3	40.222	47	1.000	0.073	41	.000 [.00 - .061]	Structural model	1.0312	3 subtract 2	.7599	.9976	3	>.20
Invariance of mean and covariance structures													
-M4	39.735	46	1.000	0.071	42	.000 [.00 - .063]	Factor loadings	1.0288	4 subtract 1	.8554	2.6147	8	>.20
-M5	47.850	54	1.000	0.083	34	.000 [.00 - .062]	Intercepts	1.0213	5 subtract 4	.9782	8.1681	8	>.20
-M6	44.132	50	1.000	0.077	38	.000 [.00 - .064]	Latent means	1.0400	6 subtract 4	1.1688	4.2932	4	>.20

*Note:* MG = Multiple group, M1 = model 1,  $\chi^2$  indicates MLR chi-square value, *df* = degrees of freedom, CFI = confirmatory fit index, TLI = Tucker-Lewis index, No. FParms = Number of free parameters, RMSEA = Root-mean-square error of approximation,  $\chi^2$  SCF = scaling correction factor, CD = difference test scaling correction, TRd = Satorra-Bentler scaled  $\chi^2$  difference test, *df*diff = difference in degrees of freedom between the nested model and the comparison model, *p* (significant at 0.05). M1 = Configural model, M2 = Factor loadings constrained equal, M3 = Factor variances constrained equal, M4 = Factor loadings constrained equal, M5 = Intercepts constrained equal, M6 = Latent means (factor means and variance estimated for group 'boy' only, 'grade 5\_6' only). There were no residual covariance's to constrain equal in the configural model.

#### 6.4.4 Test-retest reliability

Test-retest reliability (2-week interval) of the combined ranked score (*n* = 50) from the APRI and SPPI was indicated by a moderately strong correlation when answered in response to self-report of verbal/physical victimisation  $r_s = .773$  ( $p < .001$ ), and a strong correlation in response to social victimisation  $r_s = .841$  ( $p < .001$ ).

#### 6.4.5 Validity

Construct validity of the SPPI was assessed in relation to the preceding APRI social victim scale. CFA of the 3-factor model of *social victimisation*, *social power*, and *physical power* resulted in a good fit ( $n = 124$ : *normed*  $\chi^2 = 1.09$ , RMSEA = .027 [90% CI = .00 to .057], CFI = .983). Correlations between factors were low suggesting discriminant validity of the two latent factors of power imbalance (.294) and between the APRI social victim scale and power imbalance (*social power* = .325, *physical power* = .357).

Discriminant validity was supported by negative correlations between children’s perception of peer support (PPSS; Ladd et al., 1996) and each latent factor of the SPPI: *social victimisation* (*physical power* = -.292, *social power* = -.175), CFA of the 3-factor model ( $n = 120$ : *normed*  $\chi^2 = 1.0$ , RMSEA = .009 [90% CI = .00 to .041], CF1 = .997); and *verbal/physical victimisation* (*physical power* = -.138, *social power* = .035), CFA ( $n = 140$ : *normed*  $\chi^2 = 1.09$ , RMSEA = .025 [90% CI = .00 to .046], CF1 = .957).

Convergent validity was supported by a moderate correlation between the screening item of the OBQ (Olweus, 1996) and the two latent factors of the eight-item SPPI (*overt* and *social victimisation*) ( $n = 331$ ,  $r_s = .533$ ). Fifty five per cent of children reported victimisation in a relationship of power imbalance by either the SPPI or the OBQ. The overlap in self-report of power imbalance between instruments was 20.2% (see Table 6.5). Fewer children reported being bullied by the OBQ screening item (23.8%) in comparison to those who reported frequent victimisation by the combined ranked score of the 19-item APRI and the eight-item SPPI (50.8%) (see Table 6.5).

**Table 6.5 Comparison of Children’s Self-report of Victimisation with Power Imbalance by Instrument**

	Frequency	Percent	Cumulative Percent
Did not report victimisation with perceived power imbalance by either scale	149	45.0	45.0
Reported victimisation with perceived power imbalance by combined rank score of APRI+SPPI only	103	31.1	76.1
Reported bully victimisation by OBQ only	12	3.6	79.8
Reported victimisation with power imbalance by APRI & SPPI and OBQ	67	20.2	100.0

*Note:* ( $n = 331$ ). 55% of children reported victimisation in a relationship of power imbalance: 51.3% by the combined ranked scale of the APRI and SPPI, and 23.8% by the OBQ prevalence item. The overlap between instruments was 20.2%.

An additional finding was that 11% of children who reported frequent social victimisation and 8% of those who reported frequent overt victimisation did not report an experience of power imbalance by the 8-item SPPI (see Table 6.6).

**Table 6.6 Comparison of Children’s Self-report of Frequent Victimization with and without Power Imbalance**

	No report of victimisation (n)	Frequent victimisation (n)	Frequent victimisation with power (n)	Frequent victimisation without power (n)	Percent of frequent victimisation without power
Overt victimisation (n = 335)	184	151	141	10	6.6%
Social victimisation (n = 335)	202	133	119	14	10.5%

*Note:* Overt victimisation = combined ranked score of the APRI victim-verbal, APRI victim-physical and the SPPI answered in response to self-report of overt victimisation. Social victimisation = combined ranked score of APRI victim-social and the SPPI answered in response to self-report of social victimisation.

## 6.5 Discussion

Analyses of the items in the SPPI resulted in a two-factor structure. *Social power* measured the peer-valued characteristics of clever, appearance, athleticism, belonging to the popular group, and being with a group. *Physical power* measured the physical characteristics of age, size, strength, and toughness. Physical measures of power imbalance are more obvious, thus easier to quantify, than peer-valued characteristics, as evidenced by consistent fit to the data. Likewise, the group aspects of social power displayed consistently high factor loadings in response to children’s report of overt and physical victimisation. The peer-valued characteristics of social power, “good at sport,” “clever,” and “good looking,” however, displayed inconsistent factor loadings and low communalities.

The factor *social power* measured characteristics that are valued by peers and associated with peer acceptance or belonging. The a priori factor structure was supported by the extant literature. The item “good at sport” did not load onto the social power factor in CFA. This is in contrast to a high response rate of *yes* for children answering this item in the SPPI (30% to *verbal/physical victimisation* and 22% to *social victimisation*). When Green et al. (2013) previously measured power imbalance by individual items, children also responded most frequently to the item “more athletic” (39.3%). The reliability of the measure of power imbalance was however, not reported by the authors. The low factor loading for “good at sport” in our research does not mean that athleticism is not associated with power imbalance, the low communality and high tolerance (0.919) of the item suggested, however, that it was not related to the other items of social power (Kline, 2011).

Felix et al. (2011, p. 240) found that the item “smart in school work” was possibly not a good question to address power imbalance based on a small response rate to the item. Despite this the item was retained in the CBVS (Green et al., 2013). Similarly, in our research less than 20% of the variance of the item “really clever” was explained by the *social power* factor to which it was linked. Items such as “good at sport” and “clever”, and their opposites, might reflect an academic or ability-related form of power imbalance. This warrants further investigation. Moreover, in focus groups, children referred to smart as “getting their way out of trouble” by hiding the behavior from adults (Nelson, Burns, et al., 2019). This social manipulation resulted in feelings of hopelessness and the inability to escape the situation by the victim, increasing the power of the perpetrator over the victim. This is consistent with recent qualitative research. Teachers may not recognise perpetration of aggression by popular students and may even place the responsibility for victimisation on the targeted student (Rosen, Scott, & DeOrnellas, 2017). Resilience is fostered when children receive social support. It is, however, possible that some children perceive that the teacher is supporting the child who is doing the bullying and is therefore not available as a source of social support (Nelson et al., 2018). This form of power is difficult to assess, and has been difficult to quantify, but must not be ignored because it is associated with poor health outcomes (Bonanno & Hymel, 2010). For this reason, we propose that further investigation into “smart” or “clever” as a form of power imbalance might inform the development of prevention strategies, including the promotion of resilience.

The item “good looking” was used as a measure of power in the revised CBVS (Green et al., 2013) and was found to be associated with power in focus group analysis (Nelson, Burns, et al., 2019). However, we found that only 22% of the variance of the item was explained by the *social power* factor to which it was linked. In focus groups, children referred to “looks”, but beyond appearance, *looks* also related to clothes, shoes, smart phones, and possessions. These are all consistent with the attribution of appearance to social power (Kiefer & Wang, 2016). These items were kept because: a) they may be providing important information regarding the latent construct; and b) the amount of variance they contribute may be important, even if their factor loading was consistently low (Little, Lindenberger, & Nesselroade, 1999).

Cascardi et al. (2014) have suggested that popularity is potentially a superficial feature of power imbalance. Our initial invariance analysis models were not identified for the SPPI items answered in response to the *verbal/physical victimisation* sub-scale of the APRI due to very high factor loadings on the item “in the most popular group”. These results suggest that boys were likely to experience a very high experience of power imbalance when the aggressor belonged to the popular group. Girls in Grades 5 and 6 were similarly more likely to experience a high power imbalance if the aggressor belonged to the most popular group. This is consistent with qualitative findings that popularity is a key influence on bullying within the group (Burns, Maycock, Cross, & Brown, 2008).

Preliminary support was found for the construct validity of the SPPI. Discriminant validity was supported by the strong 3-factor structure of the PPSS, SPPI *physical power* sub-scale, and *social power* sub-scale. As expected the correlation between perceived peer support and perceived power imbalance was very low, suggesting that children who felt supported by peers experienced lower rates of victimisation with power imbalance. Consistent with previous research we found that double the number of children reported being bullied when they answered questions about individual types of bullying compared to the screening item of the OBQ (Huang & Cornell, 2015).

#### 6.5.1 Limitations

This study used a single method of anonymous self-report and there was no verification of victimisation by a different source, for example peers or teachers. There are, however, ethical considerations with peer nomination (Olweus, 2013). Agreement between the multiple approaches of quantitative analysis did support the 2-factor solution of power related to peer-valued characteristics and physical characteristics. However, thematic analysis of focus group discussion resulted in three forms of power imbalance reflecting physical characteristics (age), peer valued characteristics, and group membership and position (Nelson, Burns, et al., 2019). Future research might benefit from exploring group and peer-valued characteristics of power as different constructs.

The SPPI was developed for the local context, however the qualitative phase of the study was reported in the context of prior international research (Nelson,

Burns, et al., 2019). There is a great need to reduce the harm of bullying in schools (Lee, Kim, & Kim, 2015). Victims of bullying experience a power imbalance that hinders their perceived ability to stop the repeated aggression. For this reason it is necessary to continue investigating the nature and measurement of power imbalance.

A limitation of this study is the focus on power imbalance associated with traditional forms of bullying and not cyberbullying. The form of power imbalance is likely to differ between traditional and cyberbullying (Bauman et al., 2013). Bauman et al. proposed that the imbalance of power associated with cyberbullying should not be assessed by self-report where possible because of the difficulty in inferring power imbalance from a subjective response to online communication (Bauman et al., 2013). In contrast, it is widely recommended that self-report will provide the most accurate measure of the power imbalance in traditional bullying (Gladden et al., 2014; Olweus, 2013; Vaillancourt et al., 2010). This research focused on providing evidence on the reliability and validity of a specific measurement technique to attain children's self-reported experience of power imbalance associated with traditional forms of bullying (Malecki et al., 2015).

## **6.6 Conclusion**

There is reasonable agreement among researchers concerning the influence of physical factors, such as age, size, and toughness, on power imbalance. These have long been acknowledged in the literature and were found to have a strong factor structure in the analysis undertaken in this study. The influence of social factors, such as being good looking, smart, or popular, on power imbalance is much less clear for a number of reasons. Firstly, social forms of power are subtle in nature and not easily recognised by authority figures. Secondly, social power draws strength through peer group dynamics. This is supported in this study by the strong factor loadings of items that were specific to the peer-group. Thirdly, the factors that comprise social power are often highly valued by peers. The characteristics, themselves, are neutral; it is the status that peers attribute to these characteristics that confers power on those who possess them. Further research is required to better understand the influence of social factors on power imbalance. Specifically, we need to understand how social power reflects: 1) the dominance goals of the perpetrator; 2) group functioning; and 3) the perceived inability of the targeted child to overcome repeated victimisation.

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## **Amendment**

Please note an amendment to Page 177, lines 13 and 14, this sentence should read: Data were normally distributed. EFA in SPSS resulted in a KMO of .576 suggesting a “miserable” fit of the data (Kaiser, 1974, p. 35).

## **7 REVIEW and DISCUSSION**

In this chapter the research findings are discussed in the context of the extant literature. An overview of the major research findings is presented first, followed by the discussion, a section outlining the limitations of the research, a section in which recommendations are made for translating the research findings to practice and finally, a conclusion.

### **7.1 Major Research Findings**

The overall aim of this research was to develop two instruments to measure children's experience of power imbalance associated with school bullying, including covert aggression, defined as behaviour that is intentionally hidden from adults (Cross et al., 2009). The research resulted in the development of two measurement tools, the Scale of Perceived Power Imbalance (SPPI), and the Student Experience of Teacher Support Scale (SETSS). Development of the SPPI and the SETSS contributed to understanding some of the complexity around measuring children's experience of being bullied. Major research findings are presented by each research phase. The major findings are outlined below in relation to the objectives.

#### **7.1.1 Research Phase 1**

In the first phase of the research, items were identified for inclusion in a self-report questionnaire that measures the power imbalance experienced by preadolescent children who are bullied. 1) A scoping review identified two methods that have been used to measure power imbalance, the definition-based method and the behavioural method. A research gap was identified in understanding how to accurately measure the power imbalance experienced by children who are bullied (Nelson et al., 2017). In response to this gap, the focus of the study was broadened to explore the "psychometric soundness of items used to measure power imbalance by the behavioural method" (Nelson et al., 2017, p. 59). 2) In the context of the research sample, power imbalance was influenced by age, peer valued characteristics, and group membership and position. Empathy protected against power imbalance, as did the possession of peer valued characteristics (Nelson, Burns, et al., 2019). In relation to covert aggression, power imbalance was influenced through children's

friendships, social exclusion, and behaviours that were kept secret from the teacher. Support from friends and adults protected against power imbalance (Nelson et al., 2018).

### 7.1.2 Research Phase 2

The latent structure of the SPPI and the SETSS were explored using exploratory factor analysis (EFA) in the school in which the focus groups were conducted. Students who participated in focus groups did not complete the questionnaire in Phase 2 of the research. Each instrument demonstrated a distinct 2-factor structure with strong factor loadings.

### 7.1.3 Research Phase 3

The latent factor structure, reliability and validity of the SPPI and the SETSS were assessed in four schools. Major research findings were: 1) Items pertaining to the physical and group aspects of power imbalance in the SPPI demonstrated construct validity and test-retest reliability. Children's experience of power imbalance was influenced by group characteristics, however, with the exception of "larger group size" these experiences have not been included in previous behavioural based measurement tools (Nelson, Burns, et al., 2019; Nelson et al., accepted). 2) Characteristics that have been used by researchers to measure children's experience of power imbalance using a behavioural-based method of measurement, including "good looking," "good at sport," and "smart," were included in the SPPI. These three items did not demonstrate consistent and adequate content validity or construct validity (Nelson et al., accepted). 3) The SETSS demonstrated adequate fit of the 2-factor model of children's experience of teacher support. Items were allowed to covary, helping to explain some children's experience when they have told a teacher that another student has been mean (Marsh et al., 2011). The SETSS demonstrated construct validity and reliability. Children face a complex range of issues when making a decision to report bullying to the teacher. Perhaps the greatest risk for children who reported bullying was increased social exclusion and loneliness (Nelson et al., 2018; Nelson, Kendall, et al., 2019).

The major research findings are discussed in the peer-reviewed articles and three of the findings are summarised in the following sections. The first two findings relate to the measurement of children's experience of power imbalance using the

behavioural method; first the influence of group characteristics, and second the dual nature of peer valued characteristics. The third finding that is summarised relates to the issues that children may experience when reporting bullying to the teacher, including loneliness and social isolation.

## **7.2 Measuring Children's Experience of Power Imbalance Using the Behavioural Method**

Measurement has been described as the "Achilles heel" of bullying research (Volk et al., 2017, p. 36). This is attributed to difficulty in measuring the power imbalance that differentiates bullying from aggression, and to the hidden nature of much bullying (Volk et al., 2017). This section highlights the key contribution of the author's research to understanding some of the complexity of measuring power imbalance. Before introducing the findings, the following two paragraphs provide a summary of the reason behind the author's decision to use a behavioural measure.

One complexity of bullying measurement is that children aged 8 to 11 may not comprehend and retain the core elements of a long definition when answering a series of questions about their experience of bullying (Nelson et al., 2017). Based largely on the pioneering research of Olweus, the definitional method has become the accepted standard for measuring bullying prevalence (Gladden et al., 2014). However, Olweus himself has pointed to the possible benefits of the behavioural method to measure power imbalance (Olweus, 2013). In the behavioural method of measurement, children are given the opportunity to read, comprehend, and answer one short and direct question at a time. As reported in the scoping review, this maximises the likelihood that children will report accurately on their own experience of perceived power imbalance (Nelson et al., 2017).

Researchers who have used the behavioural method to measure children's experience of being bullied have recommended that further work is needed to develop and validate this method of measurement (Felix et al., 2011; Hunter et al., 2007; Malecki et al., 2015). Based on the results of the scoping review, the author of this exegesis explored the use of a behavioural method to measure children's experience of power imbalance. Children who reported that aggression had been frequently directed toward them, were asked a series of questions to measure their experience of power imbalance using the SPPI. Each question was identified through

thematic analysis of focus group transcripts. This ensured that questions were as relevant as possible to the local context of the children who answered the SPPI (Hunter et al. 2007; Volk et al, 2017). Interestingly, the language used by children for items identified through thematic analysis in the qualitative studies was similar to language used in other English speaking countries. For example, “good looking,” and “popular” (Green et al., 2013). Factor analysis was used to assess the construct validity of each new instrument (Casper et al., 2015; Marsh et al., 2011; Volk et al., 2017). The mixed methods approach added rigour to the study. The extent to which each item or measurement instrument would be relevant to different countries or communities is unknown. The author of this exegesis recommends that children are included in assessment of face validity in each new context.

Quantitative analysis of the SPPI captured two constructs of power imbalance, one represented physical power and the second social power. Social power included group characteristics and peer valued characteristics (Nelson et al., accepted). The following section discusses the contribution of this research to measuring children’s experience of power imbalance related to group characteristics.

#### 7.2.1 The influence of group characteristics on power imbalance

As discussed in the peer reviewed articles, the items that measured the group function of power imbalance add to the body of evidence for behavioural measurement of power imbalance (Nelson, Burns, et al., 2019; Nelson et al., accepted). In the scoping review the authors identified one item that measured the group function of power imbalance using a behavioural method. Hunter and colleagues asked if the aggressor was in a bigger group than the student who was reporting the aggression (2007). In contrast, thematic analysis of focus group transcripts identified that children experienced a power imbalance when the child who bullied others was “with a group of students”, or “in the most popular group” (Nelson, Burns, et al., 2019). Each item displayed content validity and a good factor loading that was above 0.50 (Nelson et al., accepted). This is consistent with reviews in which power imbalance is attributed to children’s social status in a group (Menesini & Salmivalli, 2017) or to popularity (Noret, Hunter, & Rasmussen, 2018). The contribution of the group to power differential beyond being with a “bigger group” is discussed, beginning with group size and followed by popularity.

Olweus (2013) observed that bullying is often perpetrated by a small group of two or three students with a powerful leader. This is consistent with children's focus group discussion: rather than group size, boys and girls in each of the three focus groups spoke of the influence of one powerful leader over the group (Nelson, Burns, et al., 2019). It is possible that the power of a leader is independent of group size. Some children followed the leader because of a desire to be included in a group. Others, however, removed themselves from the group in support of a friend who had been bullied (Nelson, Burns, et al., 2019). They formed a smaller friendship group and within this smaller group experienced belonging and did not succumb to intimidation by members of a larger group (Nelson et al., 2018). In doing so, these children demonstrated that they valued friendship over the status of belonging to a certain group. This demonstrates the worth of continuing research to understand how children's cognitive appraisal of threat or control contributes to their experience of power imbalance or to resilience (Noret et al., 2018).

The item with the strongest factor loading onto the social power factor of the SPPI was "in the most popular group" (Nelson et al., accepted). The types of power imbalance that are experienced by children who are bullied are different between groups of differing social status. For example, using methods of peer nomination, self-report survey and cluster analysis Peeters, Cillessen and Scholte (2010) found three categories of children (aged 13 years) who bullied others: popular and very socially skilled; moderately popular; and unpopular with low social skills. This is consistent with the different categories of children who bullied others that were identified through thematic analysis of focus group transcripts in this study. Some children who bullied others were very "smart" and had high social status, others bullied in an attempt to get into the popular group, a third group were described as children who think that they are "not good" (Nelson, Burns, et al., 2019). The reference to being "not good" implied a lack of peer-valued characteristics accompanied by poor social status among peers. Because the range of status and social skills of children who bully others is diverse, there is value in using individual questions to understand the differing experiences of children who are bullied. At preadolescence, popularity goals are communicated through the peer group and are linked with characteristics that peers value (Dawes & Xie, 2017). The following

section discusses how peer valued characteristics contribute to the power differential associated with bullying.

### 7.2.2 The contribution of peer valued characteristic's to power imbalance

Qualitative research has been recommended to help explore the complexity associated with measuring the power imbalance experienced by children who are bullied (Volk et al., 2017). In focus group discussions children spoke of those who bully others as being good looking, smart, good at sport or popular (Nelson, Burns, et al., 2019). Measures of the perceived popularity and smartness of the aggressor are consistently included in behavioural measures of power imbalance (Felix et al., 2011; Green et al., 2013; Hunter et al., 2007; Malecki et al., 2015). In addition, Green and colleagues (2013) included measures of “good looking” and “athletic.” Cascardi and colleagues considered that popularity, attractiveness and athleticism were “potentially superficial” features of power imbalance (2014, p.264). The following section discusses how the research presented by the author of this exegesis contributes to understanding some of the difficulty in using peer valued characteristics to measure children’s experience of power imbalance.

Qualitative research gives children an opportunity to discuss bullying using their own voices (Thornberg, 2018; UNICEF, 1989). Findings from the focus groups in this study suggested an association of the possession of peer valued characteristics with popularity (Nelson, Burns, et al., 2019). The centrality of peer status and popularity to aggression at preadolescence is widely acknowledged (Noret et al., 2018; Thornberg, 2018). Children perceived that if they gained popularity they would gain belonging to a desired peer group and feel accepted (Nelson, Burns, et al., 2019). This is developmentally consistent with the increasing value placed by children on peer acceptance for this age group (Dawes & Xie, 2017; Thornberg, 2018; Witvliet et al., 2010).

Findings of this study identified that children associated appearance, athleticism, and to be smart with power. However, these peer valued characteristics were also seen to protect children from being bullied (Nelson, Burns, et al., 2019). Similarly, the author of a comprehensive ethnographic study found a complex interplay in the characteristics through which power was derived (Thornberg, 2018). While some children were bullied because their appearance did not fit the social

norm, others whose appearance did not fit the social norm were protected because of their athleticism (Thornberg, 2018). The dual nature of peer valued characteristics as influences on, and buffers against, power imbalance is one such complexity. The quantitative findings of this study were triangulated by those of the factor analyses (Nelson et al., accepted). For example, the item “good looking” was identified in focus groups and displayed a strong factor loading onto the social power factor in EFA (0.9). This suggested that appearance was a strong influence on power imbalance in the sample of children who participated in research Phases 1 and 2. In Phase 3 of the research CFA resulted in an adequate factor loading (0.47), however the communality was weak; 22.4% of the variance of the item was accounted for by the social power factor (Nelson et al., accepted). This suggested that while appearance contributed to social power, it was not strongly related to other items on the factor. The low communality does not, however, negate the contribution of appearance to children’s experience of social power, as explained in the following paragraph.

Casper and colleagues (2015) suggest that in the measurement of bullying, validity has been sacrificed in preference to reliability. Reliability is supported by a high correlation between items. It cannot be assumed, however, that each item on a measurement scale will contribute equally to children’s experience of power imbalance (Crutzen & Peters, 2017). In this study the 2-factor model of physical and social power did demonstrate construct validity, even though the peer-valued characteristics of athleticism, appearance and being clever displayed poor content validity and low communalities (Nelson et al., accepted). These peer valued characteristics are neutral and power is attributed or denied by peers within the context of the social culture of each school (Nelson, Burns, et al., 2019; Thornberg, 2018). For this reason, items that contribute low variance might reflect an important aspect of children’s experience (Casper et al., 2015; Little et al., 1999). A focus on reliability might result in the removal of items that contribute significantly to some children’s experience of power imbalance (Crutzen & Peters, 2017). This has implications for the evaluation of interventions, specifically to recognise that the experience of power imbalance might differ for each child.

As previously stated, a minimum of four items per subscale is recommended to identify a factor (Raykov 1997; Russell 2002). The item “good at sport” displayed

a low communality with other items of the SPPI, and a high tolerance, suggesting that athleticism has a unique contribution to power imbalance (Nelson et al., accepted). This contribution could be explored by identifying and including a set of items into the SPPI that are specific to athleticism. Similarly, the addition of items to the SPPI that pertain to appearance may result in the identification of a reliable subscale.

Within the framework of developmental systems theory it is understood that power imbalance occurs in relationships through a complex interplay of interactions across socioecological systems. Children's interactions with others at school are not independent of the broader systems in society that influence what people value and attribute worth to (Bronfenbrenner & Morris, 2006; Thornberg, 2018). This was evident in qualitative findings as children spoke of the protection afforded by having the latest smart phones and games, fashionable shoes and clothes, and being socially accepted by the teacher (Nelson, Burns, et al., 2019). It is possible that the ideals that children aspire to might also be those ideals that are valued by teachers. For this reason, teachers may not recognise bullying by socially clever children or by children who make a favourable impression on others (Cunningham et al., 2016; Hicks, Jennings, Jennings, Berry, & Green, 2018). This adds to the complexity of recognising bullying, discussed in the following section.

### **7.3 The Complexity of Reporting Bullying to a Teacher**

Within the microsystem of the school, teachers act as a secure base of support for preadolescent children (Sabol & Pianta, 2012). However, teachers awareness of bullying can be masked by prevalent cultural attitudes and norms (Thornberg, 2018). As discussed previously, characteristics that contribute to children's popularity among peers include being socially smart, good looking or good at sport (Nelson, Burns, et al., 2019). It is possible that these same characteristics' might contribute to teachers not recognising popular children as aggressors (Hicks et al., 2018; Mucherah, Finch, White, & Thomas, 2018; Oldenburg, Bosman, & Veenstra, 2016; Rosen et al., 2017). For example, the authors of one qualitative study found that teachers often attributed more responsibility for bullying to the children who were bullied than to the aggressor (Rosen et al., 2017). Similarly, children reported that the teacher might believe the lies told by a smarter child or they might "ignore me like it was my fault" (Nelson et al., 2018, p. 286).

Mixed methods research enables a deeper understanding of bullying-related issues experienced by children. It is clear to the author of this mixed methods study that many children who have been bullied and who seek teacher support will experience difficulty as a result (Nelson et al., 2018). This is similar to the findings of other recent qualitative studies (Cunningham et al., 2016; Rosen et al., 2017). Teachers have attributed bullying to the individual characteristics of children who bully others, and of children who are bullied (Rosen et al., 2017; Thornberg, 2018). This approach can result in teachers failing to understand the complexity of school bullying, subsequently dismissing or overlooking children who report bullying (Thornberg, 2018).

Teachers have reported that when they do not see that a child has been bullied they often feel powerlessness to act on the child's report of bullying and aggression (Cunningham et al., 2016; Rosen et al., 2017; Volk et al., 2017). Children and teachers have also expressed concern that a response of support for a bullied child may make the situation worse (Bradshaw, Sawyer, & O'Brennan, 2007; Cross et al., 2009; Cunningham et al., 2016; Nelson et al., 2018). Factor analysis of the SETSS confirmed that this is the experience of many children (Nelson, Kendall, et al., 2019). The strength of factor analysis is that it deals with latent constructs. These are constructs that are not easy to measure because they are concealed (Williams, Brown, & Onsmann, 2012). This is particularly relevant to social forms of aggression and demonstrates the value of using mixed methods analysis to interpret the behaviours and outcomes associated with bullying.

At preadolescence there is a peak in relational aggression as children place increasing value on being accepted by peers (Dawes & Xie, 2017; Pfeifer & Peake, 2012). Support from a friend or teacher can reduce children's experience of being overpowered or threatened, and can provide a platform from which children learn to respond in a positive way (Noret et al., 2018). A qualitative study has found that dealing with bullying can place an increasing burden on teachers, contributing to emotional drain and burnout (Cunningham et al., 2016). Much of the bullying-related research has focused on how to support children. There is increasing recognition that research will ideally investigate how to support the teachers who respond to children who ask for help (Barnes et al., 2012; Cunningham et al., 2016; Rosen et al., 2017). Through the qualitative analysis and statistical modeling in this research we found

that children who do not feel supported by the teacher can experience an increase of social isolation and loneliness (Nelson et al., 2018; Nelson, Kendall, et al., 2019). The effect of social isolation on children's development is discussed in the following section.

### 7.3.1 Social isolation

Within a developmental systems perspective, development occurs as an active process as children interact with others (Bronfenbrenner & Morris, 2006). The emotions that children experience as they interact with others include threat or security, doubt or hope, and trust (Bronfenbrenner & Morris, 2006). Teachers are a resource for children, ideally a safe base for children who face emotional challenge, and a secure place to seek support (Oberle et al., 2014). However, a constant theme of the focus groups in this study was that lies were used as a tool by the perpetrators of covert aggression to limit trust in the relationship between the teacher and victimised children (Nelson, Burns, et al., 2017). This increased children's experience of social isolation and loneliness. For example, children described that the experience of being bullied resulted in feeling "left out," "like they don't belong," and "lonely and insecure" (Nelson et al., 2018, p. 4). Loneliness is the everyday term given to perceived social isolation (Layden et al., 2017; Leigh-Hunt et al., 2017).

Unresolved social isolation in childhood is empirically demonstrated to be associated with an increased risk of poor engagement within the classroom, poor learning outcomes, poor physical and mental health across the life course, and welfare dependence in early adulthood (Bonanno & Hymel, 2010; Danese et al., 2009; Kretschmer et al., 2017; Morrow, Hubbard, & Swift, 2014). The authors of systematic overviews have found strong research evidence associating perceived social isolation with increased morbidity and mortality, including cardiovascular outcomes, depressive illness, poor sleep and cognitive function, and suicidal ideation (Danese & McEwen, 2012; Leigh-Hunt et al., 2017). For example, in a longitudinal study, peer loneliness in childhood at age 9 was predictive of depression in early adolescence (age 13), indicated by variables of mood, self-worth, self-blame, and suicide ideation (Qualter, Brown, Munn, & Rotenberg, 2010). In a neuroimaging study, Layden et al. (2017, p. 70) identified increased brain activity in the cingulo-opercular network of people who experienced social isolation. This network of the

brain is implicated in maintaining cognitive alertness that heightens vigilance for social threat, alters attention, and may “sap” the resources needed for other cognitive processes. The associated brain regions might also be associated with quality of sleep and neurobiological function, related to unresolved stress (Layden et al., 2017). These combined findings show how social isolation can become embedded into the underlying biology of children, affecting long term health and learning (Hertzman, 1999; Pfeifer & Peake, 2012).

The research conducted as part of this study provides evidence that children who are bullied experience social isolation at preadolescence (Nelson et al., 2018; Nelson, Kendall, et al., 2019). Within a developmental systems framework it is understood that the responsibility to minimise the harm of bullying occurs across all ecological systems (Thornberg, 2018). One potential way of minimising this harm is to increase the secure base of support for children who report bullying. However, there is some evidence that many teachers experience uncertainty about how to respond to children who report bullying (Barnes et al., 2012; Cunningham et al., 2016). The following section discusses how the research findings of this might be translated into practice.

#### **7.4 Recommendations for Translating the Research Findings into Practice**

In translating research knowledge into practice there are two key considerations in the design of interventions: 1) participant engagement in the development of measures to ensure that surveys give voice to the people answering the questions, and 2) engagement of stakeholders to ensure that interventions will make a sustainable impact (Boaz, Hanney, Borst, O’Shea, & Kok, 2018). In this study the focus was on children’s experience of power imbalance. Children were included in the development of instruments to measure children’s own experience of the power imbalance associated with bullying. This is consistent with the United Nations Convention on the Rights of the Child Article 12 which states that each child who has the developmental capacity to form his or her own views has the right to express those views (UNICEF, 1989). Children contributed to the design of research including the review and development of questions, and by making recommendations on the delivery of the survey. This contributed to research that is relevant to children’s own experience and to the ethical nature of the research (Lansdown, 2011).

The triangulated findings of this study showed that children sometimes experienced an increase of harm after telling a teacher about bullying because the bullying is cleverly hidden from the teacher (Nelson et al., 2018; Nelson, Kendall, et al., 2019). This does not imply blame on teachers, who are not aware of the covert aggression and bullying. Researchers are increasingly finding that teachers face difficulty in responding to children's report of bullying (Barnes et al., 2012; Cunningham et al., 2016). In addition to minimising the harmful consequences of the power imbalance experienced by children who are bullied, a goal of further research is to reduce the burden that teachers experience in responding to children who report bullying. For this reason continuing research into interventions will ideally focus on understanding the experience of adults in the school environment who provide a secure base of care for children. Ideally adult members of the school community will contribute to the research design, ensuring that the research is directed toward understanding the experience of those who support children, including teachers. This understanding will inform the development of interventions that support whole school communities to provide a safe base for all children, minimising the harm of power imbalanced relationships.

This research has implications for school policy and for teacher training. In a systematic review Hall (2017) found that lower rates of verbal and physical bullying were reported in schools with a comprehensive anti-bullying policy. In the same schools, rates of relational bullying remained the same or increased. In schools with a strong anti-bullying policy, children might choose to bully others in a covert manner to avoid getting "into trouble" (Nelson et al., 2018, p. 285). School policy that is punitive, or that is focused on physical bullying, may exacerbate covert bullying and contribute to children's experience of social isolation. Furthermore, a school policy focus on physical and verbal bullying may result in the dismissal of children who report covert bullying. The SPPI and the SETSS provide empirical evidence that allows a better understanding pertaining to children's experience of power imbalance at school before and after bullying is reported. The majority of bullying interventions are child focused. This research informs policy that aims to strengthen prevention strategies through promoting student-teacher connectedness (O'Brennan, Waasdorp, & Bradshaw, 2014). At a national level, it is possible that investment that equips teachers to understand how children experience power

imbalance, to respond to children who report bullying and build connected relationships, will realise a long term health and economic benefit.

One issue with the introduction of interventions is the lack of accurate measurement tools to track the effectiveness of the interventions (Volk et al., 2017). This study resulted in the development of the SETSS, a measure of student experience after telling the teacher about aggression. The SETSS is a validated instrument that can be used in schools to inform the development of interventions to promote student-teacher connectedness. While some items of the SETSS are relevant to children's experience of covert aggression, the SETSS itself does not specifically ask if the aggression was hidden from the teacher. It is recommended that further research identify an item that measures children's perception that the aggression was intentionally hidden from the teacher.

### **7.5 Strengths and Limitations**

The strengths and limitations of this study associated with sample size, sample selection, and study method are described in the peer reviewed papers. Limitations included the sample selection of urban middle socioeconomic position (Nelson, Burns, et al., 2019; Nelson et al., 2018), and the single method of anonymous self-report in quantitative research phases (Nelson et al., accepted; Nelson, Kendall, et al., 2019). In addition there is possibly one major strength and one major limitation of the research in its entirety. This section presents a strength and limitation of the overall study beginning with the strength.

In Australia, and internationally, there is an increasing emphasis on including children in research. For example, children can help to identify research questions that are relevant to their own experience (Lansdown, 2011; The Australian Human Rights Commission; Early Childhood Australia, 2015). The research questions used in the SPPI and the SETSS were identified through focus group discussions with children. Children were invited to review and comment on each question in the two new instruments before the quantitative research phases. This recognised children as the experts of their own experience. Thus, a strength of the research is that the SPPI and SETSS were designed with children and for children. Items therefore captured behaviour that is relevant to the context and developmental level of participants

(Casper et al., 2015). In addition, this study was informed by the existing literature (Nelson et al., 2017).

In the first phase of quantitative analysis of the SETSS, the use of EFA with CFA using one data set could be considered a limitation. For example, Knekta, Runyon, & Eddy (2019) recommend that EFA is not followed by CFA using the same data set to confirm the dimensionality of an instrument because the information on model fit would not be generalisable. Similarly, Fokkema and Greiff (2017) demonstrated a risk of overfitting when PCA and CFA were used with the same data set. As discussed in the methods section of this thesis, PCA and independent clusters model CFA (ICM-CFA) do not allow cross-loading of items onto an alternative factor. PCA was not used in development of the SETSS due to the exploratory nature of the research. EFA used principal axis factoring (PAF) in SPSS, allowing exploration of the relationship between variables, children's experience of power imbalance, and what happens when children report bullying to a teacher. CFA in MPlus used a method of exploratory structural equation modelling (ESEM) incorporating "testing strategies with sequences of EFA and CFA models" (Asparouhov & Muthen, 2009, p. 397). ESEM incorporates CFA and EFA as special cases in psychology research in acknowledgement that there will be cross-loadings among items (Asparouhov & Muthen, 2009, Marsh et al. 2011; Marsh, Morin, Parker, & Kaur, 2014). Examination of the cross-loadings can help explain the nature of power imbalance associated with bullying (Marsh et al., 2011). In addition to fit statistics, the factor loadings and communality of the SETSS were reported. This helped to understand the latent scores (see discussion, page 152) and the hidden nature of the aggression. The author proposes that, given the exploratory nature of the research, the sequence of EFA in SPSS followed by CFA in Mplus employed in the initial quantitative analysis was, therefore, a strength rather than a limitation.

Another potential limitation of the research is that no scoring strategy was reported for the SETSS. However, the scoring of scales is not always recommended. Marsh et al. (2014) suggest that although scale scores are sometimes used for parsimony, they should be avoided unless restrictive assumptions are met. For example, the demonstration of invariance of the mean across different groups. ICM-CFA requires a strong measurement science, this science may not represent reality because scores do not allow for measurement error and may have bias (Asparouhov

& Muthen, 2009; Marsh et al., 2014). Summing of scores reflects the best-case scenario, and assumes that each item loads equally onto the factor. For this reason, the accuracy of factor scores is increased with a higher number of items; the added information increases the indeterminacy of the factor (Curran et al., 2016). Factor loadings of the items in the SETSS were good and measurement invariance was demonstrated, supporting the use of the mean summed score.

A potential limitation is that although the research set out to measure children's experience of covert aggression and bullying, it ultimately identified children's experience of teacher support. Volk et al. (2017) referred to the challenge of measuring bullying because it is often deliberately misrepresented or hidden. Children as experts of their own experience have referred to this form of bullying as covert, because it is intentionally hidden from teachers and adults at school (Cross et al., 2009). The initial aim of this study was to measure children's self-reported experience of covert bullying (Nelson et al., 2015). Indeed, themes that reflected an increase of harm associated with covert bullying did emerge. However, a review of items that were identified through the qualitative research indicated that the self-report instrument more truly reflected a measure of children's experience of teacher support. Although this could be considered a limitation, it also gives strength to the study because it was informed by children and provides a platform on which to continue research into children's experience of covert bullying at a systems level.

Quantitative analysis included confirmatory factor analysis to show the contribution of each item to power imbalance and assessment of measurement invariance which will account for developmental differences in behaviour (Casper et al., 2015; Marsh et al., 2011). The end result of the SPPI and the SETSS does not yet match the model presented in the protocol paper that proposed a seven-factor structure of covert bullying (Nelson et al., 2015, p. 2). It does, however, add to an evidence based understanding of some of the issues faced by children who are bullied in a covert manner. The authors of a recent review have recommended that there is a continuing need to understand the diverse social skills and motivations of children who bully others and an urgent requirement to understand the effective components of bullying interventions (Menesini & Salmivalli, 2017). The individual questions included in the SPPI and the SETSS will help to interpret some of the behaviours and outcomes associated with bullying.



## 8 CONCLUSION

This study resulted in the development of two instruments, the SPPI and the SETSS. The SPPI was constructed to measure power imbalance by children's report of their own experience. The SETSS was constructed to measure children's experience of teacher support after telling a teacher about aggression in the school environment. The SPPI and the SETSS have demonstrated validity in the context of schools in middle socio-economic areas in Australian cities. These instruments can be used in schools to help inform interventions to promote student-teacher connectedness and to lessen children's experience of social isolation. While the validity of the SPPI and the SETSS has not yet been evaluated in schools outside Australia, or schools in different socio-economic contexts, they add to a body of work that has been progressing over decades. It is anticipated that the development of the new instruments will contribute to a better understanding of the complexity around measuring children's experience of being bullied.

Preadolescence is an age of rapid developmental change, when children place increasing value on peer relationships. In contrast to the normative peak of physical aggression that is experienced by children at age two, children at ages eight to 12 experience a normative period of development in which peer relationships become very important. For some children, this is accompanied by goals of popularity and social dominance and these goals can be associated with an increase in relational aggression and bullying (Adams, Bartlett, & Bukowski, 2010; Dawes & Xie, 2017). Children learn to regulate behaviour in the preschool years within secure and nurturing relationships. Teachers can provide this secure base of care for preadolescent children at school, however they will not always see that children are bullying others or are being bullied.

Aggression and bullying can be subtle, and targeted at children who do not fit the norms that are accepted by the peer group. One complexity with bullying measurement that was identified in this study is the dual nature of peer-valued characteristics. Peer valued characteristics themselves are neutral. However children absorb societal values and norms, and adults do likewise. Children's attribution of power to prestigious brands of clothing, smart phones, and social media suggest a subtle embedding of cultural values and norms that are shaped at the level of the

macrosystem. The cultural patterns and belief systems of the macrosystem encompass the microsystem, the closest relationships that children have with parents, peers and teachers. It is therefore understandable that teachers and other adults at school might not recognise bullying by children of high status.

For this reason the author concludes that a continuing research focus on understanding the experience of teachers, parents, and adults who support children's relational development is necessary. The hope is to build cultural patterns and belief systems in schools that help children through the normative developmental stage of preadolescence. This is a period of development when many children begin to value status within peer relationships, and when relational aggression increases. This does not imply that relational aggression at preadolescence is acceptable. However many children will experience subtle forms of relational aggression while they are learning to understand the value of peer relationships. Adults provide a secure base from which children can learn alternatives to aggression. The hope is to build communities that promote acceptance, belonging, and resilience.

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## APPENDICES

### Appendix A. Copyright Permission Statements

#### A.1 Permission for Article 1

B

llacey@bmj.com  
on behalf of  
bmj.permissions <bmj.permissions@bmj.com>  
Tue 2/20/2018 11:49 PM

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Best wishes,

Laura

## Appendix A.2 Permission for Articles 2 and 3

Julia Cowell [jcowell@nasn.org](mailto:jcowell@nasn.org)  
Copied to Meredith.Pond@sagepub.com  
Wed 2/21/2018 8:18 AM

Dear Ms. Nelson, I am copying Meredith Pond at Sage.  
Authors may publish the last document submitted before final publication.  
Congratulations on your work. I also want to thank you for your expert reviews. Julia

Julia Muennich Cowell PhD, RN, APHN-BC, FAAN

Professor Emerita  
Rush University College of Nursing  
Executive Editor  
The Journal of School Nursing  
<http://journals.sagepub.com/home/jsn>

20 Feb 2018

### Journal of School Nursing Permissions

Dear Dr Cowell,

I would like to reproduce an extract of the following two works in a doctoral thesis, which I am currently undertaking at Curtin University in Perth, Western Australia. The subject of my research is: *The development of a self-report measure of covert aggression and bullying for upper primary school aged children*. I am carrying out this research in my own right and have no association with any commercial organisation or sponsor.

The specific materials that I would like to use for the purposes of the thesis by publications are the entire articles, including supplemental material:

Nelson, H. J., Kendall, G. E., Burns, S. K., & Schonert-Reichl, K. A. (2017). A scoping review of self-report measures of aggression and bullying for use with preadolescent children. *The Journal of School Nursing*, 33(1), 53–63. <https://doi.org/10.1177/1059840516679709>

Nelson, H. J., Burns, S. K., Kendall, G. E., & Schonert-Reichl, K. A. (2017). The factors that influence and protect against power imbalance in covert bullying among preadolescent children: A thematic analysis. *The Journal of School Nursing* (online first). <https://doi.org/10.1177/1059840517748417>

Once completed, the thesis will be made available in online form via Curtin University's Institutional Repository espace (<http://espace.curtin.edu.au>). The material will be provided strictly for educational purposes and on a non-commercial basis.

I would be most grateful for your consent to the copying and communication of the work as proposed. If you are willing to grant this consent, please complete and sign the attached approval form and return it to me by email. Full acknowledgement of the ownership of the copyright and the source of the material will be provided with the material.

If you are not the copyright owner of the materials in question, I would be grateful for any information you can provide as to who is likely to hold the copyright.

I look forward to hearing from you and thank you in advance for your consideration of my request.

Yours sincerely

Helen Nelson

## Appendix A.3 Permission for Article 4

noreply@salesforce.com

on behalf of

plosone <plosone@plos.org>

Sat 5/18/2019 5:30 PM

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Emma Darkin

Staff EO

PLOS ONE

Case Number: 06269864

ref:\_00DU0lfis.\_5004PtaAj:ref

## Appendix A.4 Permission for Article 5

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11 May 2019

### **International Journal of Bullying Prevention Permission**

Dear Customer Service Team ,

I would like to reproduce an extract of the following work in a doctoral thesis, which I am currently undertaking at Curtin University in Perth, Western Australia. The subject of my research is: *The development of a self-report measure of covert aggression and bullying for upper primary school aged children*. I am carrying out this research in my own right and have no association with any commercial organisation or sponsor.

The specific material that I would like to use for the purposes of the thesis by publications is the entire article:

Nelson, H.J., Kendall, G.E., Burns, S.K., Schonert-Reichl, K.A., Kane, R.T. (2019). Development of the Student Experience of Teacher Support Scale: Measuring the experience of children who report aggression and bullying. *International Journal of Bullying Prevention*. DOI: 10.1007/s42380-019-00015-9

Once completed, the thesis will be made available in online form via Curtin University's Institutional Repository space (<http://espace.curtin.edu.au>). The material will be provided strictly for educational purposes and on a non-commercial basis.

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If you are not the copyright owner of the material in question, I would be grateful for any information you can provide as to who is likely to hold the copyright.

I look forward to hearing from you and thank you in advance for your consideration of my request.

Yours sincerely,  
Helen Nelson

## Appendix A.5 Permission for Article 6

PUBH-D-18-04067R3

Measuring 8 to 12 Year Old Children's Self-report of Power Imbalance in Relation to Bullying: The Scale of Perceived Power Imbalance (SPPI)

Helen Jean Nelson, MN, PGDipMHN, RN; Garth E. Kendall, PhD, MPH, DipSocSci, BA, RN; Sharyn K. Burns, PhD, MPH, PGDipHP, Bed, DipTch; Kimberly A. Schonert-Reichl, NIMH, PhD, MA, BS; Robert T. Kane, PhD, BA Hons, MAPS  
BMC Public Health

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Please let us know if you have any further questions.

Kind regards,

**Jennilyn Corbo (Ms)**

JEO Assistant  
Journals Editorial Office (JEO)

**Springer Nature**

[Jennilyn.corbo@springernature.com](mailto:Jennilyn.corbo@springernature.com)  
[www.springernature.com](http://www.springernature.com)

**30 July 2019**

Dear BMC Public Health Editorial Office

I would like to reproduce an extract of my following work in my doctoral thesis, which I am currently undertaking at Curtin University in Perth, Western Australia. The subject of my research is: *The development of a self-report measure of covert aggression and bullying for upper primary school aged children*. I am carrying out this research in my own right and have no association with any commercial organisation or sponsor.

The specific materials that I would like to use for the purposes of the thesis by publications are the entire article.

Nelson HJ, Burns SK, Kendall GE, Schonert-Reichl KA. (Accepted). Measuring 8 to 12 year old children's self-report of power imbalance in relation to bullying: Development of the Scale of Perceived Power Imbalance (SPPI).

Once completed, the thesis will be made available in online form via Curtin University's Institutional Repository espace (<http://espace.curtin.edu.au>). The material will be provided strictly for educational purposes and on a non-commercial basis.

I understand that the article is open access and that as the author I may use it in my thesis. I would be most grateful for your confirmation that I have consent to copy and communicate the work as proposed. Full acknowledgement of the source of the material will be provided with the material. I look forward to hearing from you and thank you in advance for your consideration of my request.

Yours sincerely  
Helen Nelson

## Appendix A.6 Permission for Olweus Bullying Survey

Email received 18 June 2014:

Hello-

Please find attached the Olweus Bullying Questionnaire (OBQ) materials (see document with CodeForm in the file name for scoring)

and some publications you may find useful. Use of

OBQ should be referenced as Olweus, D. (1996). *The Revised*

*Olweus Bullying Questionnaire*. Mimeo. Bergen, Norway: Research Center for Health Promotion (HEMIL), University of Bergen, N-5020 Bergen, Norway.

Good luck with your work!

(Please note that, due to copyright regulations, you are not allowed to include a copy of the Questionnaire in a thesis/ dissertation or any other unpublished or (to be) published materials. However, selected text portions from the Questionnaire that have already been published, for example, in the attached Solberg & Olweus 2003 paper can be included/published without restrictions.

For possible further inquiries, you may contact Sue Thomas - [srthomas@hazelden.org](mailto:srthomas@hazelden.org)).

Kind regards

Dan Olweus

Research Professor of Psychology

Uni Health and the HEMILCenter, UiB  
PB 7810  
NO-5020 Bergen  
NORWAY

Address for visit:

Krinkelkroken 1

Bergen

Tel. +(47) 55 58 23 27 or +(47) 55 29 36 12 or + 934 19 380  
Email: [Olweus@psyhp.uib.no](mailto:Olweus@psyhp.uib.no) or [Olweus@uni.no](mailto:Olweus@uni.no)

Appendix A.7 Permission for Adolescent Peer Relations Instrument

Use of APRI

Roberto Parada <R.Parada@uws.edu.au>

Mon 7/28/2014 1:35 AM

To:

Helen Nelson;

Action Items

Dear Helen

Thank you for interest in the use of the APRI. Please accept this e-mail as permission to use the APRI for your research as detailed in your previous e-mail.

I would like to ask that you keep me informed of any changes made to the instrument. I have attached a paper that may be of interest to you from a PhD student that I supervised some time ago.

Best wishes in your research.

Regards

Roberto

**Dr Roberto H Parada PhD MAPS**

Lecturer Adolescent Development, Behaviour, Wellbeing and Pedagogical Studies

School of Education | University of Western Sydney

Appendix A.8 Permission for the Personal Experiences Checklist

Caroline Hunt <caroline.hunt@sydney.edu.au>

Mon 9/21/2015 1:20 PM

Dear Helen,

I would be very happy for you to use the PECK items – let me know if you need any additional information that is not already in our paper. Currently the items only measure victimisation, and I am also in the process of developing a measure that will assess the aggressor side of bullying behaviour. – I would be very interested in seeing how your measure develops.

Best wishes

Caroline

Appendix A.9 Permission for Peer Conflict Scale

Received 11/9/15

Helen,

So sorry for the delay in responding. Of course, you have permission to use the PCS in your research. I only ask that you share your results and publications that arise from your project. I am interested in how various researchers use the measure so I am always open to collaboration on this.

As for the instructions we give, we have done it one of two ways. I have attached the original measure with the typical instructions. Also, we have used it as part of a larger battery where we simply introduced it with: "How true are the following statements?"

I hope this helps. Best of luck with your research!

Monica

Monica A. Marsee, Ph.D.  
Associate Professor  
Department of Psychology  
Iowa State University  
W112 Lagomarcino Hall  
Ames, IA 50011

Appendix A.10 Permission for Multidimensional Offline and Online Peer  
Victimisation Scale

Sumter, Cindy <s.r.sumter@uva.nl>

Tue 8/25/2015 10:55 PM

Dear Helen,

Thank you very much for expressing an interest in the scale. You are more than welcome to use the scale in your research and adapt it as necessary. I am open to collaborate/consult in the future if you would like. As I'm always interested in exploring new ways to collaborate, incl comparative studies.

Best wishes,

Sindy

## Appendix B. Parent Information Sheet Phase 1.



Curtin University

### PARENT INFORMATION SHEET

#### Phase one: Invitation to participate in a focus group

**Study Title: The development of a self-report measure of covert aggression for upper primary school aged children.**

Research Team: Helen Nelson (PhD student), Dr Garth Kendall, A/Prof Sharyn Burns

This study aims to gain a better understanding of pro-social behaviour and aggressive behaviour including bullying (repeated and intentional aggression towards another child) to help inform interventions that support children in building healthy friendships at school.

The first phase of the study will invite a small number of children to participate in focus groups of six to eight children. The focus groups will be conducted by the researcher (a school nurse) and a supervisor (with Education and Health Promotion expertise and experience in conducting focus groups and interviews with school-aged children). The aim of the focus groups will be to clarify the issues experienced by children and the language they prefer to use when answering questions about behaviour, in particular aggressive behaviour and bullying. This will help us form the content and wording of a questionnaire. The interviews with children in focus groups will be audiotaped and transcribed to allow accuracy in understanding what the children say. We are inviting a small number of children in Years 4, 5 and 6 to participate in the focus groups. All information given by children will be confidential and will not be available to school staff or discussed with anyone other than the expert team involved in designing the questionnaire. The audiotapes and completed transcripts will be identified by a study number only and stored in a locked filing cabinet accessed only by the research team, and will be disposed of according to university guidelines when children have reached 25 years of age. No child will be identified by name or in any other way in any published results.

We would like to invite your child to participate in a focus group. Participation in this study is completely voluntary. As a parent you are free to withdraw your child at any time without prejudice or negative consequences. Your child is also free to withdraw at any time without prejudice or negative consequences. The researcher will be available by email or appointment to answer or clarify any questions. If you would like further information about the study please contact the Investigator Helen Nelson by email, [helen.nelson@postgrad.curtin.edu.au](mailto:helen.nelson@postgrad.curtin.edu.au); or Supervisor Dr Garth Kendall on (08) 9266 2191.

Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number RDHS-38-15). Should you wish to discuss the study with someone not directly involved, in particular, any matters concerning the conduct of the study or your rights as a participant, or you wish to make a confidential complaint, you may contact the Ethics Officer on (08) 9266 9223 or the Manager, Research Integrity on (08) 9266 7093 or email [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au)

A handwritten signature in black ink, appearing to read 'Helen Nelson'.

Helen Nelson MN, RN  
PhD Student  
Curtin University

Principal of Primary School

**Appendix C. Consent Form Phase 1**



**Curtin University**

**CONSENT FORM**

**Phase one: Invitation to participate in a focus group**

**Study Title: The development of a self-report measure of covert aggression for upper primary school aged children.**

Research Team; Helen Nelson (PhD student), Dr Garth Kendall, A/Prof Sharyn Burns

I have been provided with the parent information sheet and understand the intentions of this study.

I understand that I may withdraw my child from the study or my child may withdraw from the study at any time without prejudice or negative consequence to my child.

I understand that in the event of this work being published, my child as a participant will not in be in any way identifiable.

I know that I can contact the researcher Helen Nelson by email, [helen.nelson@postgrad.curtin.edu.au](mailto:helen.nelson@postgrad.curtin.edu.au) if I have questions or concerns.

**Parent Statement**

I .....(Print full name of parent)

understand the intentions of the study and know that I have the opportunity to ask questions at any time.

I AGREE for my child .....(Print name of child) to participate in a focus group.

I have discussed this research with my child and my child and I understand that my child's participation in this study is voluntary and I, or my child, can withdraw at any time without in any way causing prejudice or negative consequence to my child.

Signature..... Parent

Date.....

**OR**

I DO NOT agree for my child .....(Print name of child) to participate in a focus group

Signature..... Parent

**Please return this form to the school by ..... (Date)**

**Appendix D. Child Information Sheet and Assent Phase 1.**



**CHILD INFORMATION SHEET AND ASSENT**

We are doing some research to find out about bullying from children. We want to find out what kids your age think about bullying and would like you to help us by joining in a group discussion. There are no right or wrong answers because this is about your own feelings and ideas about the topic.

If you agree to join in we will ask you to take part in a discussion about what words you believe will best describe the way people behave with each other at school. We will record the discussion to help us remember and understand what you have to say. We will write down what you say by listening to the recording but will not write down your name or anything else that will show that you have been part of the group. We will not discuss what you say with any children or staff at school and we will respect your decision to leave the group discussion if you choose to. You will be able to speak with us if you have any concerns about taking part in the group discussion.

Please sign your name below if you agree to participate in the group discussion.

Yes, I would like to participate in the group discussion. I understand that the discussion will be recorded and then written down to help the researchers understand what was said.

Your name.....

Today's date.....

**Study Title: The development of a self-report measure of covert aggression for upper primary school aged children.**

**People doing the project:** Helen Nelson, Dr Garth Kendall, A/Prof Sharyn Burns

## **Appendix E. Focus Group Discussion: Moderator Guide Phase 1a.**

### INTRODUCTION

My name is Helen Nelson and this is Sharyn Burns. We are doing some research to find out more about bullying. We want to find out what children your age think about bullying and we would like you to help us by joining in a group discussion. There are no right or wrong answers; we are interested in your own feelings and ideas. We are using this information to help write a survey to find out more about bullying behaviours.

If you agree to join in we will ask you to take part in a discussion about the way people behave with each other at school and what words you believe will best describe that behaviour. We will record the discussion to help us remember and understand what you have to say. We will write down what you say by listening to the recording but will not write down your name or anything else that will show that you have been part of the group. We will not discuss what you say with any children or staff at school and we will respect your decision to leave the group discussion if you choose to. You will be able to speak with us if you have any concerns about taking part in the group discussion.

Before we begin I would like to ask you to read this form, if you agree to join in the discussion, we will ask you to sign this form by printing your name and the date. If you do not want to sign the form, you may return to your class before the discussion begins. If you join the discussion and begin to feel uncomfortable about anything we talk about, you may leave quietly and one of us will take you back to your classroom.

Discuss ground rules: When we are talking please: Speak one at a time; Respect what the other children in the group have to say; Respect the experience of each person in the group; When we talk about bullying please don't mention other kids names.

### YEAR FOUR TO SIX FOCUS GROUP QUESTIONS

Tell us about your favourite subjects at school (or similar question to focus the group).

We are going to tell you a little story then ask some questions about the story.

Vignette: Olivia arrived at school one day and the children that she normally sat with and played with were talking about her and laughing at her. When she

asked why she found out that someone who she had thought was a friend had told a lie about her and now the other children did not want to include her. The kid that told the lie was named Jordan, and Jordan was very popular with the other kids.

*2.1 Tell how you think Olivia might be feeling*

*2.2 Why do you think Jordan did this to Olivia?.*

*2.3 Do you think this is a type of bullying? Why/why not?*

*2.4 Tell us about whether you think things like this happen at your school or at other schools.*

*2.5 What would you do if you knew this was happening at your school?*

*prompt: what would other kids think?*

### **Potential questions**

- Can you tell us what do you think bullying is? (*Prompt: hurting another, social exclusion, cyberbullying, teasing*)
- Do you think some kids are more likely to get bullied than others? Tell us about them
- Do you think some kids are more likely to bully than others? Tell us about them. Why do you think some kids bully others?
- Tell us about any sort of bullying you have seen or heard about happening at your school. (*Prompt: Hitting? Words?*)
- Do you think some bullying happens without other people knowing about it? Tell us about that type of bullying. Why do you think some kids bully like this?
- Do you think some bullying happens without many people knowing? Tell us about this sort of bullying (may need to prompt e.g. hidden bullying)
- Do you think there is ever a situation where everyone else knows who the bully is except the person being bullied? Tell us about it
- *If you were being bullied what would you do (or what would you do if you were Olivia)*
- *What would you do if you were Olivia's friend?*
- Is there anything else you would like to say about bullying?

Thank you very much for taking part in this focus group. We appreciate hearing what you have told us.

## **Appendix F. Focus Group Discussion: Moderator Guide Phase 1b.**

In this focus group children will complete the online questionnaire and we will obtain their feedback. Children will complete the questionnaire in the reading room of the library on iPads. Children's responses will be anonymous.

### **Moderators:**

- Read each question for year 4, and year 5 groups. Ask the Year 6 teacher about the reading level of the children before deciding to read each question aloud.
- Children will first answer questions on the computer tablet and we will time how long it takes for children to complete the survey.
- If children do not understand a word they will put their hand up and we will explain it to all children and take a note of the query.
- If we notice children are struggling we will make a note and go back to the question at the end.
- Ask at the end: was there anything in the online survey that you didn't understand?
- Go back to the stem sentence to the Internet question and ask what children think about the wording.
- Response options – go back and say this one has ... how did you find all of those options, for example, is it easy to think about whether things had happened once or twice a month?
- Ask, do you think that other kids will answer these questions honestly?

Potential questions:

Is the online survey easy to use?

Did you understand the words?

Is it too long?

Do you think children will feel any concerns with answering these questions?

How honest do you think children will be in the answers they give?

Is there anything we can do to improve the survey? (Questions informed by Schonert-Reichl et al., 2013, p. 351)

## Appendix G. Parent Information Sheet Phase 2.



Curtin University

### PARENT INFORMATION SHEET

**Study Title: The development of a self-report measure of covert aggression for upper primary school aged children.**

Research Team: Helen Nelson (PhD student), Dr Garth Kendall, A/Prof Sharyn Burns

We are investigating how behaviour develops at primary school, both positive social behaviour and aggressive behaviour including bullying (repeated and intentional aggression towards another child). The study aims to gain a better understanding of how bullying behaviour develops and to ultimately use this information to design interventions that support children in building healthy friendships at school, which will help them be happy at school and achieve their learning potential.

Children in Years 4, 5 and 6 are invited to participate in the study. As a participant, your child will be asked to complete a brief online questionnaire that has been designed especially for this purpose. This questionnaire will be anonymous and confidential. Research assistants will be present to help your child read and understand the questions if needed. It is anticipated that the questionnaires will take about 20 minutes to complete.

This research looks at each year group as a whole, not at individual students. Each questionnaire will be anonymous, your child's name will not be included, and all information given will be confidential and will not be available to school staff or discussed with anyone. The completed questionnaires will be accessed only by the research team. If the results of the study are published no child will be identified by name.

Participation in this study is completely voluntary. As a parent you are free to withdraw your child at any time without prejudice or negative consequences. Your child is also free to withdraw at any time without prejudice or negative consequences. The researcher will be available by phone call or appointment to answer or clarify any questions. If you would like further information about the study please contact the Investigator Helen Nelson by email, [helen.nelson@postgrad.curtin.edu.au](mailto:helen.nelson@postgrad.curtin.edu.au); or Supervisor Dr Garth Kendall on (08) 9266 2191.

**We ask that you complete the attached consent form to indicate if you are, or are not, willing for your child to participate in the research. Please return the completed consent for to the school with your child by 30 October 2015.**

Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number RDHS-38-15). Should you wish to discuss the study with someone not directly involved, in particular, any matters concerning the conduct of the study or your rights as a participant, or you wish to make a confidential complaint, you may contact the Ethics Officer on (08) 9266 9223 or the Manager, Research Integrity on (08) 9266 7093 or email [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au)

A handwritten signature in black ink, appearing to read 'Helen Nelson'.

Helen Nelson MN, RN  
PhD Student  
Curtin University

School Principal

**Appendix H. Consent Form Phase 2**



**Curtin University**

**CONSENT FORM**

**Study Title: The development of a self-report measure of covert aggression for upper primary school aged children.**

Research Team; Helen Nelson (PhD student), Dr Garth Kendall, A/Prof Sharyn Burns

I have been provided with the parent information sheet and understand the intentions of this study.

I understand that I may withdraw my child from the study, or my child may withdraw from the study, at any time without prejudice or negative consequence to my child.

I understand that in the event of this work being published, my child as a participant will not be in any way identifiable.

**Parent Statement**

I .....(Print full name of parent)

understand the intentions of the study and know that I have the opportunity to ask questions at any time.

I AGREE for my child .....(Print name of child) to participate in the study.

I understand that my child's participation in this study is voluntary and I, or my child, can withdraw at any time without in any way causing prejudice or negative consequence to my child.

Signature..... Parent

Date.....

**OR**

I DO NOT agree for my child .....(Print name of child) to participate in this study.

Signature..... Parent

**Please return this form to the school by 30 October 2015**

**Appendix I. Child Information Sheet and Assent Phase 2**



**Curtin University**

**CHILD INFORMATION SHEET AND ASSENT**

We are doing some research to find out about how children behave with each other at school. We want to find out what kids your age think about aggressive behaviour and bullying and would like you to help us by answering some questions about your experience of aggressive behaviour. There are no right or wrong answers because this is about your own feelings and ideas about the topic.

If you agree to join in we will ask you to answer some questions on the computer or ipad. We will not write your name on the answers and we will not discuss what you say with any children or staff at school. Someone will be able to help you to read or understand the questions if you want help. We will respect your decision to stop answering the questions if you choose to. You will be able to speak with us if you have any concerns about the questions.

Please sign your name below if you agree to answer the questions.

Yes, I would like to answer the questions. I understand that my name will not be on the questionnaire.

Your name .....

Today's date.....

**Study Title: The development of a self-report measure of covert aggression for upper primary school aged children.**

**People doing the project:** Helen Nelson, Dr Garth Kendall, A/Prof Sharyn Burns

## Appendix J. Online Questionnaire Phase 2

Dear student,

We are using this survey to find out how kids treat each other at school.

No one at school or home will look at your answers.

This is not a test and there are no right or wrong answers. Please answer all the questions as honestly as you can. We are very interested in what you have to say. If you don't want to answer any questions you don't have to.

If you have any questions about the survey, please ask the research assistant visiting your classroom.

### Lets get started.

Q1.1 What year are you in at school? (click one box to mark your answer)	
Year 4	<input type="radio"/>
Year 5	<input type="radio"/>
Year 6	<input type="radio"/>

Q1.2 Are you a boy or girl? (click one box to mark your answer)	
Girl	<input type="radio"/>
Boy	<input type="radio"/>

Q1.3 What languages do you speak at home? (click one box to mark your answer)	
English only	<input type="radio"/>
Other language/s only	<input type="radio"/>
English and other language/s	<input type="radio"/>

Q 1.4 not included in thesis due to copyright restriction (Olweus, 1996)

<b>Q2.1 Are there students in your school who would (please mark one answer for each statement)</b>			
	<b>No</b>	<b>Sometimes</b>	<b>A lot of the time</b>
Share things like stickers, toys and games with you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tell you you're good at things?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Explain the rules of a game if you didn't understand them?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Invite you to play at their home?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Choose you on their team at school?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Help you if you hurt yourself in the playground?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Miss you if you weren't at school?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make you feel better if something was bothering you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pick you for a partner?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Help you if other students are being mean to you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tell you you're their friend?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask you to play when you're all alone?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tell you secrets?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Perceptions of Peer Support Scale (Ladd, Kochenderfer, & Coleman, 1996)*

<b>Q3.1 In the last few months at school I was hurt or upset because (please mark one answer for each statement)</b>						
	<b>Never</b>	<b>Someti mes</b>	<b>Once or twice a month</b>	<b>Once a week</b>	<b>Severa l times a week</b>	<b>Every day</b>
Hurtful jokes were made about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A student made rude remarks about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was teased by students saying mean things to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students teased and made fun of me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Things were said about my looks I didn't like	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was called names I didn't like	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Adolescent Peer Relations Instrument (APRI) Victim – verbal scale (Marsh et al., 2011)*

*The display logic function is used to display the following questions if the student answers yes to “once or twice a month”, “once a week”, “several times a week”, or “every day” to one or more of the above items in Q3.1.*

<b>Q3.2 When these things happened, was the mean student (please mark one answer for each statement)</b>		
	<b>No</b>	<b>Yes</b>
Really smart?	<input type="radio"/>	<input type="radio"/>
Good looking?	<input type="radio"/>	<input type="radio"/>
Older than you?	<input type="radio"/>	<input type="radio"/>
Good at sport?	<input type="radio"/>	<input type="radio"/>
Trying to be more popular?	<input type="radio"/>	<input type="radio"/>
In the most popular group?	<input type="radio"/>	<input type="radio"/>
Much stronger than you?	<input type="radio"/>	<input type="radio"/>
Bigger than you?	<input type="radio"/>	<input type="radio"/>
With a group of students?	<input type="radio"/>	<input type="radio"/>

(Nelson, Kendall, & Burns, 2015)

<b>Q3.3 In the last few months at school I was hurt or upset because (please mark one answer for each statement)</b>						
	<b>Never</b>	<b>Some- times</b>	<b>Once or twice a month</b>	<b>Once a week</b>	<b>Several times a week</b>	<b>Every day</b>
I was threatened to be physically hurt or harmed	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students crashed into me on purpose as they walked by and were trying to hurt me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was hit or kicked hard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My property was damaged, hidden or taken on purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was pushed or shoved in a mean way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Something was thrown at me to hit me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APRI Victim – physical scale (Marsh et al., 2011)

The display logic function is used to display the following questions if the student answers yes to “once or twice a month”, “once a week”, “several times a week”, or “every day” to one or more of the above items in Q3.3.

<b>Q3.4 When these things happened, was the mean student (please mark one answer for each statement)</b>		
	<b>No</b>	<b>Yes</b>
Really smart?	<input type="radio"/>	<input type="radio"/>
Good looking?	<input type="radio"/>	<input type="radio"/>
Older than you?	<input type="radio"/>	<input type="radio"/>
Good at sport?	<input type="radio"/>	<input type="radio"/>
Trying to be more popular?	<input type="radio"/>	<input type="radio"/>
In the most popular group?	<input type="radio"/>	<input type="radio"/>
Much stronger than you?	<input type="radio"/>	<input type="radio"/>
Bigger than you?	<input type="radio"/>	<input type="radio"/>
With a group of students?	<input type="radio"/>	<input type="radio"/>

(Nelson, Kendall, & Burns, 2015)

<b>Q4.1 In the last few months at school (please mark one answer for each statement)</b>						
	<b>Never</b>	<b>Some- times</b>	<b>Once or twice a month</b>	<b>Once a week</b>	<b>Several times a week</b>	<b>Every day</b>
I made fun of a student by calling them names	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I picked on a student by swearing at them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I teased a student by saying mean things to them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I said rude things to a student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I said things about a student's looks they didn't like	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I made mean jokes about a student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APRI Perpetrator – verbal scale (Marsh et al., 2011)

<b>Q4.2 In the last few months at school (please mark one answer for each statement)</b>						
	<b>Never</b>	<b>Some- times</b>	<b>Once or twice a month</b>	<b>Once a week</b>	<b>Several times a week</b>	<b>Every day</b>
I talked in a mean way about a student, to other students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I crashed into a student on purpose as they walked by to hurt them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I pushed or shoved a student to hurt them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I threw something at a student to hit them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I got into a fight with a student because I didn't like them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I slapped or punched a student to hurt them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I threatened to physically hurt or harm a student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*APRI Perpetrator – physical scale (Marsh et al., 2011)*

<b>Q5.1 In the last few months at school (please mark one answer for each statement)</b>						
	<b>Never</b>	<b>Some- times</b>	<b>Once or twice a month</b>	<b>Once a week</b>	<b>Several times a week</b>	<b>Every day</b>
A student got other students to start a rumour about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was left out of activities or games on purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A student ignored me when they were with their friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A student wouldn't be friends with me because other people didn't like me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wasn't invited to a student's place because other people didn't like me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A student got their friends to turn against me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*APRI Victim – social scale (Marsh et al., 2011)*

*The display logic function is used to display the following questions if the student answers yes to “once or twice a month”, “once a week”, “several times a week”, or “every day” to one or more of the above items in Q5.1.*

<b>Q5.2 When these things happened, was the mean student (please mark one answer for each statement)</b>		
	<b>No</b>	<b>Yes</b>
Really smart?	<input type="radio"/>	<input type="radio"/>
Good looking?	<input type="radio"/>	<input type="radio"/>
Older than you?	<input type="radio"/>	<input type="radio"/>
Good at sport?	<input type="radio"/>	<input type="radio"/>
Trying to be more popular?	<input type="radio"/>	<input type="radio"/>
In the most popular group?	<input type="radio"/>	<input type="radio"/>
Much stronger than you?	<input type="radio"/>	<input type="radio"/>
Bigger than you?	<input type="radio"/>	<input type="radio"/>
With a group of students?	<input type="radio"/>	<input type="radio"/>

(Nelson, Kendall, & Burns, 2015)

<b>Q5.3 In the last few months at school other students (please mark one answer for each statement)</b>					
	<b>Never</b>	<b>Rarely</b>	<b>Some- times</b>	<b>Once a week</b>	<b>Most days</b>
Said mean things behind my back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tried to turn my friends against me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Told people not to hang around with me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teased me about things that aren't true	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ignored me on purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Called me names because I can't do something	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Made rude hand signs at me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Told people to make fun of me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Called me names because I'm a bit different	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Made fun of my friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Made death stares at me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The Personal Experiences Checklist (PECK) Verbal-Relational scale (Hunt et al., 2012)

*The display logic function is used to display the following questions if the student answered yes to "sometimes", "once a week", or "most days" to one or more of the above items in Q5.3.*

<b>Q5.4 When these things happened, was the mean student (please mark one answer for each statement)</b>		
	<b>No</b>	<b>Yes</b>
Really smart?	<input type="radio"/>	<input type="radio"/>
Good looking?	<input type="radio"/>	<input type="radio"/>
Older than you?	<input type="radio"/>	<input type="radio"/>
Good at sport?	<input type="radio"/>	<input type="radio"/>
Trying to be more popular?	<input type="radio"/>	<input type="radio"/>
In the most popular group?	<input type="radio"/>	<input type="radio"/>
Much stronger than you?	<input type="radio"/>	<input type="radio"/>
Bigger than you?	<input type="radio"/>	<input type="radio"/>
With a group of students?	<input type="radio"/>	<input type="radio"/>

*(Nelson, Kendall, & Burns, 2015)*

<b>Q5.5 In the last few months at school other students (please mark one answer for each statement)</b>					
	<b>Never</b>	<b>Rarely</b>	<b>Some- times</b>	<b>Once a week</b>	<b>Most days</b>
Made fun of my language	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Made fun of my culture	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teased me about my voice	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wouldn't talk to me because of where I am from	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teased me about the colour of my skin	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The Personal Experiences Checklist (PECK) Bullying Based on Culture scale (Hunt et al., 2012).

<b>Q6.1 The Internet refers to use via messaging, online games, apps, and social media. The following questions are about your experiences with other students on the Internet. How often have the following things happened to you in the last few months on the Internet? (please mark one answer for each statement)</b>						
	<b>Never</b>	<b>Some- times</b>	<b>Once or twice a month</b>	<b>Once a week</b>	<b>Several times a week</b>	<b>Most days</b>
I was excluded	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other's did not let me join a conversation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other's did not let me participate	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My secrets were told to others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other's acted like I did not exist	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Multidimensional Offline and Online Peer Victimization Scale (MOOPV) (Sumter et al., 2015).*

**Q6.2** The Internet refers to use via messaging, online games, apps, and social media. The following questions are about your experiences with other students on the Internet. How often have the following things happened to you in the last few months on the Internet? (please mark one answer for each statement)

	Never	Some-times	Once or twice a month	Once a week	Several times a week	Most days
I was sent nasty messages	<input type="radio"/>					
I was called mean names	<input type="radio"/>					
I was sent aggressive messages	<input type="radio"/>					
I was insulted	<input type="radio"/>					
A student embarrassed me	<input type="radio"/>					
A student said untrue things about me	<input type="radio"/>					

*Multidimensional Offline and Online Peer Victimization Scale (MOOPV) Online Direct (Sumter et al., 2015)*

**Q7.1** In the last few months at school (please mark one answer for each statement)

	Never	Some-times	Once or twice a month	Once a week	Several times a week	Every day
I got students to start a rumour about a student	<input type="radio"/>					
I told my friends things about a student to get them into trouble	<input type="radio"/>					
I got my friends to turn against a student	<input type="radio"/>					
I got other students to ignore a student	<input type="radio"/>					
I left a student out of activities or games on purpose	<input type="radio"/>					
I kept a student away from me by giving them mean looks	<input type="radio"/>					

*APRI Perpetrator – social scale (Marsh et al., 2011)*

<b>Q7.2 How true are the following statements for you? (please mark one answer for each statement)</b>				
	<b>Not at all true</b>	<b>Sometimes true</b>	<b>Very true</b>	<b>Definitely true</b>
I enjoy making fun of others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I deliberately exclude others from my group, even if they haven't done anything to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I try to make others look bad to get what I want	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I tell others secrets for things they did to me a while back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I gossip about others to become popular	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To get what I want, I try to steal others friends from them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I gossip about others, I feel like it makes me popular	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I spread rumours and lies about others to get what I want	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I say mean things about others, even if they haven't done anything to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Forms and Functions of Aggression Proactive relational subscale (Marsee et al., 2011)*

*Q 8.1 not included in thesis due to copyright restriction*

<b>Q9.1 How true are the following statements for you? (please mark one answer for each statement)</b>				
	<b>Not at all true</b>	<b>Somewhat true</b>	<b>Very true</b>	<b>Definitely true</b>
I have to hurt others to win a game or contest	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I start fights to get what I want	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I hurt others I feel like it makes me powerful and respected	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I threaten others to get what I want	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am deliberately cruel to others even if they have not done anything to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I carefully plan out how to hurt others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I hurt others for things they did to me a while back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I enjoy hurting others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I like to hurt kids smaller than me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I threaten others even if they haven't done anything to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Forms and Functions of Aggression Proactive overt subscale (Marsee et al., 2011)*

<b>Q10.1 At my school there is a teacher or another adult (please mark one answer for each statement)</b>				
	<b>Not at all true</b>	<b>A little bit true</b>	<b>Often true</b>	<b>Always true</b>
Who really cares about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Who believes that I will be a success	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Who listens to me when I have something to say	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Who I can talk to about my problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Middle Years Development Instrument Adults at school subscale (Schonert-Reichl et al., 2013)*

<b>Q10.2 In my home there is a parent or another adult (please mark one answer for each statement)</b>				
	<b>Not at all true</b>	<b>A little bit true</b>	<b>Often true</b>	<b>Always true</b>
Who listens to me when I have something to say	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Who believes that I will be a success	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Who I can talk to about my problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Who really cares about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Middle Years Development Instrument Adults at school subscale (Schonert-Reichl et al., 2013)*

*The display logic function was used to display the following questions if the student answered, "yes" to Q10.3.*

Q10.4 What happened when you told the teacher that another student had been mean? (Click if this has happened to you)	
	Click if this has happened to you
The teacher thought it was just an accident	<input type="checkbox"/>
It got solved	<input type="checkbox"/>
The other student got away with it by telling a lie	<input type="checkbox"/>
The teacher wasn't able to help	<input type="checkbox"/>
The teacher helped me	<input type="checkbox"/>
The teacher thought we should ignore it	<input type="checkbox"/>
Telling the teacher made it worse	<input type="checkbox"/>
Telling the teacher made it better	<input type="checkbox"/>
The teacher didn't believe me	<input type="checkbox"/>
Everyone just got into way more trouble	<input type="checkbox"/>
My friends excluded me because I told the teacher	<input type="checkbox"/>
The teacher thought it didn't happen	<input type="checkbox"/>
The student who was mean to me is popular with the teachers, so nothing was done about it	<input type="checkbox"/>

*(Nelson, Kendall, & Burns, 2015)*

Here are some questions about being bullied by other students. First we define or explain the word bullying. We say a student is being bullied when another student, or several other students

- say mean and hurtful things or make fun of him or her or call him or her mean and hurtful names
- completely ignore or exclude him or her from their group of friends or leave him or her out of things on purpose
- hit, kick, push, shove around, or lock him or her inside a room
- tell lies or spread false rumours about him or her or send mean notes and try to make other students dislike him or her
- and other hurtful things like that.

When we talk about bullying, these things happen repeatedly, and it is difficult for the student being bullied to defend him or herself. We also call it bullying when a student is teased repeatedly in a mean and hurtful way.

But we don't call it bullying when the teasing is done in a friendly and playful way. Also, it is not bullying when two students of about equal strength or power argue or fight.

*Olweus Bullying Questionnaire (OBQ) (Olweus, 1996)*

<b>Q11.1 How often have you been bullied at school in the last few months? (click one box to mark your answer)</b>	
I haven't been bullied at school in the past few months	<input type="radio"/>
It has happened only once or twice	<input type="radio"/>
2 or 3 times a month	<input type="radio"/>
About once a week	<input type="radio"/>
Several times a week	<input type="radio"/>

*Olweus Bullying Questionnaire (OBQ) (Olweus, 1996)*

<b>Q11.2 How often have you taken part in bullying other student(s) at school in the last few months? (click one box to mark your answer)</b>	
I have not bullied another student	<input type="radio"/>
It has happened only once or twice	<input type="radio"/>
2 or 3 times a month	<input type="radio"/>
About once a week	<input type="radio"/>
Several times a week	<input type="radio"/>

*Olweus Bullying Questionnaire (OBQ) (Olweus, 1996)*

**Thank you for answering these questions. If these questions have caused you to feel upset or uncomfortable please talk with someone that you can trust.**

## **Appendix K. Scales Used Within the Questionnaire Phase 2**

### **Sociodemographic Items**

Children reported their year at school, gender, and language spoken at home. Year group (Q1.1) was used as a categorical measure: 0 (*Year 4*), 1 (*Year 5*), 2 (*Year 6*). Gender (Q1.2) was used as a nominal measure: 0 (*Girl*), 1 (*Boy*). Language spoken at home (Q1.3) was reported as a categorical measure: 0 (*English*), 1 (*Other language/s only*), 2 (*English and other language/s*). Information on children's ethnicity was not collected because when asked, preadolescent children will often state their ethnicity as that of the country in which they reside (Desjardins et al., 2013).

### **New Instruments**

#### Scale of Perceived Power Imbalance

The new instrument to measure power imbalance by children's self-report was included four times within the questionnaire (Q3.2, Q3.4, Q5.2, Q5.4). The display logic function of Qualtrics online survey software was used to display the new power imbalance instrument if the student answered yes to "*once or twice a month*", "*once a week*", "*several times a week*", or "*every day*" to one or more of the items in the APRI victim scales (Q3.1, Q3.3, Q5.1) (Parada, 2000), or "*sometimes*", "*once a week*" or "*most days*" to any PECK item (Q5.3) (Hunt et al., 2012). The binary response to the new measures of power imbalance was coded 0 (*no*), 1 (*yes*), or 8 (*skipped*).

#### Student Experience of Teacher Support Scale

The display logic function was used to display the new instrument if the student answered, "yes" to Q10.3, "Have you ever told a teacher when other students have been mean to you or someone else on purpose?"

Students were not limited on how many answers they could give to the 13-items in the new measure of covert aggression (Q10.4), the response was "click if this has happened to you," coded 0 (not clicked), 1 (clicked), 8 (skipped).

### **Previously Validated Instrument**

#### Adolescent Peer Relations Instruments (APRI)

The Adolescent Peer Relations Instrument (APRI; Parada, 2000 as cited by Marsh et al., 2011) measures bullying and victimisation and was initially used with an adolescent sample in Australia ( $n = 4082$ , Year 7 to 11) ( $\alpha = 0.82$  to  $0.93$ ). The APRI has been found to be reliable with primary school aged children in years five and six ( $\alpha = 0.81$  to  $0.90$ ) (Finger et al., 2008). Items were answered on a six-point scale: 0 (*never*), 1 (*sometimes*), 2 (*once or twice a month*), 3 (*once a week*), 4 (*several items a week*), 5 (*every day*). No definition of bullying precedes items in the APRI, and specific items of power imbalance are not included. It is therefore a measure of aggressive behaviour rather than bullying, the factors are however labelled as bullying and victimisation each in three subscales - *verbal*, *physical*, and *social* (Marsh et al., 2011). In comprehensive analysis of the APRI each scale formed a clear factor structure and demonstrated internal consistency (see Table 1) (Marsh et al., 2011). The goodness of fit was acceptable (CFI = 0.923), TLI = 0.916, RMSEA = 0.019) (Marsh et al., 2011). Convergent and discriminant validity over time was shown in relation to year at school, gender, and psychological correlates. The author of the APRI (Parada, 2000) was contacted and gave permission for the APRI scale to be used in the current research (R. Parada, personal communication, July 28, 2014).

**Table 1. Internal Consistency and Reliability of APRI Scales**

	APRI Scale	Cronbach's $\alpha$
Q3.1	<i>Victim - verbal</i>	<i>0.92 - 0.93</i>
Q3.3	<i>Victim - physical</i>	<i>0.89 - 0.92</i>
	<i>Victim - social</i>	<i>0.87 - 0.92</i>
Q4.1	<i>Perpetrator - verbal</i>	<i>0.89 - 0.92</i>
Q4.2	<i>Perpetrator - physical</i>	<i>0.85 - 0.90</i>
Q5.1	<i>Perpetrator - social</i>	<i>0.82 - 0.90</i>

Each victim scale preceded the new power imbalance instrument, with the intent of differentiating aggressive behaviour and bullying. The APRI asks children to report on their experience "In the past year at this school," this was changed to "in the past few months at this school". One item of the *perpetrator-verbal* subscale "I made jokes about a student" was changed to "I made mean jokes about a student." Following review of the instrument by children the wording of one item was adapted for preadolescent students: "I was ridiculed" to "Students teased and made fun of me." Following expert review "My property was damaged on purpose" was changed to "My property was hidden, taken or damaged on purpose."

### The Personal Experiences Checklist (PECK)

The Personal Experiences Checklist (PECK) *relational-verbal* scale (Q5.3) and *bullying based on culture* scale (Q5.5) were included to measure children's self report of victimisation. The PECK was developed in Australia to measure children's experience of being bullied by self-report (n=647, age 8 to 15 years) (Hunt et al., 2012). The PECK included measures of physical, relational-verbal, and cyber bullying, and bullying based on culture answered on a five-point scale: 0 (*never*), 1 (*rarely*), 2 (*sometimes*), 3 (*once a week*), 4 (*most days*). The PECK did not however define bullying and did not include a measure of repetition, intent, or power imbalance. The authors wrote that "it is arguable whether these elements are adequately assessed in any current measures of bullying" (Hunt et al., 2012, p. 164). Severity was however rated on a five-point scale for how bad it made the participant feel "not bad at all, a little bad, bad, really bad, terrible" (Hunt et al., 2012, p. 158). CFA resulted in a four-factor model,  $\chi^2 = 1465.539$ ,  $df=458$ , CFI = 0.881, RMSEA = 0.071. The comparative fit index of 0.88 was slightly below the recommended criteria of 0.90. The items in the *relational-verbal* ( $\alpha = 0.91$ ) and *bullying based on culture* ( $\alpha = 0.78$ ) scales were, however, simple to read and relevant to children of eight years of age. Review of the literature has revealed high correlations in many scales of verbal and relational bullying, and indeed, Hunt et al. (2012) found that verbal and relational items loaded onto one factor. Written permission was given to use items by the author of the PECK (C. Hunt, personal communication, September 21, 2015). Following expert review an item "Teased me about the colour of my skin" was added to the *bullying based on culture* scale. The severity rating of the PECK was not used in the current study, rather, children who responded "sometimes", "once a week" or "most days" to any item on the PECK *verbal-relational* scale answered the new power imbalance instrument.

### Multidimensional Offline and Online Peer Victimization Scale

The Multidimensional Offline and Online Peer Victimization Scale (MOOPV) ( $\alpha > 0.80$ , n=799, age 9 to 18 years, The Netherlands) (Sumter et al., 2015). Two scales were used to measure children's experience with online victimisation: *Online indirect* scale (Q6.1) and *online direct* scale (Q6.2).

Using EFA, Sumter and colleagues found four factors of peer victimisation: direct offline, indirect offline, direct online, indirect online. CFA confirmed acceptable fit of the four-factor structure when errors were allowed to correlate  $\chi^2(df = 153, n = 726) = 613.02$ ,  $p < .005$ , CFI = .94, RMSEA = .06, ECVI = 1.06. All subscales had

Cronbach's alpha estimates greater than 0.80. The Internet was defined as "Internet via a computer, laptop and Internet via your mobile" (Sumter et al., 2015, p. 120). Respondents answered on a six-point scale: 0 (*never*), 1 (*once in the past six months*), 2 (*2–3 times in the past six months*), 3 (*about once a month*), 4 (*about once a week*), and 5 (*almost every day*).

In Phase 1 of the current study, thematic analysis of focus group discussion revealed the Internet as an influence on power imbalance through social exclusion, lies and the group. The *direct online* scale (for example, "I was sent nasty messages") and *indirect online* scale (example, "I was excluded") were therefore included in the current study. The author of the MOOPV gave written permission to use and adapt the scale as necessary (S. Sumter, personal communication, August 25, 2015). An expert reviewer recommended the addition on an item to the *direct online* scale "A student said untrue things about me." This reflected the observations made by children in focus groups and was therefore included. Furthermore, based on focus group analysis "online games" and "social media" were added to the definition of the Internet. In review of the questionnaire children recommend the inclusion of the term "apps" to the definition of the Internet. The definition used in the questionnaire was, "The Internet refers to use via messaging, online games, apps, and social media." The response scale was changed to match the OBQ 0 (*Never*), 1 (*Sometimes*), 2 (*Once or twice a month*) 3 (*Once a week*), 4 (*Several times a week*), 5 (*Most days*).

#### Forms and Functions of Aggression

The Forms and Functions of Aggression (FFA) measured aggressive behaviour defined as "intent to harm" (Marsee et al., 2011, p. 792). Two scales were used to measure perpetration of aggression by children's self-report: The *proactive relational* subscale (Q7.2) and the *proactive overt* subscale (Q9.1).

The FFA is a 40-item self-report measure of the perpetration of aggressive behaviour (Marsee et al., 2011). The structure of the FFA was examined with adolescents (n=855, age 12 to 19 years), and four valid dimensions of behaviour were reported: reactive overt, reactive relational, proactive overt and proactive relational,  $\chi^2$  (152, n=848) = 758.588, CFI = 0.906, RMSEA = 0.068. Each item was answered on a four-point scale; 0 (*not at all true*), 1 (*somewhat true*), 2 (*very true*), and 3 (*definitely true*). Many items refer to power imbalance, for example "When I hurt others, I feel like it makes me powerful and respected" (*proactive overt* subscale). Likewise, "When I gossip about others, I feel like it makes me popular"

(*proactive relational* subscale). Proactive aggression was defined as either dominance, unprovoked and premeditated, or sadistic, in keeping with the callousness associated with intent to harm (Marsee et al., 2011, p. 800; Marsee & Frick, 2010). Invariance of the four-factor model across gender, and across high school, detained and residential samples was supported. Associations with delinquency and arrest history were measured and differed for the different dimensions of aggression.

Although the FFA was validated with adolescents, the age of 12 years was relevant to the sample in the current study. Furthermore, two subscales of the FFA were relevant to themes raised by children in focus groups in Phase 1 of the current study, specifically in relation to popularity as an influence on power imbalance. The *proactive relational* sub-scale ( $\alpha = 0.80$ ) and the *proactive overt* subscale ( $\alpha = 0.82$ ) were included in the questionnaire. The author of the FFA gave written permission for the use of the instrument in the current study (M. Marsee, personal communication, September 11, 2015).

#### Scales Used for Validity Testing

The following scales were included to assess reliability in Phase 2 with a view to inclusion in Phase 3 of the research.

#### Perceptions of Peer Support Scale

The Perceptions of Peer Support Scale (PPSS) (Ladd et al., 1996) (Q2.1) is a widely used measure of perceived peer support. This scale has shown high reliability in Western Australia ( $\alpha = 0.92$ ,  $n=1163$ , Year 6) (Burns, 2007). Items are scored 0 (*No*), 1 (*Sometimes*), 2 (*A lot of the time*), a higher score indicates higher perceived peer support. PPSS was included as a potential measure of divergent validity of the new power imbalance instrument in Phase 3.

#### Middle Years Development Instrument

The Middle Years Development Instrument *Adults at school* sub-scale (Q10.1) *Adults at home* sub-scale (Q10.2) (Schonert-Reichl et al., 2013).

The MDI assessed the well-being of children across multiple contexts including home and school in Canada ( $n = 3026$ , Year 4). The two subscales from the connectedness domain of the MDI were included as potential measures of convergent validity of the new covert behaviour instrument; each is a measure of children's sense of connectedness with adults. Three items pertain to each subscale, for example, "At my school, there is a teacher or another adult who really

cares about me,” and “In my home there is a parent or another adult who believes that I will be a success.” All items loaded highly onto their primary factor, and scale mean, Cronbach's alpha was reported, *Adults at school* ( $M = 3.2$ ,  $SD = 0.7$ ,  $\alpha = 0.71$ ), *adults at home* ( $M = 3.6$ ,  $SD = 0.5$ ,  $\alpha = 0.69$ ).

It is recommended that each scale contain a minimum of four items to identify an effective factor (Raykov, 1997; Russell, 2002). Following expert review an extra item was added to each scale. “At my school, there is a teacher or another adult who I can talk to about my problems” was added to the *adults at school* subscale, and “In my home there is a parent or another adult who really cares about me” was added to the *adults at home* subscale. For Phase 2 of the study each subscale was measured on a four-point scale 0 (*always true*) to 4 (*not at all true*). A higher answer indicated lower perceived connectedness, it was anticipated that this would correlate with children's experience of covert aggression.

#### Olweus Bullying Questionnaire

The Olweus Bullying Questionnaire (OBQ) (Q1.4, Q11.1 – Q 11.6) (Olweus, 1996) is the most commonly used scale to report prevalence rates of bullying in schools, and is used by the World Health Organisation and the United Nations (Molcho et al., 2009; Vaillancourt et al., 2010). A definition of bullying precedes two items, “How often have you been bullied at school in the last few months?” and “How often have you taken part in bullying other student(s) at school in the last few months?” The response is coded on a five-point scale, 0 (*I haven't been bullied/bullied other students at school in the past couple of months*), 1 (*only once or twice*), 2 (*two or three times a month*), 3 (*about once a week*), and 4 (*several times a week*) (Solberg & Olweus, 2003). The screening questions, however, while “good at classifying non-involved students” (reported specificity of 94.3% for victimisation and 91.5% for perpetration) are not good at identifying children who are true cases (sensitivity was 56.3% for victims and 55.7% for perpetrators) (Vaillancourt et al., 2010, p. 245). Nevertheless, the OBQ is considered the gold standard in bullying measurement as evidenced by its widespread use, and the screening items are included as a measure of the concurrent validity of the new power imbalance instrument.

The author of the APRI OBQ was contacted and gave permission for the OBQ to be used and adapted in the current research (D. Olweus, personal communication, June 17, 2014).

## **Appendix L. Results of Phase 2 and Reason for Discontinuation of Scales Not Included in Phase 3**

To reduce burden of participants and the time burden on schools the author aimed to keep the questionnaire succinct for Phase 3. The reliability of each instrument included in Phase 2 was assessed and decisions were made about which instruments and subscales to include in Phase 3. This decision was made in consultation between the first three authors of each paper.

### The Personal Experiences Checklist (Hunt et al., 2012)

The PECK demonstrated good internal consistency in Phase 2 (*relational-verbal* scale  $\alpha = .938$ ,  $n = 106$ ; *bullying based on culture* scale: 5-item scale  $\alpha = .860$ ,  $n = 110$ , original 4-item scale  $\alpha = .869$ ,  $n = 110$ ). The APRI was used for Phase 3 because it demonstrated distinct factors of relational and verbal aggression.

### Multidimensional Offline and Online Peer Victimization Scale (Sumter et al., 2015)

The MOOPV demonstrated good internal consistency in Phase 2 (Online Indirect scale  $\alpha = .926$ ,  $n = 111$ ; Online Direct scale  $\alpha = .909$ ,  $n = 111$ ). Many items in the MOOPV instrument, for example “I was called mean names,” “My secrets were told to others,” “I was excluded” were similar to items in the APRI, for example “I was called names I didn’t like,” “A student got other students to start a rumour about me,” “I was left out of activities or games on purpose.” Furthermore, Sumter and colleagues observed that the “specific characteristics of bullying do not easily transfer to online peer victimisation” (Sumter et al., 2015, p. 115). The MOOPV was not included in Phase 3.

### Forms and Functions of Aggression (Marsee et al., 2011)

Phase 2 results (*proactive relational* scale  $\alpha = .699$ ,  $n = 109$ ; *proactive overt* scale  $\alpha = .661$ ,  $n = 108$ ). The FFA did not demonstrate a strong internal consistency, in Phase 2. This might indicate that some items were difficult for younger children to comprehend. Because the primary aim of this study was to measure children’s self report of power imbalance in relation to victimisation, the *proactive relational* and *proactive overt* scales of the FFA were not included in Phase 3. Some items within these scales do measure the self-report of the perpetrator specific to his or her intent to gain status or power, and this is likely to be relevant to future research that aims to measure power imbalance within bullying perpetration.

Middle Years Development Instrument (Schonert-Reichl et al., 2013).

Phase 2 results (*adults at home* subscale  $\alpha = .937$ ,  $n = 110$ ). The new SETSS instrument measured children's experience after telling a teacher that another student had been mean. For this reason the *adults at school* subscale was included in Phase 3 to measure construct validity, and the *adults at home* subscale was not included.

### **Appendix M. Protocol for Research Assistants Phases 2 and 3**

(The researcher will introduce the questionnaire to the entire class, informing children: that there are no right or wrong answers; that their answers will not be seen by their parents, peers, or teachers; and that participation in the research is voluntary. Children will be given an opportunity to ask questions.)

The teacher will have previously informed the researcher of children that may need help with reading or understanding questions because of a learning disability or cognitive impairment.

These children will answer the questionnaire in a different part of the classroom using the online format. The research assistant will ensure that the children are seated so that they are unable to see each other's answers.

The research assistant will read each question out aloud and children will answer each question using the online format. If any child is having difficulty in understanding the question he or she will ask the research assistant for an explanation. The explanation will be given using neutral language without persuasion toward any answer. In addition, the research assistant will be asked to keep a written record of questions that children had difficulty understanding, and of the response that was given to help them understand.

The research assistant will not at any time answer questions for children.

The research assistant will monitor children for distress or increasing anxiety associated with answering the questionnaire, and will refer to the researcher to arrange support for the child from the school psychologist (or the support person indicated by the Principal of the school).

At the end of the survey the researcher conducted a solution focused session with all students who had completed the questionnaire.

I am aware that for some of you this survey may have caused you to remember some hurtful things. Can you give me some ideas of people that you can talk with if you are feeling upset or uncomfortable?

## Appendix N. Parent Information Sheet Phase 3



### PARENT INFORMATION SHEET

**Study Title: The development of a self-report measure of covert aggression for upper primary school aged children.**

Research Team: Helen Nelson (PhD student), Dr Garth Kendall, A/Prof Sharyn Burns

We are investigating how behaviour develops at primary school, both positive social behaviour and aggressive behaviour including bullying (repeated and intentional aggression towards another child). The study aims to gain a better understanding of how bullying behaviour develops and to ultimately use this information to design interventions that support children in building healthy friendships at school, which will help them be happy at school and achieve their learning potential.

Children in Years 4, 5 and 6 are invited to participate in the study. As a participant, your child will be asked to complete a brief online questionnaire that has been designed especially for this purpose. This questionnaire will be anonymous and confidential and will be administered during class time. Research assistants will be present to help your child read and understand the questions if needed. It is anticipated that the questionnaires will take about 20 minutes to complete. Children will complete the questionnaire at two different times, approximately two weeks apart.

This research looks at each year group as a whole, not at individual students. Each questionnaire will be anonymous using a number to match children's responses at time one and time two; the number will not be available to the researchers. Your child's name will not be included, and all information given will be confidential and will not be available to school staff or discussed with anyone. The completed questionnaires will be accessed only by the research team. If the results of the study are published no child will be identified by name.

Participation in this study is completely voluntary. As a parent you are free to withdraw your child at any time without prejudice or negative consequences. Your child is also free to withdraw at any time without prejudice or negative consequences. The researcher will be available by phone call or appointment to answer or clarify any questions. If you would like further information about the study please contact the researcher Helen Nelson by email, [helen.nelson@postgrad.curtin.edu.au](mailto:helen.nelson@postgrad.curtin.edu.au); or Supervisor Dr Garth Kendall on (08) 9266 2191.

**We ask that you complete the attached consent form to indicate if you are, or are not, willing for your child to participate in the research. Please return the completed consent form to the school with your child by (date).**

Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number RDHS-38-15). Should you wish to discuss the study with someone not directly involved, in particular, any matters concerning the conduct of the study or your rights as a participant, or you wish to make a confidential complaint, you may contact the Ethics Officer on (08) 9266 9223 or the Manager, Research Integrity on (08) 9266 7093 or email [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au).

A handwritten signature in black ink, appearing to read "Helen Nelson".

Helen Nelson MN, RN  
PhD Student  
Curtin University

School Principal

**Appendix O. Consent Form Phase 3**



**Curtin University**

**CONSENT FORM**

**Study Title: The development of a self-report measure of covert aggression for upper primary school aged children.**

Research Team: Helen Nelson (PhD student), Dr Garth Kendall, A/Prof Sharyn Burns

I have been provided with the parent information sheet and understand the intentions of this study.

I understand that I may withdraw my child from the study, or my child may withdraw from the study, at any time without prejudice or negative consequence to my child.

I understand that in the event of this work being published, my child as a participant will not be in any way identifiable.

**Parent Statement**

I .....(Print full name of parent)

understand the intentions of the study and know that I have the opportunity to ask questions at any time.

I **AGREE** for my child .....(Print name of child) to participate in the study.

I understand that my child's participation in this study is voluntary and I, or my child, can withdraw at any time without in any way causing prejudice or negative consequence to my child.

Signature..... Parent

Date.....

**OR**

I **DO NOT** agree for my child .....(Print name of child) to participate in this study

Signature..... Parent

**Please return this form to the school by .....(Date)**

## Appendix P. Parent Information Sheet - Electronic Phase 3



Curtin University

### PARENT INFORMATION SHEET

**Study Title: The development of a self-report measure of covert aggression for upper primary school aged children.**

Research Team: Helen Nelson (PhD student), Dr Garth Kendall, A/Prof Sharyn Burns

We are investigating how behaviour develops at primary school, both positive social behaviour and aggressive behaviour including bullying (repeated and intentional aggression towards another child). The study aims to gain a better understanding of how bullying behaviour develops and to ultimately use this information to design interventions that support children in building healthy friendships at school, which will help them be happy at school and achieve their learning potential.

**We ask that you read this email and complete the attached consent form to indicate if you are, or are not, willing for your child to participate in the research.**

Children in Years 4, 5 and 6 are invited to participate in the study. As a participant, your child will be asked to complete a brief online questionnaire that has been designed especially for this purpose. This questionnaire will be anonymous and confidential and will be administered during class time. Research assistants will be present to help your child read and understand the questions if needed. It is anticipated that the questionnaires will take about 20 minutes to complete.

This research looks at each year group as a whole, not at individual students. Each questionnaire will be anonymous, your child's name will not be included, and all information given will be confidential and will not be available to school staff or discussed with anyone. The completed questionnaires will be accessed only by the research team. If the results of the study are published no child will be identified by name.

Participation in this study is completely voluntary. As a parent you are free to withdraw your child at any time without prejudice or negative consequences. Your child is also free to withdraw at any time without prejudice or negative consequences. The researcher will be available by phone call or appointment to answer or clarify any questions. If you would like further information about the study please contact the researcher Helen Nelson by email, [helen.nelson@postgrad.curtin.edu.au](mailto:helen.nelson@postgrad.curtin.edu.au); or Supervisor Dr Garth Kendall on (08) 9266 2191.

Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number RDHS-38-15). Should you wish to discuss the study with someone not directly involved, in particular, any matters concerning the conduct of the study or your rights as a participant, or you wish to make a confidential complaint, you may contact the Ethics Officer on (08) 9266 9223 or the Manager, Research Integrity on (08) 9266 7093 or email [hrec@curtin.edu.au](mailto:hrec@curtin.edu.au)

A handwritten signature in black ink, appearing to read 'Helen Nelson'.

Helen Nelson MN, RN  
PhD Student  
Curtin University

School Principal

**Appendix Q. Consent Form - Electronic Phase 3**



**Curtin University**

**CONSENT FORM**

Study Title: The development of a self-report measure of covert aggression for upper primary school aged children.

Research Team: Helen Nelson (PhD student), Dr Garth Kendall, A/Prof Sharyn Burns

I have been provided with the parent information sheet and understand the intentions of this study. I understand that I may withdraw my child from the study, or my child may withdraw from the study, at any time without prejudice or negative consequence to my child. I understand that in the event of this work being published, my child as a participant will not be in any way identifiable.

Parent's Name \*

--	--

First Name

Last Name

Student's Name \*

--	--

First Name

Last Name

I AGREE for my child named above to participate in the study.

**OR**

I DO NOT agree for my child named above to participate in this study.

(NB. \* = mandatory field)

## Appendix R. Online Questionnaire Phase 3

Dear student,

We are using this survey to find out how kids treat each other at school. You don't have to write your name, so we don't know who you are. No one at school or home will look at your answers. This is not a test and there are no right or wrong answers. Please answer all the questions as honestly as you can. We are very interested in what you have to say. You don't have to answer any questions if you don't want to. If you have any questions about the survey, please ask the person visiting your classroom.

**Q1.2 Please click the box below if you agree to answer the questions.**

Yes, I will answer the questions	<input type="radio"/>
----------------------------------	-----------------------

**Lets get started.**

**Q2.1 What grade are you in at school?**  
(click one box to mark your answer)

Year 4	<input type="radio"/>
Year 5	<input type="radio"/>
Year 6	<input type="radio"/>

**Q2.2 Are you a boy or girl?**

(click one box to mark your answer)

Girl	<input type="radio"/>
Boy	<input type="radio"/>

**Q2.3 What languages do you speak at home?**

(click one box to mark your answer)

English only	<input type="radio"/>
Other language/s only	<input type="radio"/>
English and other language/s	<input type="radio"/>

Q 2.4 not included in thesis due to copyright restriction (Olweus, 1996)

**Q3.1 Are there students in your school who would**

(please mark one answer for each statement)

	No	Sometimes	A lot of the time
Share things like stickers, toys and games with you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Tell you you're good at things?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Explain the rules of a game if you didn't understand them?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Invite you to play at their home?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Choose you on their team at school?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Help you if you hurt yourself in the playground?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Miss you if you weren't at school?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Make you feel better if something was bothering you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Pick you for a partner?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Help you if other students are being mean to you?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tell you you're their friend?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask you to play when you're all alone?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tell you secrets?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Perceptions of Peer Support Scale* (Ladd, Kochenderfer, & Coleman, 1996)

<b>Q4.1 In the last few months at school I was hurt or upset because</b> (please mark one answer for each statement)						
	<b>Never</b>	<b>It has happened only once or twice</b>	<b>2 or 3 times a month</b>	<b>Once a week</b>	<b>Several times a week</b>	<b>Every day</b>
Hurtful jokes were made about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A student said rude things about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was teased by students saying mean things to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students teased and made fun of me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Things were said about my looks I didn't like	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was called names I didn't like	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Adolescent Peer Relations Instrument (APRI) Victim – verbal scale* (Marsh et al., 2011)

**Q4.2 In the last few months at school I was hurt or upset because**  
(please mark one answer for each statement)

	Never	It has happened only once or twice	2 or 3 times a month	Once a week	Several times a week	Every day
I was threatened to be hurt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Students crashed into me on purpose as they walked by and were trying to hurt me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was hit or kicked hard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My things were damaged, hidden or stolen on purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was pushed or shoved in a mean way	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Something was thrown at me to hit me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*APRI Victim – physical scale (Marsh et al., 2011)*

*If the student answers yes to ‘2 or 3 times a month’, ‘once a week’, ‘several times a week’, or ‘every day’ to one or more of the above items in 4.1 or 4.2 the following questions will be displayed to measure power imbalance. (These questions are based on focus group analyses).*

<b>Q4.3 When these things happened, was the mean student</b> (please mark one answer for each statement)	No	Yes
Really clever?	<input type="radio"/>	<input type="radio"/>
Good looking?	<input type="radio"/>	<input type="radio"/>
Older than you?	<input type="radio"/>	<input type="radio"/>
Good at sport?	<input type="radio"/>	<input type="radio"/>
Trying to be more popular?	<input type="radio"/>	<input type="radio"/>
In the most popular group?	<input type="radio"/>	<input type="radio"/>
Much stronger than you?	<input type="radio"/>	<input type="radio"/>
Bigger than you?	<input type="radio"/>	<input type="radio"/>
With a group of students?	<input type="radio"/>	<input type="radio"/>
Tougher than you?	<input type="radio"/>	<input type="radio"/>

*(Nelson, Kendall, & Burns, 2015)*

**Q5.1 In the last few months at school**

(please mark one answer for each statement)

	Never	It has happened only once or twice	2 or 3 times a month	Once a week	Several times a week	Every day
I made fun of a student by calling them names	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I picked on a student by swearing at them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I teased a student by saying mean things to them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I said rude things to a student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I said things about a student's looks they didn't like	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I made mean jokes about a student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*APRI Perpetrator – verbal scale (Marsh et al., 2011)***Q5.2 In the last few months at school**

(please mark one answer for each statement)

	Never	It has happened only once or twice	2 or 3 times a month	Once a week	Several times a week	Every day
I crashed into a student on purpose as they walked by to hurt them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I pushed or shoved a student to hurt them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I threw something at a student to hit them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I got into a fight with a student because I didn't like them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I slapped or punched a student to hurt them	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I threatened to hurt or harm a student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*APRI Perpetrator – physical scale (Marsh et al., 2011)*

<b>Q6.1 In the last few months at school</b> (please mark one answer for each statement)						
	<b>Never</b>	<b>It has happened only once or twice</b>	<b>2 or 3 times a month</b>	<b>Once a week</b>	<b>Several times a week</b>	<b>Every day</b>
A student got other students to tell lies about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I was left out of activities or games on purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A student ignored me when they were with their friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A student wouldn't be friends with me because other people didn't like me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wasn't invited to a student's place because other people didn't like me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A student got their friends to turn against me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
A student said mean things behind my back	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*APRI Victim – social scale* (Marsh et al., 2011) (Item 7 added to reflect language used in focus groups)

*If the student answers yes to '2 or 3 times a month', 'once a week', 'several times a week', or 'every day' to one or more of the above items in 6.1 the following questions will be displayed to measure power imbalance. (These questions are based on focus group analyses).*

**Q6.2 When these things happened, was the mean student**  
(please mark one answer for each statement)

	No	Yes
Really clever?	<input type="radio"/>	<input type="radio"/>
Good looking?	<input type="radio"/>	<input type="radio"/>
Older than you?	<input type="radio"/>	<input type="radio"/>
Good at sport?	<input type="radio"/>	<input type="radio"/>
Trying to be more popular?	<input type="radio"/>	<input type="radio"/>
In the most popular group?	<input type="radio"/>	<input type="radio"/>
Much stronger than you?	<input type="radio"/>	<input type="radio"/>
Bigger than you?	<input type="radio"/>	<input type="radio"/>
With a group of students?	<input type="radio"/>	<input type="radio"/>
Tougher than you?	<input type="radio"/>	<input type="radio"/>

(Nelson, Kendall, & Burns, 2015)

**Q7.1 In the last few months at school**  
(please mark one answer for each statement)

	Never	It has happened only once or twice	2 or 3 times a month	Once a week	Several times a week	Every day
I got students to spread rumours about a student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I told my friends things about a student to get them into trouble	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I got my friends to turn against a student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I got other students to ignore a student	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I left a student out of activities or games on purpose	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I kept a student away from me by giving them mean looks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

APRI Perpetrator – social scale (Marsh et al., 2011)

**Q8.1 Have you ever told a teacher when other students have been mean to you or someone else on purpose?**  
(click one box to mark your answer)

No	<input type="radio"/>
Yes	<input type="radio"/>

Based on focus group analysis, the following questions will be asked if the student answers 'yes' to question 8.1.

<b>Q8.2 What happened when you told the teacher that another student had been mean?</b> (please click the box for every answer that is true)	
	<b>Click if this has happened to you</b>
The teacher said it was just an accident	<input type="checkbox"/>
It got solved	<input type="checkbox"/>
The other student got away with it by telling a lie	<input type="checkbox"/>
The teacher helped me	<input type="checkbox"/>
The teacher said we should forget about it	<input type="checkbox"/>
Telling the teacher made it better	<input type="checkbox"/>
The teacher didn't believe me	<input type="checkbox"/>
Everyone just got into more trouble	<input type="checkbox"/>
My friends excluded me because I told the teacher	<input type="checkbox"/>
The teacher said it didn't happen	<input type="checkbox"/>
The teacher really likes the student who was mean to me so nothing was done about it	<input type="checkbox"/>
The teacher listened to me	<input type="checkbox"/>

(Nelson, Kendall, & Burns, 2015)

<b>Q9.1 Here are some sentences, is each sentence <u>really</u> like you, <u>sort of</u> like you, or <u>not</u> like you?</b> (click one box to mark your answer)			
	<b>Really like you</b>	<b>Sort of like you</b>	<b>Not like you</b>
I feel sorry for other kids who don't have toys and cool clothes.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When I see someone being picked on I feel sorry for them.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel sorry for the people who don't have the things I have.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It makes me sad to see a student who can't find anyone to play with.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel sorry for another student who is hurt.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I often feel sorry for other student's who are sad or in trouble.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

SAS (AR4) (Bryant, 1982)

**Q10.1 At my school there is a teacher or another adult**  
(please mark one answer for each statement)

	<b>Not at all true</b>	<b>A little bit true</b>	<b>Often true</b>	<b>Always true</b>
Who really cares about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Who believes that I will be a success	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Who listens to me when I have something to say	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Who I can talk to about my problems	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

*Middle Years Development Instrument Adults at school subscale (Schonert-Reichl et al., 2013)*

Here are some questions about being bullied by other students. First we define or explain the word bullying. We say a student is being bullied when another student, or several other students

- say mean and hurtful things or make fun of him or her or call him or her mean and hurtful names
- completely ignore or exclude him or her from their group of friends or leave him or her out of things on purpose
- hit, kick, push, shove around, or lock him or her inside a room
- tell lies or spread false rumours about him or her or send mean notes and try to make other students dislike him or her
- and other hurtful things like that.

When we talk about bullying, these things happen repeatedly, and it is difficult for the student being bullied to defend him or herself. We also call it bullying when a student is teased repeatedly in a mean and hurtful way.

But we don't call it bullying when the teasing is done in a friendly and playful way. Also, it is not bullying when two students of about equal strength or power argue or fight.

*Olweus Bullying Questionnaire (OBQ) (Olweus, 1996)*

<b>Q11.1 How often have you been bullied at school in the last few months?</b> (click one box to mark your answer)	
I haven't been bullied at school in the past few months	<input type="radio"/>
It has happened only once or twice	<input type="radio"/>
2 or 3 times a month	<input type="radio"/>
About once a week	<input type="radio"/>
Several times a week	<input type="radio"/>

*Olweus Bullying Questionnaire (OBQ) (Olweus, 1996)*

<b>Q11.2 How often have you taken part in bullying other student(s) at school in the last few months?</b> (click one box to mark your answer)	
I have not bullied another student	<input type="radio"/>
It has happened only once or twice	<input type="radio"/>
2 or 3 times a month	<input type="radio"/>
About once a week	<input type="radio"/>
Several times a week	<input type="radio"/>

*Olweus Bullying Questionnaire (OBQ) (Olweus, 1996)*

**Thank you for answering these questions. If these questions have caused you to feel upset or uncomfortable please talk with someone that you can trust.**

**Note.** Children answered two additional questions from the OBQ (Olweus, 1996) that are not included in Appendix J or Appendix R due to Copyright restrictions.

## **Appendix S. Measures Used in the Online Questionnaire for Phase 3**

### **New Instruments**

#### Scale of Perceived Power Imbalance

Phase 2 test results (n=53):

Factor One: Items “Older than you,” “Much stronger than you,” “Bigger than you,” Cronbach’s alpha ( $\alpha$ ) = 0.634, Composite reliability 0.812. A minimum of four items within a scale is recommended to identify an effective factor (Raykov, 1997; Russell, 2002). In consultation with an expert reviewer a fourth item, “Tougher than you”, was added for Phase 3 of the data collection.

Factor Two: Items “Really clever,” “Good looking,” “Good at sport,” “In the most popular group,” and “With a group of students,”  $\alpha$  = 0.673, Composite reliability 0.819. With regard to the reported  $\alpha < 0.7$ , the calculation of internal consistency and composite reliability included every item that loaded onto the factor. Items were not removed to increase Cronbach’s alpha during Phase 2 of the research due to the small sample size. An answer of “yes” to any of the power imbalance items indicated a self-report of perceived power imbalance by the victim. Thematic analysis of focus group discussion identified “really smart” as a potential issue related to power imbalance, this statement was therefore included in the instrument in phase two. The item did not load consistently onto a factor, furthermore, Felix, et al. (2011) found that “smart in school work” was possibly not a good question to address power imbalance. An expert reviewer suggested “clever” as an alternative to “smart”; the item “really clever” was therefore substituted for “really smart”.

#### Student Experience of Teacher Support Scale

Phase two test results (n=69): EFA, Parallel analysis and scree plot confirmed that this scale converged onto two factors.

Factor One: Items “It got solved”, “The teacher helped me”, “Telling the teacher made it better”, Cronbach’s alpha ( $\alpha$ ) = 0.736, composite reliability = 0.885. A further item “The teacher listened to me” was added for phase three following consultation with an expert reviewer, this also forms a four-item scale as recommended for factor analysis (Russell, 2002). A higher score indicates a higher experience of aggression that was intentionally hidden from the teacher.

Factor Two: Includes all remaining items,  $\alpha = 0.856$ , composite reliability = 0.925. A higher score indicates a higher experience of being heard by the teacher.

The language of some items has been changed following consultation with an expert reviewer (see Table 1). Expert review was sought in response to questions that children asked the research assistants during phase two of data collection. The reviewer was a primary school teacher who had expertise in the areas of literacy and numeracy, and experience with questionnaire design for children in middle childhood.

**Table 1. Rewording of items following expert review.**

Original item	Reworded item	Reason
The teacher thought it was just an accident	The teacher said it was just an accident	Although during focus groups children said “the teacher thought”, the appropriate translation in instrument design for middle childhood is “the teacher said”.
The teacher thought we should ignore it	The teacher said we should forget about it	Children had difficulty understanding the word “ignore” in this context.
Everyone just got into way more trouble	Everyone just got into more trouble	The word “way” is not necessary
The student who was mean to me is popular with the teachers, so nothing was done about it	The teacher really likes the student who was mean to me so nothing was done about it	The subject is the teacher, the question must therefore begin with “The teacher...” to give the correct meaning.

### Previously Validated Instruments

#### Adolescent Peer Relations Instruments (APRI) (Marsh et al., 2011)

Assesses victimisation and perpetration of aggressive behaviour in subscales - verbal, physical, and social. The APRI is composed of six scales, an answer of “once or twice a month” on any item is a self-report of frequent victimisation; the reliability of each scale is reported in Table 2. The Perpetrator verbal scale reported is the original 6-item scale. Cronbach’s alpha for the 7-item scale was improved but still inadequate ( $\alpha = .624$ ,  $n=111$ ).

**Table 2. Internal Consistency and Reliability of APRI Scales**

APRI Scale	Cronbach’s $\alpha$ Marsh et al. (2011)	Cronbach’s $\alpha$ Phase 2	Composite Reliability Phase 2
<i>Victim - verbal</i>	<i>0.92 - 0.93</i>	<i>0.875 (n=110)</i>	<i>0.881</i>

<i>Victim - physical</i>	0.89 - 0.92	0.858 (n=110)	0.866
<i>Victim - social</i>	0.87 - 0.92	0.908 (n=108)	0.914
<i>Perpetrator - verbal</i>	0.89 - 0.92	0.598 (n=111)	0.839
<i>Perpetrator - physical</i>	0.85 - 0.90	0.752 (n=111)	0.946
<i>Perpetrator - social</i>	0.82 - 0.90	0.632 (n=110)	0.873

Permission to use and adapt the scale was given in writing by the author of the instrument, Roberto Parada. Children questioned the meaning of some words during Phase 2 of data collection; changes made following expert review are listed in Table 3. The item “A student said mean things behind my back” was added to the APRI victim-social scale, because “behind my back” was a phrase used by children in focus group discussion. For Phase 3 the response “once or twice a month” was changed to match the recommended lower bound cut-off point to differentiate bullying from aggressive behaviour of “2 or 3 times a month” (Olweus, 2013).

**Table 3. Rewording of APRI items for Phase 3 following expert review.**

Original item	Reworded item	Reason
I was threatened to be physically hurt or harmed	I was threatened to be hurt	Children had difficulty comprehending the word “physically”
My property was damaged, hidden or taken on purpose	My things were damaged, hidden or stolen on purpose	Children had difficulty understanding the word property. Stolen is a word that preadolescent children will understand in the context of the statement.
I made rude remarks at a student	I said rude things to a student	Children did not understand the word “remarks”
I got into a physical fight with a student because I did not like them	I got into a fight with a student because I didn’t like them	Children had difficulty understanding the word “physical”
I threatened to physically hurt or harm a student	I threatened to hurt or harm a student	As above
A student got other students to start a rumour about me	A student got other students to tell lies about me	Children did not understand the word “rumour”
I got other students to start a rumour about a student	I got students to spread rumour’s about a student	Children asked the meaning of the question during phase 2 of data collection.

### Measurement of Empathy

SAS (AR4) (Provided by Schonert-Reichl, UBC, Canada)

The Scale of Dispositional Sympathy (Eisenberg et al., 1996) is a measure of children’s sympathy, empathy, or concern for others, a higher total score reflects greater sympathy or empathy. This scale was introduced for Phase 3 of the data

collection, Items were scored 0 (*really like you*), 1 (*sort of like you*), 2 (*not like you*), a lower score indicating higher empathy. The Scale uses four items from Bryant's Empathy Scale (1982), which reported a Cronbach's alpha of 0.54 for children in first grade, 0.68 for children in fourth grade, and 0.79 for those in seventh grade. In addition the scale uses three items from the *Empathetic Concern Subscale* of the *Interpersonal Reactivity Index (IRI)* (Davis, 1983; Eisenberg, Fabes, Schaller, Carlo, & Miller, 1991). Cronbach's alpha ( $\alpha = 0.73$  for a similar scale, mean age 7.25 years, Eisenberg et al., 1996).

The SAS, AR4 was included as a potential measure of divergent validity with children's self-report of aggression to others because measures of empathy have been found to relate negatively to aggressive behaviour in preadolescence (Cross et al., 2009; Schonert-Reichl, Smith, Zaidman-Zait, & Hertzman, 2012).

Note: The SAS (AR4) was not reported in the peer-reviewed publications because the prevalence of bullying was not reported. The SAS (AR4) did demonstrate internal consistency in Phase 3 ( $n = 330$ ,  $\alpha = .825$ ) and the Spearman's rho Correlation between OBQ bully perpetrator and *empathy sum* is reported.

## **Appendix T. Perpetration of Aggression and Bullying, and Correlation with Empathy.**

This appendix reports on perpetration of aggression by the APRI, bullying by the OBQ, and on the correlation of bullying and aggression perpetration with each other and with empathy by the SAS (AR4). Data analysis was performed in SPSS. Non-normality of data was accounted for and missing data was excluded listwise.

First the highest score for each participant from the combined APRI perpetrator scales (Q5.1, Q5.2 and Q7.1) was selected to form a new variable representing *APRI aggression perpetration*. In total 32 ( $n = 328$ , 39.8%) students reported perpetration of frequent aggression by the APRI, representing 9.8% of participants. In contrast, 10 students ( $n = 330$ , 3%) reported bullying others by the OBQ prevalence question (Q11.2). The APRI does not measure intended power imbalance.

The Spearman's rho correlation coefficient between Q11.2 and *APRI aggression perpetration* was positive and significant (.414,  $p < 0.001$ ,  $n = 322$ ).

Second, a new variable was made, the sum of the 6 SAS (AR4) items, named *empathy sum*. Spearman's rho correlation coefficient was negative and significant between *empathy sum* and *APRI aggression perpetration* (-.212,  $p < 0.001$ ,  $n = 322$ ), and between *empathy sum* and *OBQ bullying perpetration* (-.210,  $p < 0.001$ ,  $n = 325$ ).

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