

**Title: Burden and Preference-based Quality of Life Associated with Bullying in Children**

**Subtitle: Quality of Life Burden and Bullying**

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## **Abstract**

**Objectives:** To assess the association between childhood bullying and preference-based health related quality of life (QoL) in Australian school children and their parents and estimate quality adjusted life years (QALYs) associated with bullying chronicity.

**Methods:** Children aged 8-10 years completed the Child Health Utilities (CHU-9D) while parents completed the Australian Quality of Life (AQoL-8D). Children were grouped into four categories of bullying involvement (no bullying, victim, perpetrator or both perpetrator and victim) based on the Revised Olweus Bully/Victim Questionnaire. Parental data were compared across two bullying involvement groups (bullying vs. no bullying). QALYs were calculated for children over three-time points (baseline, one and two year follow up) and comparisons made based on the number of assessments where bullying was reported.

**Results:** Children who were involved in bullying (victims and/or perpetrators) reported statistically significantly lower mean utility scores compared to children who were not involved in bullying. Parents whose child was involved in bullying had significantly lower mean utility scores compared to parents of children not involved with bullying. There appeared to be a dose-response relationship, with higher QALY losses associated with increasing frequency of reported bullying.

**Conclusions:** Bullying among Australian school children was associated with significantly lower preference-based QoL for themselves and their parents. This study also confirmed the significant burden of disease for bullying among children measured by an incremental decrease in QALY with an increasing chronicity of bullying over time.

Key words: bullying, perpetrator, preference-based quality of life, quality-adjusted life years.

## 1 **Introduction**

2 Bullying among children and adolescents is recognised as a major public concern and a leading  
3 risk factor for mental disorders (measured by Disability Adjusted Life Years (DALYs)),  
4 according to the Global Burden of Disease (GBD) study 2017 [1]. The GBD study found that  
5 bullying victimisation of children and adolescents attending school contributed to 2.57 million  
6 DALYs that were evenly attributable to anxiety disorders and major depressive disorder  
7 globally [1]. There is strong evidence that being a victim of bullying is associated with higher  
8 risk for mental health problems including depression, anxiety, symptoms and diagnosis of post-  
9 traumatic stress disorder, poor general health and suicidal ideation [2, 3]. Furthermore, bullying  
10 victimisation in childhood can lead to fewer quality social relationships, economic hardship  
11 and poor perceived quality of life at age 50[4]. In terms of health care services, being a victim  
12 of bullying is associated with increased visits to a General Practitioner (GP) or mental health  
13 specialist[5]. In Australia, the total annual health and non-health cost due to victimisation  
14 bullying was estimated at A\$764 million in 2016[6]. These costs were largely attributable to  
15 health care costs for anxiety disorders, depressive disorders, intentional self-harm and tobacco  
16 use[6]. Evidence showed that bullying victimisation has predicted changes over time in a range  
17 of serious problems (psychosis, psychosomatic problems, internalising problems including  
18 depression and poor self-esteem) and bullying perpetration predicts deterioration in drug use,  
19 criminal offending, and overall violent aggression [7-9]. Evidence indicated an association  
20 between peer support, connectedness to school, pro-victim attitudes, outcome expectancies and  
21 level of bullying involvement [10]. Although victimisation bullying might have higher  
22 prevalence than bullying perpetration , these forms of involvement in bullying have been  
23 associated with increased risk of psychological distress, emotional and behavioural problems,  
24 substance use, self-harm and attempted suicide [11]. None of the evidence distinguished

25 between bullying victims and perpetrators, and many did not evaluate the preference based  
26 quality of life for children who involved in bullying or their caregivers.

27 Economic evaluation has become an important tool to assist decision-makers in allocating  
28 health resources effectively to reduce the burden of disease. To quantify disease burden, the  
29 quality-adjusted life year (QALY) is commonly used as a generic measure combining a  
30 person's quality of life (morbidity) and quantity of life (mortality) [12]. The most commonly  
31 used and accepted method to inform the 'Q-component' of the QALY is to use preference-  
32 based quality of life (QoL) measures (most commonly generic measures but occasionally  
33 disease-specific). The preference-based QoL measures move the measurement of QoL from  
34 rankings to judgments of worth and value and are able to allow comparison of QoL scores  
35 across diseases as well as estimation of summary scores [12]. Preference-based QoL measures  
36 have two parts: (i) a descriptive classification system that consists of questions and response  
37 options, which enable respondents to describe their health related quality of life (HRQoL) in  
38 one of a finite number of health states; and (ii) a valuation system that is a method of scoring  
39 each health state defined by the descriptive system [12]. Each preference-based QoL measure  
40 has a scoring algorithm that calculates the weighted preferences for the domains of quality of  
41 life assessed in questionnaires that are commonly referred to as preference-based QoL scores  
42 or "utility weights" and are anchored on a scale from 0 to 1 where a value of 1 represents full  
43 health and 0 is equivalent to death [12]. The utility weight is then multiplied by the length of  
44 time the individual is in that particular health state to derive estimated QALYs [13]. Several  
45 studies have examined reductions in QALYs using preference-based quality of life (QoL)  
46 instruments for people with mental disorders such as major depressive disorders, anxiety  
47 disorders, and other mental disorders [14-16]. While QALYs have been used in economic  
48 evaluations of bullying prevention interventions [17], the estimation of the QALYs lost for  
49 children involved in bullying compared to those who have not been has not been investigated.

50 Previous research in young people from Sweden and the UK has found that bullying  
51 victimisation is associated with decrements in utility values of 0.06 points on the Short Form  
52 – 6 dimensions (SF-6D) and 0.108 on the Child Health Utility – 9 dimensions (CHU-9D) [18,  
53 19]. Both these studies, however, were cross-sectional and could not assess the impact of  
54 bullying over time measured by QALYs or DALYs. Furthermore, they did not assess the  
55 impacts of bullying, in terms of utility losses separately for victims and perpetrators of bullying.  
56 The impact of bullying on primary caregivers (usually parents) was also not investigated.

57 This analysis aims to extend previous research on bullying and preference-based quality of life  
58 to Australian school children and their parents. Trial data collected as part of the Preventing  
59 Anxiety and Victimization through education (PAVe) randomized controlled trial were used  
60 to:

- 61 1. Examine the association between bullying and children's and their parents' preference  
62 based QoL.
- 63 2. Quantify the burden of disease measured by QALYs due to bullying chronicity using  
64 two-year follow up trial data.

## 65 **Method**

### 66 **Trial information**

67 The PAVe trial was a cluster randomized controlled trial assessing the effectiveness and cost-  
68 effectiveness of the addition to usual practice of a whole of school approach to bullying  
69 prevention (known as the *Friendly Schools Plus program*), a targeted approach to victims of  
70 bullying (*Cool Kids: taking control program*) or a concurrent combination of both programs  
71 compared to a waitlist control group, in reducing peer victimisation. The trial provided  
72 comprehensive data on bullying perpetration and victimisation, mental health, and HRQoL  
73 from a cohort of 8,822 year 3 and 4 students (aged 8-10 years) at baseline and two subsequent

74 time points over 2 years. The PAVe trial included 135 primary schools within the state  
75 government and non-government education systems of New South Wales and Western  
76 Australia. Schools ranged in approximate total school size from 102 to 1,011 students  
77 (mean[M]= 446.84, standard deviation [SD] = 163.94) [20]. Full details of the sampling  
78 methodology are available in the published primary outcome article [20]. Data pertinent to the  
79 analysis examining the association between bullying and each child's and their parent's utility  
80 scores were collected at the trial baseline prior to allocation of schools to intervention or  
81 comparator groups between 2014 and 2015. Self-report trial data collected across three time  
82 points (baseline, one-year and two-year follow-up) were used to estimate the burden of bullying  
83 (measured by QALYs).

#### 84 Ethical approval

85 Ethical approval was granted through the Macquarie University Human Research Ethics  
86 Committee (Reference number 5201300641), and the Deakin University Human Research  
87 Ethics Committee.

#### 88 Preference-based QoL measures

89 Preference-based QoL (or utility scores) for children was measured using the Child Health  
90 Utility 9D (CHU-9D) that was completed by children. The CHU-9D was developed  
91 specifically as a paediatric preference-based measure and includes nine dimensions (i.e.  
92 worried, sad, pain, tired, annoyed, schoolwork, sleep, daily routine and ability to join in  
93 activities). Within each dimension, there are five different levels indicating increasing levels  
94 of severity (e.g. level 1 to 5). We used the scaling algorithm published by Ratcliffe et al (2016)  
95 that used a best-worse scaling technique in an Australian population of adolescents aged 11-17  
96 years old [21]. Utility scores derived from this CHU-9D algorithm range from 1.00  
97 (representing perfect health or best possible health on that questionnaire), to a negative score

98 of -0.1059 (representing the worst possible health state that has been valued as worse than-  
99 death).

100 Parents' preference based QoL was assessed using the Assessment of Quality of Life measure  
101 eight dimension (AQoL-8D) [22]. The AQoL-8D contains 35 items derived from a review of  
102 existing HRQoL instruments and uses a descriptive system developed within the framework of  
103 the World Health Organization's classification of impairments, disabilities and handicaps. The  
104 AQoL-8D includes eight domains of HRQoL (including independent living, happiness, mental  
105 health, coping, relationships, self-worth, pain, senses). The published scoring algorithm from  
106 Richardson et al (2014)[23] was used. This algorithm uses preference weights calculated with  
107 the time trade-off technique in a general Australian population sample. The algorithm produces  
108 utility scores ranging from 1.00 (best possible health) to -0.4 (representing the worst possible  
109 health state that was valued as being worse than death).

110 Quality-adjusted life years (QALYs) were calculated for students over the time horizon of the  
111 study using the area under the curve method [12]. The formula of this method is shown as:

$$112 \text{ QALY}_{\text{each person}} = (U_{\text{BL}} + U_{12\text{months}}) / 2 + (U_{12\text{months}} + U_{24\text{months}}) / 2$$

113 Where  $U_{\text{BL}}$  is preference-based QoL score at baseline,  $U_{12\text{months}}$  is preference-based QoL score  
114 at 12 months and  $U_{24\text{months}}$  is preference-based QoL score at 24 months.

115 Other measures

116 The Revised Olweus Bully / Victim Questionnaire (OBVQ) includes 39 questions assessing  
117 physical, verbal, and relational bullying [24]. However, in this study, the shortened version  
118 with 13 questions was used to determine whether students were victims of bullying, the  
119 perpetrator of bullying or both the victim and perpetrator. In line with previous research [20,  
120 25], the global score on the OBVQ was categorised as either no victimization (i.e. not  
121 victimized at all and victimized once or twice) in the previous school term or victimization (i.e.

122 victimized 3 or more times) while the global perpetration item from the OBVQ was used to  
123 assess bullying perpetration, dichotomized as per the measure of victimization.

124 Demographic student data collected in this study included sex, age, school sector (government,  
125 Catholic or independent), ethnicity, of Aboriginal/ATSI descent and socio-economic  
126 background. Socio-educational background was assessed using the Index of Community  
127 Socio-Educational Advantage (ICSEA) which is calculated by *Student Factors* (parents'  
128 occupation and parents' education) and *School Factors* (geographical location and proportion  
129 of Indigenous students). The school with a lower than average ICSEA (i.e. 1000) indicates a  
130 lower level of educational advantage for students. For parents, demographic data of sex, age,  
131 parental employment, parental marital status, and parental education were collected.  
132 Assessments at each time point were conducted in each school using standardized procedures  
133 with teachers' supervision. Measures were mostly delivered online using the Qualtrics software  
134 platform and via paper surveys in 15% of schools due to lack of technological  
135 infrastructure[20].

### 136 **Statistical analysis**

137 Analyses were carried out in STATA 15 SE (Stata Corporation, College Station, TX, USA)  
138 and were adjusted for clustering at the school level where possible. All statistical tests were  
139 two tailed and considered only complete cases. To determine if there were differences between  
140 the participants with complete data and those lost to follow-up, analysis of demographic  
141 characteristics of these subgroups was undertaken. Those with missing follow-up data were  
142 found to be younger (8.97 [SD 0.72] vs. 9.04 [SD 0.71],  $p=0.049$ ) and in a lower socio-  
143 educational level (79.7% vs 85.3% above average for schools in Australia,  $p<0.001$ ), but there  
144 was no significant difference in terms of utility scores (0.74 [SD 0.22] vs 0.73 [SD 0.22],  
145  $p=0.09$ ) and bullying status (81% vs 80% no bullying,  $p=0.06$ ) at baseline. Baseline



146 characteristics of children and their parents with complete preference-based QoL data at each  
147 time point are described.

148 The first objective of this research was to explore the relationship between bullying (victims  
149 and/or perpetrators of bullying) and both children's and parents' health utility. To begin this  
150 analysis, we assessed the differences in child utility scores between four groups of children:  
151 non-involved, only victims of bullying, only perpetrators of bullying and both victims and  
152 perpetrators of bullying at any time point. For parent utility scores, only two groups were  
153 created due to limited parent sample size (see below) and included parents of children who  
154 were not bullied compared to those of children who were victims and/or perpetrators of  
155 bullying. The utility scores are left-skewed because of the bounded nature of utility values (0  
156 to 1) and there are typically few people with low utility scores. Therefore, the data were  
157 analysed using a generalized linear model (GLM) with and without covariates as recommended  
158 by the International Society for Pharmacoeconomics and Outcomes Research guidelines [26].  
159 In the analysis of child utility scores, the covariates included age, child gender, school sector,  
160 ethnicity, and socio-economic background while covariates of age, gender, marital status and  
161 employment status were included for analysis of parental utility scores.

162 Longitudinal associations between bullying and utility scores over 2 years were examined  
163 using fixed effects models. In the fixed effects models, those time-invariant characteristics are  
164 unique to the individual and should not be correlated with other individual characteristics. A  
165 Hausman test was conducted to determine whether the error terms were correlated where the  
166 null hypothesis is that the preferred model is random effects vs. the fixed effects [27]. Models  
167 were specified including involvement in bullying as a binary variable. Thus, models estimated  
168 the mean differences (with 95% confidence intervals) in utility scores between children with  
169 and without involvement in bullying (classified at each time point so that this can vary over the  
170 period of two years). Interaction between change in bullying status and change in utility score

171 during follow-up would be included in the multivariable model if the interaction term was  
172 statistically significant.

173 Secondly, to estimate the burden of bullying, QALYs were calculated using the area under the  
174 curve method (as shown in the formula above) based on the data from baseline, one-year and  
175 two-year follow up for children only. Burden of bullying in parents was not conducted given  
176 only half of parents provided utility data at baseline. Furthermore, both bullying victimization  
177 and perpetration were collapsed. In this analysis, the children were classified into four different  
178 groups according to bullying chronicity: no involvement in bullying within the three time  
179 points, involved in bullying (either as a victim or as a perpetrator or both) at one time-point,  
180 involved in bullying at two time-points and involved in bullying at all three time-points. The  
181 differences in QALYs were determined using GLM with or without covariates as in the utility  
182 score analysis.

### 183 **Results**

184 There were 8,822 students from 135 schools who agreed to participate in the PAVE trial. From  
185 these, 8,216 (93%) completed the CHU-9D at baseline and 6,279 (71%) of children completed  
186 the CHU-9D at all three time points (Figure 1). Of 4,363 parents who agreed to participate in  
187 the trial, 2,128 (49%) completed the AQOL-8D at baseline. The demographic characteristics  
188 of both students and their parents at baseline are presented in Table 1. Eighteen percent of  
189 students reported they were victims of bullying and less than 1% reported being either a  
190 perpetrator or both a victim and perpetrator of bullying. Overall, 51% of students were females  
191 and 49% had an Australian background. The majority of students (85%) came from high socio-  
192 educational backgrounds. The vast majority of parents who completed the baseline  
193 questionnaire were female (87.4%) and married (92.3%).

194 **Children’s preference based utilities**

195 Table 2 presents cross sectional associations between bullying and QoL. Unadjusted  
196 multivariable regression analysis showed that children who were involved in bullying as a  
197 victim or perpetrator or both reported significant lower utility scores across time points  
198 compared to children who were not involved in bullying ( $p < 0.001$ ). The difference in utility  
199 scores remained significant after controlling for other covariates including child gender, age,  
200 socio-educational, and ethnicity background at time point (Table 2).

201 [Insert Table 2]

202 Table 3 presents longitudinal associations between bullying and QoL. There was no reliable  
203 evidence of a ‘bullying x time’ interaction since the interaction term was not statistically  
204 significant ( $p = 0.099$ ). Therefore, we used a simpler model without the interaction term to test  
205 for a group and time effect on utility scores. Examining the longitudinal association between  
206 bullying and utility scores with bullying status as a binary predictor, and accounting for  
207 potential confounders, children were only victims of bullying or reported both bullying  
208 victimisation and perpetration experienced significantly lower utility scores than children  
209 without bullying. In particular, the mean differences of utility scores between victims or victims  
210 + perpetrators and no victims/perpetrators were -0.09, 95%CI: -0.10 to -0.08; and -0.09, 95%  
211 CI: -0.14 to -0.04), respectively (Table 3). There was no statistically significant difference in  
212 utility scores between those who were perpetrators of bullying and those who were not involved  
213 in bullying.

214 [Insert Table 3]

215 **Burden of bullying in children (QALYs)**

216 Table 4 presents the association between QALY loss (over the period of the study) and the  
217 stability of bullying from baseline to the 24-month follow-up period across children. There

218 appeared to be a dose-response relationship, with more stable reporting of victimisation and/or  
219 perpetration of bullying associated with lower mean QALYs. Children who reported being a  
220 victim or perpetrator of bullying at three time points had the lowest mean total QALYs (mean  
221 1.11, 95% CI: 1.05 to 1.17 QALYs) equivalent to a 16% QALY loss compared to those who  
222 did not report being bullied at any time point (adjusted analysis). Children who reported being  
223 involved with bullying at one or two time points had mean total QALYs of 1.40 (95% CI: 1.38  
224 to 1.42) and 1.21 (95% CI: 1.17 to 1.25), equivalent to 5% and 13% QALY loss per child  
225 compared to those who were not bullied, respectively.

226 [Insert Table 4]

### 227 **Parents' preference based utilities**

228 Parents with a child who was categorised as a victim and/or perpetrator of bullying reported  
229 mean utility scores of 0.78 (95%CI: 0.77 to 0.80) which was significantly lower than the mean  
230 utility score of 0.81 (95%CI: 0.81 to 0.82) for parents whose children were not involved in  
231 bullying at baseline ( $p < 0.001$ ,  $F = 13.04$ ,  $df = 134$ ). This result remained statistically significant  
232 after adjusting for covariates ( $p < 0.001$ ,  $F = 6.64$ ,  $df = 134$ ).

### 233 **Discussion**

234 Our study has uniquely contributed new findings to the literature investigating the impact of  
235 bullying on health related quality of life. Firstly, we found that children involved with bullying,  
236 regardless of whether they were victims and/or perpetrators, had significantly lower  
237 preference-based quality of life than those who did not report any involvement with bullying.  
238 The longitudinal association supported the significant impairment in utility scores due to  
239 bullying victimisation or the combination of bullying victimisation and perpetration. However,  
240 the association between bullying perpetration and utility scores needs to be interpreted in  
241 caution given the small sample size. Previous studies have indicated that perpetration (either

242 cyberbullying or school bullying) was not associated with school-related happiness and  
243 specific domains of life satisfaction [28, 29]. Previous evidence has consistently shown an  
244 impairment of QoL among youth due to bullying victimisation in cross-sectional analyses [18,  
245 19, 30] however no studies have reported preference-based QoL by bullying victimisation  
246 and/or perpetration within a single study as well as using longitudinal analysis especially in  
247 young to middle-aged children.

248 Secondly, findings from this analysis also suggest that bullying was associated with significant  
249 burden of disease over the two-year follow up. Children involved with bullying had a 5% to  
250 16% loss in QALYs depending on the stability of bullying (i.e. number of times they reported  
251 bullying) over the two years (or 0.035 to 0.1 QALYs lost per year). To our knowledge, this is  
252 the first time a QALY loss associated with bullying over a long-term time horizon has been  
253 estimated. It is noteworthy that the burden of bullying is likely to be underestimated given that  
254 the burden of bullying in parents was not included and that the loss of QALYs was only  
255 estimated within a two-year window. It is noteworthy that a 0.1 QALY loss is comparable to  
256 the mean QALY loss for a traumatic brain injury treated in the emergency department or being  
257 admitted to hospital for an upper extremity fracture [31]. These findings indicate an urgent  
258 need for interventions to prevent both bullying victimisation and perpetration in school-aged  
259 children given the longer-term effects of bullying.

260 The decrement in CHU-9D utility scores between bullying victims and non-victims in our study  
261 was consistent with those reported in other two studies. In the study by Fantaguzzi et al. [18],  
262 adolescents aged 11-12 years who were bullied reported utility decrements ranging from 0.08  
263 to 0.23 as measured with the CHU9D and using the Australian scoring algorithm [18].  
264 Furthermore, it is important to consider that the method for identifying bullying victimisation  
265 differed across the two prior published studies and this study. Our study used the revised  
266 OBVQ while Fantaguzzi et al. 2018 [18] used the Gatehouse Bullying Scale, and the remaining

267 study utilised a self-report victimization index [19]. The different age groups of the target  
268 populations may be another explanation for the differences in utility scores among these  
269 studies. It is noteworthy that this is the first study to investigate preference based QoL in young  
270 to middle school-aged children where the impact of bullying on preference-based QoL is  
271 unclear.

272 This current study is the first to show that bullying was associated with poor preference-based  
273 QoL in parents of children who were involved in bullying. The decrement in utility scores in  
274 this study was equivalent to the decrement in utility scores of adults with mild substance use  
275 disorder compared to those without mental disorders or symptoms (0.04) [32]. Parents together  
276 with school, community, media are important to reduce experiences of bullying or to reduce  
277 harm from bullying. For example, parents can teach children social skills and ways to deal with  
278 the bullying and also that they do not blame and are encouraged to seek help in dealing with  
279 the bullying. There is a striking contrast between the robust statistical associations indicating  
280 that parenting can positively impact on bullying involvement, and parents' perplexity,  
281 uncertainty and even denial of their influence in bullying [33, 34].

### 282 *Strengths and limitations*

283 A strength of this analysis was the relatively large sample size of child participants. The use  
284 of reliable and valid measures of preference based QoL for both children and parents as well  
285 as the assessment and categorisation of bullying was an additional strength. Importantly, this  
286 is the first study to conduct longitudinal model analyses accounting for the correlation of  
287 repeated measures over time, and quantifying burden of disease due to bullying measured by  
288 loss of QALYs. Although the revised OBVQ is one of the few psychometrically valid and  
289 reliable measures of bullying and victimization, using a self-reported measure might be a  
290 limitation. It could be that using Olweus' definition up front inhibits students from labelling

291 their aggression as bullying as most know that bullying is not good behaviour. This implies the  
292 need for sensitivity analyses of utility values in economic evaluations. In addition, the short  
293 recall period (1 day) of the CHU-9D may limit its applicability as it may not be sufficiently  
294 sensitive to capture issues that irregularly affect respondents [18]. Furthermore, this study has  
295 not captured the full impact of cyberbullying on HRQoL given that children of this age are not  
296 legally able to access social media, potentially underestimating the burden associated with  
297 bullying. Other cofounders such as mental health disorders or disabilities were not taken into  
298 account in the analysis. Participants who completed follow-up were different to those lost at  
299 follow-up on some socio-demographics such as age and socioeconomic school status but not  
300 utility scores or bullying status at baseline. The low number of perpetrators found in this study  
301 may be a result of using self-reported bullying perpetration in this young age group. It was also  
302 not possible to implement a peer nomination measure of victimization since our public schools'  
303 ethics committee would not allow individual identification of children in this age group. In this  
304 study when parent identification was initiated by the school, the parent participation was poor  
305 (e.g. only half provided baseline data) [20]. This seems fairly typical for many studies which  
306 involved parents in school-based research [35]. Another limitation of the parental preference  
307 based utility data was that it relied on cross-sectional data, making it impossible to identify  
308 whether bullying was a cause or consequence of decrements in parental health-related QoL.

## 309 **Conclusion**

310 For Australian children aged 8-10 years, involvement in bullying, either as a victim or  
311 perpetrator, was associated with significantly lower preference-based health-related quality of  
312 life compared to children not reporting involvement in bullying. The preference-based quality  
313 of life of parents of children involved in bullying was also significantly lower than parents  
314 whose children were not involved in bullying. Furthermore, there appears to be a dose  
315 relationship for the stability of bullying over time and losses in QALYs. Those children

316 reporting bullying (victims and/or perpetrators) at all three assessment periods over 2 years had  
317 substantively greater burden of disease compared to those who were not bullied or not  
318 consistently bullied during this time. Given significance of the impact of bullying involvement  
319 on childhood quality of life, there is an urgent call for greater efforts to focus on prevention of  
320 bullying in early childhood.



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**Conflict of interest.**

The authors report no conflict of interest.

**Ethical approval.** Ethical approval was granted through the Macquarie University Human Research Ethics Committee (Reference number 5201300641), and the Deakin University Human Research Ethics Committee.

**Informed consent.** All participants included in the study were provided with details regarding the study and informed that return of the completed study implied their consent to participate in the study

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