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4 **The development of a self-report measure of covert aggression and bullying for upper**
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6 **primary school aged children.**
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3 **The development of a self-report measure of covert aggression and bullying for upper**
4 **primary school aged children.**
5

6 **ABSTRACT**
7

8 **Introduction**
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10 Covert bullying in schools is associated with a range of academic, social, emotional, and physical
11 health problems. Much research has focused on bullying, but there remains a gap in
12 understanding about covert aggression and how to most accurately and reliably measure
13 children's own reports of this behaviour. This paper reviews relevant literature and outlines a
14 research project that aims to develop a self-report instrument that effectively measures covert
15 aggression and bullying. It is anticipated that this research will result in a standardised instrument
16 that is suitable for exploring preadolescent children's experiences of covert aggressive behaviour.
17 The data collected by the instrument will enhance health and education professionals
18 understanding of covert bullying behaviours and will inform the design and evaluation of
19 interventions.
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33 **Methods and analysis**
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35 Relational developmental systems theory will guide the design of an online self-report instrument.
36 The first phase of the project will include a critical review of the research literature, focus groups
37 with children aged 8 to 12 years (Grades 4 to 6) in Perth, Western Australia, and expert review.
38 The instrument will be explored for content and face validity prior to the assessment of convergent
39 and discriminant validity, internal consistency, and test-retest reliability.
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48 **Ethics and dissemination**
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50 The study has been approved by the Curtin University of Human Research Ethics Committee
51 (RDHS-38-15) and by the Executive Principal of the participating school.
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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[1–3]. Health problems associated with being a victim of bullying range from loneliness, low-self concept, fear, and somatisation to anxiety, depression, and suicidal behaviour[3–5]. Children who bully others are also more likely to experience poor health and developmental outcomes, such as depression, increased alcohol and substance use[3], future school dropout, criminal arrest, and teen parenthood[6]. Evidence suggests that bullying among school children peaks between the ages of 9 to 13 as children find their social position among their peer group[3,7]. 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[8]. In reality, however, adult support is often not forthcoming because adults are simply not aware of bullying behaviour that it is 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[9]. There is a widely documented need for continuing research into the reliable and valid measurement of bullying that is covert or hidden[10–12]. 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 to 12 years (Grades 4 to 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 overt physical and verbal behaviour, particularly that of boys[11]. More 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[13]. 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[13,14]. This is a plausible explanation for why bullying continues to be such a major issue in schools despite the policies and programs that have been widely

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2
3 implemented to prevent it[15–18]. It is perplexing for many parents and teachers to suggest that
4 children who appear to be well-adjusted and successful at school may be causing other children
5 harm[13]. And yet, it is entirely realistic and understandable as bullying is essentially a means of
6 attaining social dominance[17]. Harm is caused through the perceived imbalance of power
7 between the perpetrator and the victim, and is perpetuated when adults are either unaware of the
8 behaviour or insensitive to children's reports of bullying[17,18].
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17 Evidence suggests that for interventions to effectively prevent covert aggression and bullying they
18 must be based on understanding children's behaviour and experience[10]. However, the factors
19 which influence this behaviour during preadolescence are not well understood[3,11,17].
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23 Existing research has investigated the different types of behaviour within aggression, including
24 relational aggression[13,19], and the repeated harm and power imbalance associated with
25 bullying[13,20]. However, there has been inconsistent measurement of bullying behaviour[10,11].
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29 For example, imprecise language is an important issue for research in this field[10]. While the
30 terms bullying and aggressive behaviour are often used interchangeably, they are different
31 concepts that should be measured differently[11]. In addition, there is a gap in understanding how
32 to most accurately and reliably measure: (a) the imbalance of power between the perpetrator and
33 the victim; and (b) covert aggression that is hidden from adults[3,10,12]. This limits understanding
34 of factors that contribute to the development of bullying and contributes to difficulty in implementing
35 and evaluating school-based interventions[3,21].
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45 It is recommended that bullying research begin with the administration of a self-report
46 questionnaire by children as a baseline[1,11,20,22]. An understanding of the concepts which
47 differentiate bullying from aggression is central to the effective design of an instrument that will
48 measure covert bullying[10,11]. There are two common features of aggression: (a) an *intent to*
49 *harm* the victim *physically or psychologically* by the perpetrator[23]; and (b) the behaviour is
50 perceived negatively as "*a feeling of hurt*" by the victim[10]. Bullying happens when aggressive
51 behaviour is carried out *repeatedly*, in a relationship that has *an imbalance of power* between the
52 perpetrator and the victim[10,11]. Based on findings from qualitative research with children aged 8
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2 to 13 years in Australia, Cross and colleagues[13] defined covert bullying as any form of bullying
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4 “that is ‘hidden’, out of sight of, or unacknowledged by adults”[13]. For this study with
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6 preadolescent children covert bullying is defined as happening when children behave repeatedly
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8 with aggression that is hidden from or not acknowledged by adults, with the intent of causing harm
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10 to a victim, who feels hurt, in a relationship that involves an imbalance of power. Aggression,
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12 bullying, and covert behaviour form the three scales of the proposed model which was informed by
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14 the research[10,11,13,14,19,23] (see Figure 1).
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18 It is recommended that bullying research will ideally: assess the intent to harm another by the
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20 perpetrator and the report of harm by the victim at the same time[11,23]; differentiate between
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22 overt physical or verbal behaviour and relational forms of aggressive behaviour[14,19,23];
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24 differentiate between aggressive behaviour and bullying[10,11]; and include a measure of covert
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26 behaviour[13]. The aim of the proposed research will be to facilitate these recommendations by
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28 designing an instrument with the intent of measuring seven subscales of behaviour as shown in
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30 Figure 1. The subscales are: (1) intent to harm (perpetration), (2) feeling of hurt (victimisation), (3)
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32 overt aggression, (4) relational aggression, (5) repetition of behaviour, (6) imbalance of power
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34 between the perpetrator and the victim, and (7) covert behaviour. Statistical analysis will be
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36 conducted to explore which scales and subscales of behaviour, or factors, can be reliably
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38 measured. The following section of the background summary addresses the measurement of
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40 aggression, bullying, and covert behaviour, the three scales of the proposed model.
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45 **Aggression**

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47 The proposed model (Figure 1) begins by measuring factors associated with aggressive behaviour
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49 including: (1) perpetration, (2) victimisation, and (3) overt or (4) relational behaviour. Initial review
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51 of the literature has identified instruments that are commonly used to measure these factors: The
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53 *Olweus Bullying Questionnaire* (OBQ)[11,24], *The Social Experience Questionnaire* (SEQ) [19],
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55 and the *Adolescent Peer Relations Instrument* (APRI)[25] as cited by Marsh et al.[23].
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Olweus introduced bullying research in the 1970's and the *Olweus Bullying Questionnaire*[24] is now widely used to measure rates of perpetration and victimisation of aggressive behaviour and bullying. The OBQ uses single variable items with a specific response as a measure of prevalence estimation[12,26]. Kyriakides, Kaloyirou, and Lindsay[27] conducted extensive Rasch analysis of the OBQ and found the instrument to have “satisfactory” construct validity and reliability when used with children aged 11 and 12. The authors proposed that the questions in the OBQ are broad in that each individual question may address multiple related behaviours, and recommended that the validity of the instrument would be improved if questions were broken down into more specific items[27]. Similarly, Hartung and colleagues[28], measured the psychometric properties of the OBQ and recommended that the addition of more questions measuring relational aggression would improve the accuracy of measurement. Whereas the single questions are an estimate of the prevalence of bullying, a multi-item scale will be more relevant to measuring the differences in children's experience of the perpetration and victimisation of aggressive behaviour and bullying[12,20]. This will add to the evidence-based understanding of factors that contribute to the development of bullying, and inform the development and evaluation of interventions[3,29].

Meta-analytic review of aggression research has supported two overall forms of aggressive behaviour. The first includes physical acts and overt verbal aggression, often termed overt aggression; the second includes hurtful manipulation of relationships causing relational and social harm[30]. The second form of aggressive behaviour is termed relational, indirect, or social aggression, but they essentially deal with psychological, rather than physical or overt verbal, aggression towards the victim[14]. For the purpose of this research the term *relational aggression* will be used to distinguish between overt aggressive behaviour and psychologically aggressive behaviour aimed at causing harm through social relationships[19]. Research suggests that relational aggression may result in more psychological harm than overt behaviour[6,13]. The Social Experience Questionnaire (SEQ)[19] is most commonly used to measure overt and relational forms of aggressive behaviour in preadolescent children[1,31]. The SEQ was first used by Crick and Grotpeter[19] to measure the self-report of relational aggression by the victim in preadolescent children (Grades 3 to 6). Three scales were found to be highly reliable: relational victimisation

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($\alpha = 0.80$), overt victimisation ($\alpha = 0.78$), and prosocial recipient ($\alpha = 0.77$)[19]. 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 five to ten years[31]. Desjardins et al.[31] recommended further qualitative research to clarify children's understanding of the items in each scale. This research will address this recommendation through focus groups with children.

Whereas the SEQ measured children's self-report of victimisation but not perpetration, Bovaird[10] and Olweus[11] propose that there is a need to assess the intent to harm another by the perpetrator and the report of harm by the victim at the same time. Within this context, Marsh and colleagues used the Adolescent Peer Relations Instrument (APRI)[25] as cited by Marsh et al.[23] to differentiate between the perpetration and victimisation of aggressive behaviour in an adolescent sample (school Grades 7 to 11) ($\alpha = 0.82 - 0.93$). Within each scale of perpetration and victimisation sub-scales of verbal, physical, and social aggression were measured. The APRI has been found to be reliable with primary school aged children in Grades 5 and 6 ($\alpha = 0.81 - 0.90$)[32]. Similarly, Fitzpatrick and Bussey[33] differentiated between social victimisation ($\alpha = 0.97$) and social perpetration of aggressive behaviour ($\alpha = 0.93$) in a sample of adolescents aged 11 to 16 years, and recommended that future research include measures of verbal and physical aggression, and empathy. 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[7,34].

Bullying

While aggressive behaviour is a normal part of development[35], bullying is not[22]. Aggression may be a single event in reaction to the behaviour of another (termed reactive aggression), or proactive with the purpose of obtaining a goal, for example social dominance[36]. Bullying is proactive aggression[10,37]. 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[23]. The following section builds on the first level of the proposed model

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3 by reviewing measurement of the factors: (5) repeated behaviour, and (6) imbalance of power (see
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5 Figure 1).
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9 Many self-report instruments that measure bullying do not specify how bullying is differentiated
10 from aggression. While frequency of behaviour can be measured using a Likert-type scale, there is
11 a gap in understanding how to effectively measure the behavioural component of a power
12 imbalance between the perpetrator and the victim of bullying[11,38]. Olweus[11] proposed that
13 without appropriate report of power imbalance *by the victim*, there is likely to be a misclassification
14 of aggressive behaviour and bullying, and also of bullying perpetration and victimisation, causing
15 artificially high correlations between the different subscales of behaviour. This means that because
16 these behaviours do not sit at two ends of a scale they are not independent constructs,
17 compromising the validity of research.
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29 Olweus[11] defines power imbalance "as perceived by the targeted" person rather than the
30 perpetrator. Although perpetrators might report on aggressive behaviour to themselves, in some
31 cases it may be reactive aggression from the one they had hurt rather than the proactive
32 aggression that is part of bullying. Such perpetrators will, however, still report that they have been
33 exposed to aggressive behaviour even though they are dominant in terms of power, resulting in
34 increased correlations between behaviours. For example, when asked why they bullied other
35 students in a qualitative study (n = 51) all indicated they bullied others because they were
36 provoked in some way. For some students this was reactive as a result of being bullied, however
37 these bully-victims often targeted other children to gain a sense of power[39,40]. Ideally, research
38 will differentiate between three outcome groups: victim, perpetrator, and bully-victim based on self-
39 report of power imbalance[11,38]. The aim of including these outcome groups is to address the
40 overlap between aggressive behaviour and bullying, between perpetration and victimisation, and to
41 give more clarity to the different behaviours within these groups[11]. Understanding these
42 behaviours is important because the behavioural and health outcomes differ for each group, with
43 the poorest outcomes in the bully-victim group[3,20,41].
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3 To distinguish aggressive behaviour from bullying Felix et al.[20] designed a measure of
4 victimisation that followed each initial question with questions asking about intentionality (was it
5 done in a mean way), and power imbalance (how popular, smart in school, physically strong the
6 other person was). The authors reported test-retest stability ($r = 0.80 - 0.83$, $p < 0.001$) but
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8 concluded that “smart” may not be a beneficial word to assess power imbalance[20]. There is a
9
10 need to continue investigating the method for measuring aggression in comparison to bullying, in
11
12 particular the accurate measurement of the self-report of power imbalance by victims of
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14 bullying[11,12,38,42]. Phase one of this research will explore children’s understanding of
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16 aggression, bullying and power imbalance in focus groups to determine relevant language and
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18 question structure.
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25 **Covert behaviour**

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27 The hidden or covert nature of much relational aggression contributes to harm to the victim while
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29 reducing the risk of the perpetrator being seen or found by adults[6,13]. The following section
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31 provides a brief review of the final factor proposed in the model: (7) covert behaviour (See Figure
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33 1).
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38 The second gap that has been identified in the literature is in understanding how to accurately
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40 measure covert aggression. Crick and Grotpeter[19,43] differentiate relational aggression from
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42 overt physical and verbal aggression, suggesting that relational aggression is considered to be
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44 covert behaviour. However, some researchers suggest covert or indirect aggression is aggression
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46 in which the victim is not aware of the identity of the perpetrator[44,45]. Based on the work of Crick
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48 and colleagues, Verona and colleagues[46] found a distinction between direct aggression (knowing
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50 who the perpetrator was) and indirect aggression (unaware of the identity of the perpetrator), was
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52 not supported. Likewise, Fitzpatrick and Bussey[33] found adolescents did not report differently on
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54 direct and indirect aggression (defined as not knowing the identity of the perpetrator). This
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56 supports the findings of Cross and colleagues[13] that children aged eight to 14 years view covert
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58 aggression as aggressive behaviour that is not seen or acknowledged by adults. The harmful
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2 effects of aggressive behaviour and bullying are compounded when adults either do not see, or fail
3 to acknowledge, the behaviour[1,47].
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9 To the authors' knowledge, there are no self-report measures of aggression and bullying that
10 reflect the defined elements of intent to harm, feeling of hurt, physical and relational aggression,
11 repetition, power imbalance, and covert behaviour. An instrument that provides for children to
12 report on their own experience of covert aggression and bullying will contribute to understanding
13 the harm that children cause to others, and their reasons for doing so, helping inform the design
14 and evaluation of prevention and intervention strategies[48]. The ultimate goal is to reduce covert
15 aggression and bullying by bringing it to the attention of students, parents, teachers, and others
16 who are members of a school community.
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25 26 27 **METHODS and ANALYSIS**

28 29 **Research objectives**

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31 This study aims to work with children to develop an online self-report measure of covert aggression
32 and bullying for upper primary school aged children, and to validate the instrument. The research
33 objectives are: (1) Identify appropriate questions to use in a self-report instrument that measures
34 aggression and bullying, including covert aggression among preadolescent children (purposive
35 sample, $n = 70$); and (2) To establish the test-retest reliability, and convergent and discriminant
36 validity of a new instrument designed to measure covert aggression and bullying (purposive
37 sample, $n = 140$).
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47 48 **Study design**

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50 Instrument development will consist of qualitative and quantitative methods and will be conducted
51 within a theoretical framework of relational developmental systems theory[49]. Phase one: Focus
52 groups with children from Grades 4 to 6 will inform the development of the instrument, in
53 conjunction with a critical review of the literature and instruments. The instrument will be reviewed
54 for content and face validity by an expert panel and a purposive sample of the target group
55 respectively. Preadolescent children, as members of the target population, are considered
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3 “experiential experts”[50]. The perspectives of children are therefore a critical part of the
4 development, evaluation, and validation of the measure[50,51]. Phase two: The instrument will be
5 completed in online format by a purposive sample of students from Grades 4 to 6 (8 to 12 years).
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7 Quantitative analysis will include exploratory factor analyses (EFA), internal consistency,
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9 convergent and discriminant validity, and test-retest reliability. Phase three: A subsequent
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11 quantitative study will be conducted with a larger sample of children to further evaluate the model
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13 for fit, interpretability, strength, and statistical significance, and to assess the criterion validity of the
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15 new instrument. This paper focuses on phases one and two of the proposed research.
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21 **Research setting**

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23 Phases one and two of the study will comprise a purposive sample of students enrolled in Grades
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25 4 to 6 at one independent school in the Perth metropolitan region of Western Australia ($n = 210$).
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27 The population in this fee paying school is represented by families from a wide range of cultural
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29 and ethnic backgrounds who bring to the school an influence of educational advantage because of
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31 the parents own level of education and occupation. This is reflected by the 2012 Index of
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33 Community Socio-Educational Advantage (ICSEA) value for the school of 1073, placing it within
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35 one standard deviation above the median of socio-educational advantage in Australia[52]. Bullying
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37 occurs across sociodemographic levels and the middle class represents the greater concentration
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39 of people, the focus on the middle class therefore promotes a normative perspective to the
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41 research[53,54]. The school has three classrooms in each grade. Children will be purposefully
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43 selected from one classroom in each Grade 4, 5, and 6 ($n=70$) for focus groups in phase one of
44
45 this study. Phase two of the study will comprise a purposive sample of students from the remaining
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47 two classrooms of each Grade 4, 5 and 6 ($n=140$). To avoid a potential testing effect, students
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49 from classrooms that participated in phase one will not be invited to participate in phase two.
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51 Active written consent will be obtained from parents, and written assent will be obtained from
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53 children prior to data collection.
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58 **Phase one: Instrument development**

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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[49]. 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[55]. In addition, the research design will be guided by relevant theories encompassed within relational developmental systems theory, including attachment theory[56] and the bioecological model of development[55]. Consistent with recommendations made by Bronfenbrenner and Morris[55] the research includes two phases; discovery and confirmatory. The discovery phase of instrument design will be informed by children because children best understand their own experience[57].

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 to 12 years. The initial review will include publications between 1995 and 2014 and a manual reference list search will be conducted to locate original articles where relevant. Adult-focused scales will be excluded.

Focus groups

Children will be asked of their perception of aggression and bullying through a series of focus groups with a purposive sample of children aged 8 to 12. 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

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2 will be conducted, it is anticipated that each group will include six to eight children with equal
3 numbers of males and females[58].
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9 Focus group data will be audio taped, transcribed verbatim and will be reviewed by two
10 researchers, one who has extensive experience in this field, to maintain dependability and
11 determine credibility[59]. Descriptive codes will be generated, and words and phrases will be
12 explored to elicit shared meanings and perceptions across interviews using a thematic analyses
13 approach. Themes that are commonly presented by children will be identified. The content of
14 existing scales will then be adapted to be consistent and relevant to the findings of the focus
15 groups, and incorporated into the design of the instrument. The qualitative data will be managed
16 using software package NVivo 10.
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25 26 27 Expert review

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29 The questions in each subscale will be reviewed by a panel of people with expertise in the areas of
30 psychology, education, health promotion, behavioural research, and statistics. For content validity,
31 a minimum of seven experts will be consulted[60]. The Content Validity Index[61] will be used to
32 rate item relevance and clarity and the relevance of each subscale. It is anticipated that each factor
33 will be represented by no more than six questions prior to instrument testing[10].
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41 Instrument format

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43 The instrument will be completed as an anonymous and confidential self-report of children's own
44 behaviour using an online survey format. An anonymous self-report is used because Olweus[11]
45 recommends that without a report of power imbalance *by the victim* there is likely to be an
46 artificially high correlation between bullying victimisation and perpetration, limiting the validity of
47 bullying research. However, perpetration of bullying may be under reported by self-report and this
48 needs to be considered when framing research design[12]. There is little consensus on the
49 influence of social desirability bias on children's own report of bullying others[42,62], however
50 Ahmad and Smith[63] found that children were more likely to report bullying others by anonymous
51 self-report questionnaire than when they were identified by name. Anonymous self-report is
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3 similarly recommended by Rigby[64] because children may be unwilling to identify themselves as
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5 victims or perpetrators of bullying.
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8 Instrument pretest

9
10 Face validity will be assessed by recruiting a purposive sample of children from the target group (n
11 = 10) to complete the instrument and to comment on the language, clarity, relevance of the
12 questions, and ease of use of the instrument[65]. Personal feelings or concerns regarding
13 participation in the completion of an online questionnaire regarding bullying will also be explored.
14
15 The wording of items will be changed as indicated. The resulting measure will then be reviewed by
16
17 another purposively selected group of children (n = 10), the process will continue until the
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19 language, content, and reading ease of the instrument are considered acceptable by the
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21 researchers. Children who participate in the pretest of the instrument will be sourced from the three
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23 classrooms participating in phase one of the study, and will not participate in instrument completion
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25 in phase two of the research.
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33 **Phase two: Construct validity and reliability testing of the proposed instrument**

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35 The self-report instrument will initially be administered to students from one primary school.
36
37 Exploratory factor analyses (EFA) will be used to determine which questions within the instrument
38
39 fit different subscales of behaviour. This will test for construct validity, the relevance of questions to
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41 each different subscale of behaviour[23]. In addition, this will test for convergent and discriminant
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43 validity[66].
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47 Sample size

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49 Phase two of the study will comprise a purposive sample of students from the remaining two
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51 classrooms of each Grade four, five and six (n=140) who attend the same independent primary
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53 school in the Perth metropolitan region participating in phase one of the study. Recommendations
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55 of sample size for EFA vary between 10 per variable (mid range) and 20 per variable (upper
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57 range)[67]. Each factor or subscale of behaviour represents one variable; therefore for the seven
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2 subscales being explored a minimum of 70 participants will represent the midfield of the proposed
3 ratios and 140 students will represent the upper range of 20 children per variable.
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8 Data collection

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10 The instrument will be completed in a classroom in online format using Qualtrics™ online
11 questionnaire software. The researcher will be present to administer the instrument. To ensure
12 confidentiality during administration, children will be seated at a distance from each other and
13 asked not to talk while completing the instrument. Children will be informed that there are no right
14 or wrong answers, and will be assured that their answers will be anonymous[64], and will not be
15 seen by their parents, peers, or teachers[33]. There is a degree of homogeneity associated with
16 socioeconomic status (SES) within schools in the Perth metropolitan region of Western Australia;
17 SES will therefore be recorded by the ICSEA value alone, supporting the anonymity of data
18 collection[68].
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31 Analysis

32 The initial construct validity of the instrument will be established through EFA allowing examination
33 of which questions measure, or fit, each of the seven proposed subscales of behaviour[66]. EFA
34 was chosen as the method because previous studies have shown there is overlap between
35 aggression perpetration and victimisation causing them to be correlated[11,23]; thus they are not
36 independent constructs. EFA will determine if they can be regarded as different subscales for the
37 purpose of building a model (for example, the model proposed in Figure 1).
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47 The first step in data analysis will be to conduct a split-half test to assess the consistency of
48 children's responses[69]. The second step will be to find initial subscales of behaviour, or
49 factors[67]. The Pearson correlation coefficient (r) between variables will be calculated to find
50 items that have a correlation over 0.30 indicating items that share enough properties to be
51 potential measures of the same factor. EFA will be used to extract factors, which will then be
52 rotated to identify subscales or factors that best fit the instrument. The fit of items to relevant
53 subscales will be assessed and decisions made if any items should be discarded[70]. This will test
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3 the initial construct validity of the instrument. Convergent validity will be supported when items that
4 are similar or strongly correlated load onto the same factor[66]. Discriminant validity is the extent to
5 which each factor or subscale is well differentiated and will be supported if theoretically different
6 constructs are not highly intercorrelated[66]. The results will be interpreted to give names to each
7 subscale. The aim will be to include three items on each subscale to triangulate each form of
8 behaviour as recommended by Bovaird[10]. The fourth step will assess the internal consistency of
9 the instrument and its subscales using Cronbach's alpha, an alpha greater than or equal to 0.7 will
10 be considered adequate[71]. In the fifth step the instrument will be administered to the same
11 children two weeks after the initial questionnaire for assessment of test-retest reliability.

12 Spearman's rho, a measure of agreement between scores on different administrations of the
13 instrument will be calculated. A correlation coefficient between 0.7 and 1.0 will indicate that the
14 instrument is reliable. Data analysis will be conducted using M-Plus[23]. Questionnaires with
15 missing data will be excluded from the analysis.

28 29 30 **ETHICS and DISSEMINATION**

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32 Ethics approval has been obtained from Curtin University (RDHS-38-15), and from the Executive
33 Principal of the participating school. Prior to participation in the study, informed written consent will
34 be obtained from parents and informed written assent will be obtained from each participating
35 child. Children will be able to withdraw from the research at any time without negative
36 consequence[72]. A research assistant will be available to help children but will not answer
37 questions. The school psychologist will be available for children to be referred to if they are
38 distressed by the discussion in the focus groups, or if they become distressed during completion of
39 the instrument. A de-identified report of study findings from phase one and a report of findings from
40 phase two will be given to the School Executive for dissemination to families and staff. Results will
41 also be disseminated through conference presentations and peer reviewed journals.

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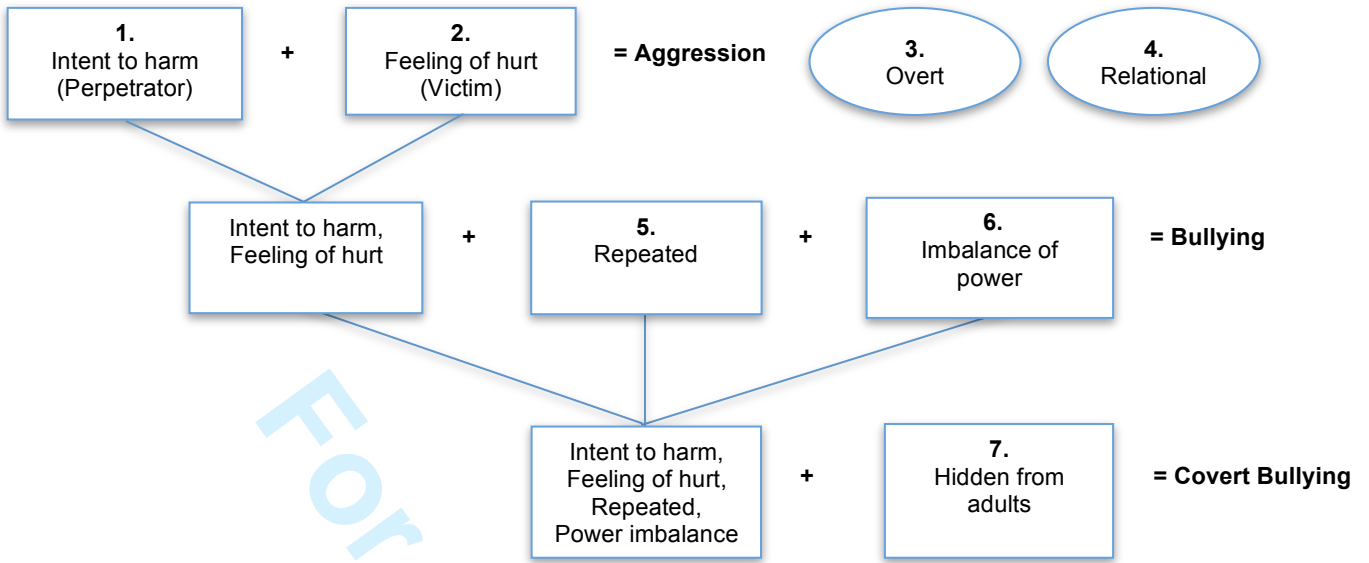
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BMJ Open

A protocol for the design of an instrument to measure preadolescent children's self-report of covert aggression and bullying.

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4 **A protocol for the design of an instrument to measure preadolescent children's self-report**
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6 **of covert aggression and bullying.**
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45 **Keywords**
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47 Bullying, covert, power imbalance, instrument design
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3 **A protocol for the design of an instrument to measure preadolescent children's self-report**
4 **of covert aggression and bullying.**
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6 **ABSTRACT**
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8 **Introduction**
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10 Covert bullying in schools is associated with a range of academic, social, emotional, and physical
11 health problems. Much research has focused on bullying, but there remains a gap in
12 understanding about covert aggression and how to most accurately and reliably measure
13 children's own reports of this behaviour. This paper reviews relevant literature and outlines a
14 research project that aims to develop a self-report instrument that effectively measures covert
15 aggression and bullying. It is anticipated that this research will result in a standardised instrument
16 that is suitable for exploring preadolescent children's experiences of covert aggressive behaviour.
17 The data collected by the instrument will enhance health and education professionals
18 understanding of covert bullying behaviours and will inform the design and evaluation of
19 interventions.
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33 **Methods and analysis**
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35 Relational developmental systems theory will guide the design of an online self-report instrument.
36 The first phase of the project will include a critical review of the research literature, focus groups
37 with children aged 8 to 12 years (grades 4 to 6) in Perth, Western Australia, and expert review.
38 The instrument will be explored for content and face validity prior to the assessment of convergent
39 and discriminant validity, internal consistency, and test-retest reliability.
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48 **Ethics and dissemination**
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50 The study has been approved by the Curtin University of Human Research Ethics Committee
51 (RDHS-38-15) and by the Executive Principal of the participating school.
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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[1–3]. Health problems associated with being a victim of bullying range from loneliness, low-self concept, fear, and somatisation to anxiety, depression, and suicidal behaviour[3–5]. Children who bully others are also more likely to experience poor health and developmental outcomes, such as depression, increased alcohol and substance use[3], future school dropout, criminal arrest, and teen parenthood[6]. Evidence suggests that bullying among school children peaks between the ages of 9 to 13 as children find their social position among their peer group[3,7]. 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[8]. 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[9](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[10–12]. 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 to 12 years (grades 4 to 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[11]. More 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[13]. 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[13,14]. This is a plausible explanation for why bullying continues to

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3 be such a major issue in schools despite the policies and programs that have been widely
4 implemented to prevent it[15–18]. It is perplexing for many parents and teachers to suggest that
5 children who appear to be well-adjusted and successful at school may be causing other children
6 harm[13]. And yet, it is entirely realistic and understandable as bullying is essentially a means of
7 attaining social dominance[17]. Harm is caused through the perceived imbalance of power
8 between the perpetrator and the victim, and is perpetuated when adults are either unaware of the
9 behaviour or insensitive to children's reports of bullying[17,18].
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19 Evidence suggests that for interventions to effectively prevent covert aggression and bullying they
20 must be based on understanding children's behaviour and experience[10]. However, the factors
21 which influence this behaviour during preadolescence are not well understood[3,11,17].
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25 Existing research has investigated the different types of behaviour within aggression, including
26 relational aggression[13,19], and the repeated harm and power imbalance associated with
27 bullying[13,20]. However, there has been inconsistent measurement of bullying behaviour[10,11].
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29 For example, imprecise language is an important issue for research in this field[10]. While the
30 terms bullying and aggressive behaviour are often used interchangeably, they are different
31 concepts that should be measured differently[11]. In addition, there is a gap in understanding how
32 to most accurately and reliably measure: (a) the imbalance of power between the perpetrator and
33 the victim; and (b) covert aggression that is intentionally hidden from adults[3,10,12]. This limits
34 understanding of factors that contribute to the development of bullying and contributes to difficulty
35 in implementing and evaluating school-based interventions[3,21].
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47 It is recommended that bullying research begin with the administration of a self-report
48 questionnaire by children as a baseline[1,11,20,22]. An understanding of the concepts which
49 differentiate bullying from aggression is central to the effective design of an instrument that will
50 measure covert bullying[10,11]. There are two common features of aggression: (a) an *intent to*
51 *harm* the victim *physically* or *psychologically* by the perpetrator[23]; and (b) the behaviour is
52 perceived negatively as "*a feeling of hurt*" by the victim[10](p.278). Bullying happens when
53 aggressive behaviour is carried out *repeatedly*, in a relationship that has an *imbalance of power*
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between the perpetrator and the victim[10,11]. Based on findings from qualitative research with children aged 8 to 13 years in Australia, Cross and colleagues defined covert bullying as any form of bullying “that is ‘hidden’, out of sight of, or unacknowledged by adults”[13](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[10,11,13,14,19,23] (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[11,23]; differentiate between overt physical or verbal behaviour and relational forms of aggressive behaviour[14,19,23]; differentiate between aggressive behaviour and bullying[10,11]; and include a measure of covert behaviour[13]. 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: (a) 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 (b) exploratory factor analyses 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 toward another with the goal of inflicting harm or injury.

Physical aggression is a normal part of development and peaks between the ages of 24 to 48 months, either as a response to frustration or for the purpose of achieving a goal[24]. 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[24,25].

Researchers have identified multiple forms of aggressive behaviour and the outcomes predicted by each differ[25]. Meta-analytic review of aggression research has, however, supported two overall forms of aggressive behaviour[26]. The first includes physical acts and overt verbal aggression, often termed overt aggression; the second includes hurtful manipulation of relationships causing relational and social harm[26,27]. The second form of aggressive behaviour may be termed *indirect*[28,29], *social*[30,31], or *relational aggression*[32].

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[6,26]. *Indirect* aggression is generally considered to occur “behind-the-back” of the victim, the perpetrator causing harm without being identified[28,29]. 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[30,31]. *Relational* aggression is harm caused through hurtful manipulation of peer relationships, encompassing indirect and socially aggressive behaviours[19]. 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[19,26,27]. Research suggests that relational aggression may result in more psychological harm than overt behaviour[6,13].

The Social Experience Questionnaire (SEQ)[19] is most commonly used to measure overt and relational forms of aggressive behaviour in preadolescent children[1,33]. The SEQ was first used to measure the self-report of relational aggression by the victim (Children in grades 3 to 6)[19].

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Three sub-scales were found at first to be highly reliable: relational victimisation ($\alpha = 0.80$), overt victimisation ($\alpha = 0.78$), and prosocial recipient ($\alpha = 0.77$)[19]. 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 five to ten years[33]. Additional qualitative research has been recommended to clarify children's understanding of the items in each sub-scale[33]. 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[10,11,34].

The Adolescent Peer Relations Instrument (APRI) was developed to measure both perpetration and victimisation aspects of aggressive behaviour in adolescents in school grades 7 to 11 using sub-scales of verbal, physical, and social aggression ($\alpha = 0.82 - 0.93$)[23]. The APRI has also been found to be reliable with primary school aged children in grades 5 and 6 ($\alpha = 0.81 - 0.90$)[35]. 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 to 16 years[36]. These authors have proposed that future research include measures of verbal and physical aggression, and empathy[36]. 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[7,37].

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[38]. Reactive aggression is associated with poor regulation of emotions and internalising symptoms[27,38]. Alternatively, aggression may be proactive with the purpose of obtaining a goal, for example, social dominance[27,39]. 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[27,38]. When proactive aggression is a strategic and goal oriented behaviour it is regarded as bullying [10,40,41]. The perpetrator, for his or her own benefit, exploits an *imbalance of power* to dominate

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3 the victim *repeatedly* and in an unwelcome way, resulting in harm or disadvantage to the
4 victim[23]. Furthermore, bullying is understood to occur as a group process[41]. The main
5 perpetrator is likely to have a powerful position within his or her peer group, termed the in-group,
6 with a social network of children to assist and defend him or her in the perpetration of harm to
7 another[41].
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15 There are many reasons why bullying remains a major issue in schools despite the widespread
16 implementation of comprehensive whole-of-school interventions[42,43]. While it is argued that
17 bullying behaviour can never be totally eliminated, many students, teachers, parents, researchers,
18 and policy makers agree that more can be done to manage it and reduce the harm that it causes.
19 From a research point of view, there are major issues associated with the inconsistent use of
20 terminology in instruments that are commonly used to measure bullying behaviour, including
21 differing definitions of bullying[3,10,11,44,45]. For example, many self-report instruments that
22 measure bullying do not specify how bullying is differentiated from aggression. In addition, there is
23 a gap in understanding how to effectively measure the behavioural component of a power
24 imbalance between the perpetrators and the victims of bullying[11]. Furthermore, the accuracy of
25 self-reported bullying is unknown and agreement between different informants is low[26]. The
26 value of self-report may be limited by bias especially when teachers, parents, and peers are not
27 aware that bullying is taking place[45]. Thus, despite many developments over the past 50 years of
28 bullying research, the factors that influence the development of bullying are not well
29 understood[34]. The following section reviews the measurement of perceived power imbalance by
30 the victim, a proposed key to increasing the accuracy of bullying assessment[11,20,34,46].
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49 Power imbalance

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51 Without a report of power imbalance *by the victim* there is likely to be an artificially high correlation
52 between bullying perpetration and victimisation as well as between aggressive behaviour and
53 bullying[11]. Although perpetrators might report on aggressive behaviour to themselves, in some
54 cases it may be reactive aggression in response to being hurt rather than the proactive aggression
55 that is considered part of bullying. Such perpetrators will, however, still report that they have been
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2 exposed to aggressive behaviour even though they are dominant in terms of power, resulting in
3 increased correlations between behaviours. For example, when asked why they bullied other
4 students in a qualitative study (n = 51) all indicated they bullied others because they were
5 provoked in some way. For some students this was reactive as a result of being bullied, however
6 these bully-victims often targeted other children to gain a sense of power[47,48]. Ideally, research
7 will differentiate between three outcome groups: victim, perpetrator, and bully-victim based on self-
8 report of power imbalance[11,46]. The aim of including these outcome groups is to address the
9 overlap between aggressive behaviour and bullying, between perpetration and victimisation, and to
10 give more clarity to the different behaviours within these groups[11]. Understanding these
11 behaviours is important because the behavioural and health outcomes differ for each group, with
12 the poorest outcomes in the bully-victim group[3,20,49].

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27 Reviews of bullying research have recommended that factors associated with power imbalance are
28 likely to include physical strength, group size, older age, popularity, smartness in schoolwork, and
29 differences in self-confidence[11,45,46]. There is, however, a need to continue investigating the
30 method for measuring aggression in comparison to bullying, including the use of specific individual
31 items to assess power imbalance within self-report[11,20,46,50]. For example, victims' perception
32 of power imbalance has been measured using individual items to ask how popular, smart in
33 school, and physically strong the other person was[20]. The authors reported test-retest stability
34 ($r = 0.80 - 0.83, p < 0.001$), but concluded that "smart" may not be a beneficial word to assess
35 power imbalance[20]. Similarly, the perception of power imbalance may differ by gender. Physical
36 size and group size were found to be significant individual predictors of threat appraisal for boys
37 ($R^2 = 0.074, p < 0.01$), whereas physical size and popularity power imbalance predicted poorer
38 function for girls ($R^2 = 0.075, p < 0.01$)[46]. A limitation of the study was the reliability of the
39 measure of threat appraisal ($\alpha = 0.63$). The authors proposed further research to assess types of
40 power imbalance by gender, ethnic group, socioeconomic status, and success in romantic
41 relationships[46]. Phase one of the proposed research will use focus groups to explore children's
42 perception of what influences and protects against power imbalance to determine relevant

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2 language and question structure. In addition, covert behaviour as a source of harm will be
3 explored. Covert behaviour is discussed in the following section.
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8 **Covert behaviour**

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10 Covert behaviour as a source of influence in bullying is little understood, in part because covert
11 aggression and bullying are not clearly or consistently defined in the literature. Crick and
12 Grottpeter[19] differentiate relational aggression from overt physical and verbal aggression,
13 suggesting that relational aggression is considered to be covert behaviour. Others' have used the
14 term "covert" as an alternative to the term "indirect" when referring to a victim who is unaware of
15 the identity of the perpetrator[36,51,52]. Such categories of direct versus indirect social or
16 relational aggression, however, are not supported in comprehensive empirical analyses[25,36].
17 Current research discusses relational aggression as a specific type of indirect aggression that may
18 be both overt and covert[53]. Furthermore, beyond relational aggression, children's understanding
19 of covert aggression includes physical and verbal behaviour[13], a view supported by an expert
20 panel of researchers[34]. In qualitative research with children (n= 85, school grades 4,6,7, and 8) it
21 was found that while covert is not a term that would be used by children, it adequately describes
22 behaviour that is *not seen or acknowledged by adults*[13]. This research underscores the point that
23 children's perspectives are crucial as it is children who have the current lived experience of
24 bullying at school[54,55]. The harmful effects of aggressive behaviour and bullying are
25 compounded when adults either do not see, or fail to acknowledge, the behaviour[1,56].
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45 Covert behaviour is a potential influence within power imbalance. To this end children have
46 reported that one way of hurting others without being seen by the teacher is to "lie to the
47 teacher"[13](p.149). The group nature of bullying may contribute to harm through covert means as
48 members of the in-group assist and defend the perpetrator[41]. Targets of covert aggression in
49 middle-childhood are likely to remain unidentified when there is uncertain evidence of harm and
50 the source is not clearly identified, for example, when the in-group of the bully participates in a
51 lie[52,57]. Furthermore, children with leadership skills and a good understanding of social
52 situations may be covertly aggressive, but seen by teachers as mature and socially able[13,58].
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3 The findings of one study showed that even at preschool age, when much aggression is visible to
4 teachers, (n = 60) verbal aggression was positively associated with teacher-rated prosocial
5 behaviour, $r(26) = 0.43$, $p < 0.05$, and with teacher-rated peer acceptance for girls, $r(26) = 0.68$, p
6 < 0.001 [59]. It has been proposed that the teacher's understanding of harm caused to the victim is
7 masked when the perpetrator holds high social status[57].
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12 Elder[60](p.9) talks of "the maturing experience of working through the pain and confusion of life".
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14 Importantly, this comment is framed within a life-course perspective and understood through the
15 links between people who are important in the child's life. Children's perception of support from
16 adults and connectedness with peers at school are key "resources" in middle childhood[8].
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18 Understanding the development of covert aggression in childhood is important for supporting the
19 development of prosocial behaviour[61]. As previously mentioned, poor agreement between
20 informants has been a common research finding[26,42]. This is to be expected when covert
21 bullying is deliberately hidden from teachers and perpetrators give socially desirable responses.
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23 Despite widespread acknowledgement that bullying research will ideally include measurement
24 from multiple informants to reduce bias, child self-report is recommended as a starting
25 point[49,62]. Self-report allows victims of covert bullying to report on their own perceived
26 experience[11]. For this reason, this research will begin with the development of a self-report
27 measure as a baseline, with the intention of the later inclusion of peer, teacher, and parent report
28 instruments[34].
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45 To the authors' knowledge, there are no self-report measures of aggression and bullying that
46 include each of the defined elements of: intent to harm, feeling of hurt, physical and relational
47 aggression, repetition, power imbalance, and covert behaviour that is *deliberately or intentionally*
48 *hidden from adults*. An instrument that provides for children to report on their own experience of
49 covert aggression and bullying will contribute to a greater understanding of the harm that children
50 cause to others and their reasons for doing so, as well as helping to inform the design and
51 evaluation of prevention and intervention strategies[27]. The ultimate goal is to reduce covert
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2 aggression and bullying by bringing it to the attention of students, parents, teachers, and other
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4 members of a school community.
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8 9 **METHODS and ANALYSIS**

10 11 **Research objectives**

12 This study aims to work with children to develop an online self-report measure of covert aggression
13 and bullying for upper primary school aged children, and to validate the instrument. The research
14 objectives are: (1) Identify appropriate questions to use in a self-report instrument that measures
15 aggression and bullying, including covert aggression among preadolescent children (purposive
16 sample, $n = 70$); and (2) To establish the test-retest reliability, and convergent and discriminant
17 validity of a new instrument designed to measure covert aggression and bullying (purposive
18 sample, $n = 140$).
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28 29 **Study design**

30 Instrument development will consist of qualitative and quantitative methods and will be conducted
31 within a theoretical framework of relational developmental systems theory[63]. Phase one: Focus
32 groups with children from grades 4 to 6 will inform the development of the instrument, in
33 conjunction with a critical review of the literature and instruments. Preadolescent children, as
34 members of the target population, are considered “experiential experts”[55](p.38). The
35 perspectives of children are therefore a critical part of the development, evaluation, and validation
36 of the measure[54,55]. Phase two: The instrument will be completed in online format by a
37 purposive sample of students from grades 4 to 6 (8 to 12 years). Quantitative analysis will include
38 exploratory factor analyses (EFA), internal consistency, convergent and discriminant validity, and
39 test-retest reliability. Phase three: A subsequent quantitative study will be conducted with a larger
40 sample of children to further evaluate the model for fit, interpretability, strength, and statistical
41 significance, and to assess the criterion validity of the new instrument. This paper focuses on
42 phases one and two of the proposed research.
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Phases one and two of the study will comprise a purposive sample of students enrolled in grades 4 to 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 standard deviation above the median of socio-educational advantage in Australia[64]. 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[65,66]. 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 one of this study. Phase two 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 one will not be invited to participate in phase two. Active written consent will be obtained from parents, and written assent will be obtained from children prior to data collection.

Phase one: 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[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[67]. The discovery phase of instrument design will be informed by children because children best understand their own experience[68].

Literature review

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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 to 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 to 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[69].

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[70]. 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 10.

Expert review

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3 A panel of people with expertise in the areas of psychology, education, health promotion,
4 behavioural research, and statistics will review the questions in each subscale. For content validity,
5 a minimum of seven experts will be consulted[71]. The Content Validity Index[72] will be used to
6 rate item relevance and clarity and the relevance of each subscale.
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10 11 12 Instrument format

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

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35 Face validity will be assessed by recruiting a purposive sample of children from the target group (n
36 = 10) to complete the instrument and to comment on the language, clarity, relevance of the
37 questions, and ease of use of the instrument[76]. Personal feelings or concerns regarding
38 participation in the completion of an online questionnaire regarding bullying will also be explored.
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40 The wording of items will be changed as indicated. The resulting measure will then be reviewed by
41 another purposively selected group of children (n = 10), the process will continue until the
42 language, content, and reading ease of the instrument are considered acceptable by the
43 researchers.
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53 **Phase two: Construct validity and reliability testing of the proposed instrument**

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55 The self-report instrument will initially be administered to students from one primary school as
56 previously described. Exploratory factor analyses (EFA) will be used to determine which questions
57 within the instrument fit different subscales of behaviour.
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Sample size

Recommendations of sample size for EFA vary between 10 per variable (mid range) and 20 per variable (upper range)[77]. 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[75] and will not be seen by their parents, peers, or teachers[36]. There is a degree of homogeneity associated with socioeconomic status (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[78].

Analysis

The first step in data analysis will be to conduct a split-half test to assess the consistency of children's responses[79]. The second step will be to find initial subscales of behaviour, or factors[77]. 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[80,81]. Convergent validity will be supported when items that are similar or strongly correlated load onto the same factor[81]. 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[81]. 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

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2 using Cronbach's alpha, an alpha greater than or equal to 0.7 will be considered adequate[82]. In
3 the fifth step the instrument will be administered to the same children two weeks after the initial
4 questionnaire for assessment of test-retest reliability. Spearman's rho, will be calculated, a
5 correlation coefficient between 0.7 and 1.0 will indicate agreement between scores (reliability).
6
7 Data analysis will be conducted using M-Plus[23]. Questionnaires with missing data will be
8 excluded from the analysis.
9

10 11 12 13 14 15 16 **ETHICS and DISSEMINATION**

17 Ethics approval has been obtained from Curtin University (RDHS-38-15), and from the Executive
18 Principal of the participating school. Prior to participation in the study, informed written consent will
19 be obtained from parents and informed written assent will be obtained from each participating
20 child. Children will be able to withdraw from the research at any time without negative
21 consequence[83]. The school psychologist will be available for children to be referred to if they are
22 distressed by the discussion in the focus groups, or if they become distressed during completion of
23 the instrument. A de-identified report of study findings from phase one and a report of findings from
24 phase two will be given to the School Executive for dissemination to families and staff. Results will
25 also be disseminated through conference presentations and peer reviewed journals.
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40 *Relations Instrument* who has given permission for his scale to be used in this research.
41

42 **Contributorship statement**

43 HN conceived of the study in consultation with GK, SB, and K S-R, participated in its design, and
44 drafted the manuscript.

45 GK contributed to the conception and design of the study, writing and revision of the manuscript.
46 SB contributed to the conception and design of the study, writing and revision of the manuscript.
47 K S-R supported HN with resources and advice during the conception, design, and writing of the
48 study protocol and reviewed the manuscript.
49

50 **Competing interests**

51 There are no competing interests.
52

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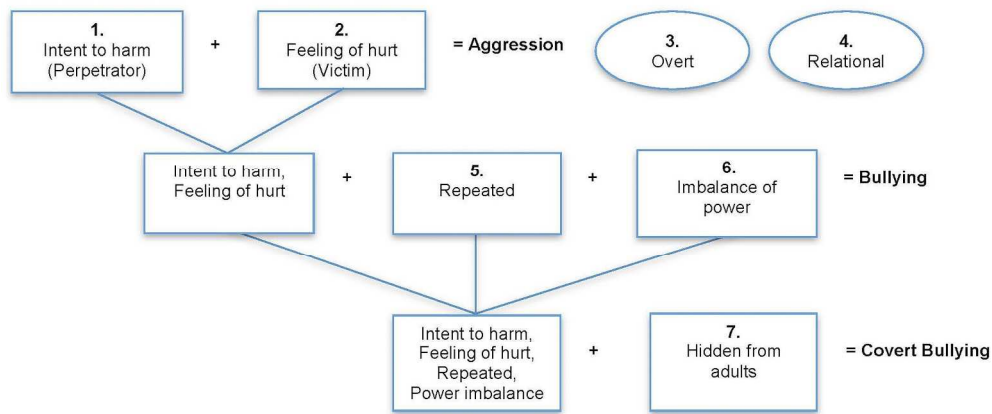
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For peer review only



Legend for Figure 1.

This model, which was informed by the research [10,11,13,14,19,23], 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 one) and feeling of hurt (factor two) are the accepted common features of aggressive behaviour. Aggressive behaviour may be overt physical and verbal behaviour (factor three) or it may be directed at causing harm through social relationships (factor four). Bullying is a form of aggressive behaviour that is repeated (factor five), and in which there is an imbalance of power of the perpetrator over the victim (factor 6). At preadolescence, covert bullying (factor seven) 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.

207x90mm (300 x 300 DPI)

Review only