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# **Association Between Experiencing Relational Bullying and Adolescent Health Related Quality of Life**

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## **ABSTRACT**

**BACKGROUND:** Bullying is a public health concern for the school-aged population, however the health outcomes associated with the sub-type of relational bullying are less understood. The purpose of this study was to examine the association between relational bullying and health related quality of life (HRQL) among young people.

**METHODS:** The present study utilized data from 5335 students aged 11-15 years, collected as part of the 2014 Health Behaviour in School-aged Children (HBSC) study conducted in England. Data was collected through self-completed surveys. Multilevel analysis modelled the relationship between relational bullying and HRQL. Demographic variables (sex, age, ethnicity, socioeconomic status) and other forms of bullying were controlled for.

**RESULTS:** Experiencing relational bullying had a significant negative association with HRQL whilst controlling for other forms of bullying. Weekly relational bullying resulted in an estimated 5.352 (95% confidence interval (CI), -4.178, -6.526) decrease in KIDSCREEN-10 score compared with those not experiencing relational bullying.

**CONCLUSION:** Experiencing relational bullying is associated with poorer HRQL. The findings question the perception of relational bullying as being a predominantly female problem. Girls were more likely to report experiencing relational bullying, but the negative association with HRQL was equal for boys and girls.

**Key words:** relational bullying; victimization; health related quality of life; KIDSCREEN

Bullying is a relatively common occurrence in schools worldwide, with a cross-national study indicating approximately 1 in 3 young people across Europe and North America had been victimized in the previous two months.<sup>1</sup> Bullying is commonly defined as intentional, harmful behaviors carried out repeatedly by an individual or group against someone with less physical or psychological strength.<sup>2</sup> Typically, bullying behaviors are categorized into four forms based upon the actions employed: physical, verbal, relational and cyber.

Relational bullying is a distinct form of bullying which causes harm to the victim through the systematic manipulation and destruction of their peer relationships and social status.<sup>3</sup> Such behaviors could include threatening to retract friendships, spreading rumours, purposefully ignoring and excluding the victim or using friendship as a bartering tool.<sup>4</sup> Relational bullying is often used interchangeably with the terms indirect, covert and social bullying; while there are intrinsic definitional differences the majority of researchers accept the terms are highly correlated and there is considerable overlap.<sup>5</sup> The present paper will use the term relational bullying as the measure adopted was traditionally devised to measure behaviors which manipulated peer relationships.<sup>3</sup>

Despite anecdotal evidence suggesting relational bullying is a common occurrence very little research reports the prevalence of relational bullying alone. Moreover the variety of definitions, methods for measuring relational bullying and varying reference periods has produced inconsistent findings. An Australian study identified 16% of respondents had experienced covert bullying in the past few weeks,<sup>6</sup> rising to over 40% of an American sample reporting relational bullying in the past two months.<sup>7</sup>

Relational bullying is often perceived as a female form of bullying, supported by research identifying more girls than boys reporting relational bullying.<sup>3,7,8</sup> Additionally the term was first established to describe typically female behaviors when Crick and Grotpeter<sup>3</sup>

extended their aggression research beyond traditionally masculine physical behaviors. It has been suggested girls advanced development of social-cognitive and language skills compared with boys may explain gender differences in relational bullying.<sup>9</sup> Moreover, gendered cultural norms stipulate girls as being innocent, caring and passive,<sup>10</sup> contradicting the expression of aggression; this may inadvertently encourage girls to adopt relational bullying behaviors that are more likely to go unnoticed and maintain gender norms.

An exclusive focus on relational bullying as a feminine behavior reinforces negative normative assumptions of girls being capable of being malicious and mean in a subordinate and indirect manner, while also detracting attention from boys' experience of the behavior. It is worth highlighting that while Wang et al.<sup>7</sup> established girls were significantly more likely than boys to report relational bullying, a substantial amount (36.0%) of boys reported being victimized relationally in the previous two months. Furthermore, recent research has called into question the gendered conceptualization of relational bullying, with a number of studies unable to replicate gender differences<sup>4,11</sup> and a meta-analysis showing "indirect aggression is not a "female form" of aggression".<sup>5(p1209)</sup>

It is widely acknowledged that bullying is a public health concern, with research demonstrating victimization is associated with negative physical and emotional health outcomes as well social developmental implications and negative impacts on life chances including academic achievement.<sup>12</sup> However fewer studies, especially in a UK context, have explicitly considered relational bullying. Of the limited research exploring relational bullying, the behavior has been associated with internalizing problems such as depression and loneliness,<sup>5</sup> and poorer physical health.<sup>8</sup> Moreover, there are indications relational bullying is more harmful than other forms of bullying behavior.<sup>8,13</sup> Relational bullying is often tied up within friendship groups,<sup>14</sup> which combined with the increased importance and intimacy of friendships during adolescence, may make the behavior particularly upsetting.

Girls have reported perceiving relational bullying to be more serious and harmful than other forms of bullying, comparably boys have been reported to place less importance on relational bullying behaviors.<sup>4,15</sup> However it is worth noting young people's perception of relational bullying may be influenced by gender stereotypes; research demonstrates school-aged children are aware of gender norms associated with relational bullying,<sup>16</sup> and boys may be reluctant to express levels of distress at what is often perceived as a typically feminine behavior. Evidence is unclear whether these gendered perceptions are reflected in the associations between relational bullying and health outcomes. Crick and colleagues<sup>17,18</sup> suggest relational bullying has a stronger association with social-psychological adjustment among girls than boys, whereas other studies have found the relationship between relational bullying and poorer health did not differ by gender.<sup>5,8</sup> Further research is necessary to clarify whether the negative outcomes associated with experiencing relational bullying are primarily a concern for girls.

The World Health Organization (WHO) states health is not merely the absence of illness, but also incorporates an holistic assessment of physical, mental and social wellbeing.<sup>19</sup> In line with this definition, a number of studies have examined the impact of bullying on more comprehensive health outcome measures as opposed to specific symptoms. Health related quality of life (HRQL) is a multifaceted construct which refers to an individual's perception of their physical, emotional, social and behavioral functioning.<sup>20</sup> The association between HRQL and relational bullying has received very little investigation; however current research suggests a link between bullying behaviors more broadly and poorer HRQL.<sup>21-23</sup>

The present study is the first known UK study to examine the association between relational bullying and HRQL among a large representative sample of school-aged children, by drawing on data from the WHO Health Behaviour in School-aged Children (HBSC) study

carried out in England.<sup>24</sup> Moreover, this paper furthers the understanding of gender differences in relational bullying through consideration of sex in the statistical model. Additional demographic variables including age, ethnicity and socioeconomic status (SES) were controlled for.

There is undoubtedly overlap between the different forms of bullying; victims of bullying are usually subjected to a number of bullying behaviors.<sup>25</sup> To draw conclusions about relational bullying and HRQL independent of additional experiences of bullying, the statistical model controlled for verbal and physical forms of bullying. Research suggests considerable overlap between relational bullying and cyber bullying,<sup>26</sup> with the U.S Department of Education characterizing cyber bullying as a tool for conducting relational bullying as opposed to a unique form.<sup>27</sup> Consequently, cyber bullying was not controlled for within the present model as it is unclear whether the two bullying behaviors are distinct from each other.

## **METHODS**

### **Participants**

A random sample of state and independent secondary schools in England was drawn, stratified by region and school type to ensure a representative sample. Following this process, 261 classes from 48 schools across England were recruited, resulting in 5335 students (51.5% boys). The average age of the sample was 13.5 years (SD 1.7). The majority of the sample were White British (75%), and 90% reported being born in England. The response rate at the student level was 92%.

### **Procedure**

HBSC is an international WHO survey-based study collecting data on the health and wellbeing, health behaviors and social determinants of young people aged 11-, 13- and 15-years old.<sup>28</sup> The survey is conducted every four years across Europe and North America following an internationally approved protocol.<sup>29</sup> The present findings are based on the 2014 HBSC survey conducted in England. Surveys were administered during class time under exam like conditions to promote confidentiality. Data collection occurred between September 2013 and March 2014. For full details of methodology see Brooks et al.<sup>24</sup>

## **Instruments**

The following measures from the 2014 HBSC survey in England were included in the present analysis.

***Relational bullying.*** Three items measured relational bullying. The items “students left me out of things on purpose, excluded me from their group, or completely ignored me” and “students told lies or spread false rumours about me and tried to make others dislike me” are derived from the Revised Olweus Bully/Victim Questionnaire.<sup>30</sup> The third item, “students spread embarrassing or personal information about me” is adapted from Dukes, Stein and Zane.<sup>31</sup> The reference period was the past two months with response options: never, once or twice, two or three times a month, about one a week or several times a week. Respondent answers were categorized into no victimization, monthly victimization or weekly victimization based on the most extreme answer – in other words, a response of “about once a week” or “several times a week” to any item was categorized as weekly victimization, “two or three times a month” was categorized as monthly and “once or twice” or “never” was categorized as no victimization. The cut-off point of “two or three times a month” is widely accepted within the bullying field as it reflects the repetitive and ongoing nature of bullying

whilst excluding one-off incidents. However it was decided if a respondent answered “once or twice in the past two months” to all three items they would be re-categorized as monthly victimization. The items form a composite measure reflecting one type of bullying behavior so it was appropriate to view the items collectively, and for an individual to report experiencing all three items it is indicative that the bullying is both repetitive and ongoing which coincides with the research definition of bullying.

***Verbal and physical bullying.*** Measured via items “I was called mean names, was made fun of, or teased in a hurtful way” and “I was hit, kicked, pushed, shoved around or locked indoors” from the Revised Olweus Bully/Victim Questionnaire.<sup>30</sup> Response answers were measured on a Likert type scale where 1= never, through to 5 = several times a week. Respondent’s experiences of verbal and physical bullying were categorized into 1-2 = “no victimization”, 4 = “monthly” and 5 = “weekly”.

***Demographic variables.*** Sex, age, ethnicity and SES were also controlled for. SES was assessed through two proxy measures: the family affluence scale (FAS) and free school meal (FSM) eligibility. FAS includes four items assessing the material wealth of the family home, and categorizes respondents into low, medium and high family affluence.<sup>32</sup> In England, a free school meal is a statutory benefit for all school-aged children from low income households, and thus FSM eligibility acts as an indicator of lower SES among respondents.

***HRQL.*** KIDSCREEN-10, a measure designed for cross-cultural use among young people aged 8-18 years, was used to assess HRQL among the student sample.<sup>20</sup> KIDSCREEN-10 is comprised of 10 items addressing affective, cognitive, psycho-vegetative and psychosocial symptoms, rated on a 5-point scale from “never” through to “always” or “not at all” through to “extremely”. KIDSCREEN-10 generates an overall score of HRQL.

Good internal consistency (Cronbach's alpha = 0.82) and test-retest reliability ( $r = 0.73$ ) have been demonstrated for KIDSCREEN-10.<sup>33</sup>

## **Data Analysis**

As the data was hierarchical, a multilevel regression model was undertaken using the package MLwiN version 2.33 (Centre for Multilevel Modelling, University of Bristol). A systematic strategy was employed. Initially a backward selection of main effects from a list of explanatory variables was conducted. Main effects were retained in the model at the 5% level. Wald tests were used to judge significance. Physical and verbal bullying were retained in the model irrespective of significance as it was important to control for these distinct types of bullying. Subsequently random slopes and interactions were considered for inclusion in the model. The significance of both random slope models and interactions was judged by changes in deviance, each time comparing to the best model at present. Random slopes and interactions were only included in the model if they reached the 1% level of significance so as to avoid inclusion of spurious relationships.

## **RESULTS**

### **Descriptive Statistics**

In all, 16.6% (828) of young people reported experiencing relational bullying in the previous two months, with 8.7% (436) reporting monthly relational bullying and 7.9% (393) reporting weekly relational bullying. Girls were more likely to report being relationally bullied; 19.7% (480) of girls compared with 13.7% (348) of boys.

## Statistical Model

The final multilevel regression model included six variables with significant main effects (relational bullying, verbal bullying, age, FAS, FSM and ethnicity) with one interaction (sex x age). Results are given as mean differences in KIDSCREEN-10 score for the main effects with 95% confidence interval (CI) and relevant p-values (Table 1). Significant comparisons are highlighted in bold text.

**Relational bullying.** As shown in Table 1 – controlling for demographic variables and other forms of bullying - relational bullying was significantly associated with poorer HRQL. Experiencing monthly or weekly relational bullying was associated with lower KIDSCREEN-10 scores compared with respondents who reported no relational bullying. The negative association between relational bullying and HRQL was most prominent for those reporting weekly victimization, weekly relational bullying resulted in an estimated 5.352 (95% CI, -4.178, -6.526) detrimental decrease in KIDSCREEN-10 score compared with those not victimized. While the association between relational bullying and HRQL increased with frequency, the difference between monthly and weekly relational bullying was non-significant. There was insufficient evidence to claim any differences exist in the impact of relational bullying across the demographic factors.

**Other forms of bullying.** Experiencing verbal bullying in the past two months, both monthly and weekly, was significantly associated with lower HRQL. Experiencing weekly verbal bullying was associated with an estimated difference in KIDSCREEN-10 score of -2.446 (95% CI, -1.21, -3.682) compared with those not victimized verbally. There was insufficient evidence to demonstrate a significant relationship between physical bullying and HRQL.

**Demographic variables.** As shown in Table 1, SES and ethnicity had a significant association with HRQL. SES, as measured via FAS and FSM, was identified as significantly associated with a lower KIDSCREEN-10 score, however the expected difference in KIDSCREEN-10 scores were marginal. The significant association between ethnicity and HRQL is likely to be an artefact of the data, with only a significant difference between Chinese and White/White British respondents.

A significant interaction between sex and age was retained in the model, suggesting sex as significantly associated with HRQL at 13- and 15- years only. At 11 years old boys and girls KIDSCREEN-10 scores do not differ, but by 13 and 15 years old girls scores decrease to a greater degree compared with boys of the same age (Table 2). As shown in Table 3, 15 year old girls have an estimated difference in KIDSCREEN-10 score of -4.280 (95% CI, -5.137, -3.423) compared with 15 year old boys.

## **DISCUSSION**

While a wealth of research has identified the negative association between bullying and health outcomes, few studies have explored relational bullying alone. Moreover, utilizing the comprehensive concept of HRQL as an outcome measure in response to bullying has seen little practice to date. The present paper demonstrates the detrimental impact of relational bullying on adolescent HRQL: experiencing relational bullying on either a weekly or monthly basis was associated with a significant decrease in KIDSCREEN-10 score. In line with previous research identifying relational bullying as a unique predictor of poor emotional and physical health,<sup>8,13</sup> by controlling for additional forms of bullying the present paper identifies an association between relational bullying and poorer HRQL which is above and beyond that of physical and verbal bullying.

Research has demonstrated bullying of any kind can have detrimental and long lasting effects on young people's health and wellbeing,<sup>5,12</sup> however the current findings add weight to the idea that relational bullying may be the most harmful form of bullying victimization.<sup>8,13</sup> Relational bullying had a larger association with HRQL compared with physical or verbal bullying: weekly relational bullying was associated with an estimated decrease in KIDSCREEN-10 score over double that of weekly verbal bullying (-5.352 vs. -2.446). It has been suggested that a change of half a standard deviation can be categorized as "noticeable".<sup>33</sup> For the current study this would be a change of 4.5 points in the KIDSCREEN-10 score, indicating that weekly relational bullying is associated with an important detrimental effect whereas the effect of verbal bullying is less severe. Relational bullying is likely to be conducted by those closest to the victim.<sup>14</sup> With adolescent friendships increasing in intimacy relational bullying tactics can be of a personal nature, for example sharing information told in confidence, and thus particularly traumatic for the victim. Furthermore, with relational bullying embedded within friendship groups, it becomes difficult to distinguish relational bullying from natural conflict between friends, potentially reducing the likelihood of outside intervention.<sup>14</sup>

The severity of relational bullying is often disregarded; bullying research indicates a wider misconception of relational bullying as normative which may be detrimental to the identification and support of victims. A content analysis identified relational bullying was less likely than verbal or physical bullying to be defined in school anti-bullying policies.<sup>34</sup> Preservice teachers, from the UK and USA, have described relational bullying as less serious than physical bullying, as well as provoking less empathy with victims and requiring fewer interventions.<sup>35,36</sup> Furthermore, cross-cultural comparisons identified English parents were least likely to include the relational bullying behavior social exclusion when asked to define bullying.<sup>37</sup>

The inclusion of sex in the model allows for further exploration of the notion that relational bullying is a female form of aggression. The current findings suggest girls were more likely than boys to report being relationally victimized in the previous two months, supporting traditional research by Crick and colleagues.<sup>3</sup> A number of suggestions have been proposed as to why relational bullying may be more prevalent among females. Relational bullying is thought to require a higher level of social intelligence and superior cognitive abilities which tend to develop earlier in girls.<sup>9</sup> Moreover, for bullying to cause harm to the victim it is likely the behaviors underpinning the bullying must challenge principles which are of considerable importance to the victim. Boys and girls friendships tend to differ, with girls placing more importance on intimacy; which may foster a tendency for girls to employ relational bullying behaviors as the most effective form of causing harm.<sup>15</sup> Furthermore the socialization of girls against overt forms of aggression may contribute to their greater use of relational bullying.<sup>10</sup> It is important to note the gendered socialization of aggression may also bias the results, boys may be unwilling to admit to a typically perceived feminine behavior resulting in an underreporting of relation bullying.

Recent perspectives have suggested a need to move beyond mean gender differences in bullying, to explore the more complex role gender may play in shaping young people's experience of bullying.<sup>38</sup> While sex and age were significantly associated with KIDSCREEN-10 score the present study could not identify an interaction between sex and relational bullying, suggesting the association between relational bullying and HRQL was the same for both boys and girls. The decrease in KIDSCREEN-10 score attributed to relational bullying was equal for both sexes. This is in stark contrast to previous research exploring the perception of relational bullying among adolescents, where boys have been shown to perceive relational bullying as less serious than physical bullying.<sup>4,15</sup>

The conceptualization of relational bullying as a female behavior not only potentially hinders the identification of relational bullying among boys, but ignores the detrimental effect of relational bullying on their health and wellbeing. The focus on girls has extended to popular fiction, with a number of books aimed at helping girls navigate relational bullying behaviors eg *Odd Girl Out*<sup>39</sup> and *Queen Bees and Wannabees*.<sup>40</sup> Furthermore, Kahn et al.<sup>35</sup> identified fewer teachers intervening when boys experienced relational bullying compared with girls.

### **Limitations**

While the HBSC England dataset provided a large representative sample of young people it is important the limitations of cross-sectional survey data are acknowledged. The cross-sectional nature of the data prevents causation from being determined. The model presents a correlation between experiencing relational bullying and poorer HRQL but it is not possible to demonstrate the direction of this relationship; a longitudinal approach would confirm the direction of causality. In light of current longitudinal studies clarifying bullying involvement as a direct cause of poor emotional and physical health,<sup>41</sup> it is likely the relationship between relational bullying and HRQL described in the present paper would have a similar direction of causation. Validation work within the HBSC network is ongoing, however it is important to note the data is reliant on self-reporting and young people's responses may be influenced by social desirability bias.

### **Conclusions**

The current paper identifies a significant association between relational bullying, of varying levels, and poorer HRQL as demonstrated by KIDSCREEN-10. The analysis suggests relational bullying has a unique contribution over and above that of other bullying forms, and furthermore is associated with larger decreases in HRQL. Relational bullying is a

contributing factor to young people's health and wellbeing, and should therefore be incorporated into school bullying policies. Further research needs to be undertaken to understand how gendered normative assumptions and expectations are shaping the experience of relational bullying for both boys and girls. Of particular interest would be qualitative research exploring boys' perceptions of relational bullying; this may shed light on the equal health outcomes identified among boys and girls compared with the differing prevalence rates of relational bullying.

## **IMPLICATIONS FOR SCHOOL HEALTH**

Bullying can be detrimental to the health and wellbeing of young people and the school environment, culture and ethos have been shown to play a pivotal role in identifying, preventing, and addressing school bullying. The present research specifically identified relational bullying as being associated with poor HRQL, highlighting the need for relational bullying to be specifically acknowledged in school policies as both a distinct form of bullying and as a form that warrants specific bullying prevention and reduction strategies. The idea of comprehensive school bullying policies is neither new nor unique; however, despite anti-bullying policies being statutory for all UK state schools (Education and Inspections Act 2006) research has demonstrated that relational bullying features in fewer school policies than physical or verbal bullying.<sup>34</sup> A similar finding was identified in Australia, with only 40% of teachers reporting that their school policy covered relational bullying behaviors.<sup>42</sup> Relational bullying is often anecdotally perceived as less harmful than physical or verbal bullying while simultaneously being perceived as harder to address, which may contribute in part to its omission from many school policies. The present research rebukes these suggestions as relational bullying alone was deemed to have a larger impact on HRQL than

either physical or verbal bullying combined, calling for relational bullying to be given considerable weight in school policies.

In regards to relational bullying, there may be a particular need for whole school and community educational programs. Teachers, parents and students have been shown to disregard relational bullying as a form of victimization with the consequence that it is less likely to be reported and addressed within the school system.<sup>37,43</sup> The findings presented in this paper, and especially the negative association with HRQL, demonstrates that relational bullying is a form of bullying that warrants attention as part of school-based anti-bullying interventions. It is therefore important to raise awareness of relational bullying and its broader implications, as well as making school staff aware of a potential bias to respond to the more overtly visible forms of bullying. The work justifies the added value of embedding relational bullying interventions in the wider community; existing evaluations<sup>44</sup> have raised the importance of considering the social context of relational bullying, with the “Walk Away, Ignore, Talk, Seek Help”<sup>45</sup> and “Making Choices: Social Problem Skills for Children”<sup>46</sup> programs involving key individuals from the lives of young people.

Interventions addressing relational bullying may also offer a means to positively influence young people’s health and wellbeing in schools, as the present study demonstrates the importance of interventions for both boys and girls and challenges the stereotype of relational bullying as a uniquely female issue. To date a number of interventions have focused exclusively on girls, for example “A Friend in Deed”<sup>47</sup> and “Friend to Friend Programme”.<sup>48</sup> The findings here indicate that bullying interventions need to consider gendered experiences of bullying in a more sophisticated and comprehensive manner including designing interventions that address the forms of relational bullying that both girls and boys experience.

Furthermore, Leff and colleagues<sup>44</sup> note evaluation is key to a successful school-based anti-bullying program but frequently the outcome measures utilized are unreliable with poor psychometric properties. In light of the current research it is important schools adopt measurement tools for evaluation which are sensitive to relational bullying behaviors and demonstrate good reliability and validity.

The findings from this paper have implications for school health more broadly. The analysis identifies HRQL decreases with age for both boys and girls, with a sharper decrease noted among girls. Identifying a link between age, sex and HRQL highlights the potential for targeted health promotion education for different school years. The link between the health and wellbeing of young people and their educational attainment has been well documented;<sup>49</sup> interventions which aim to reduce bullying and promote student wellbeing are likely to have considerable reach in terms of young people's HRQL and educational achievement.

### **Human Subjects Approval Statement**

Ethical approval was granted from the University of Hertfordshire Ethics Committee for Health and Human Sciences (HSK/SF/UH/00007).

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**Table 1. Estimated Difference in KIDSCREEN-10 Score, 95% CI and Relevant p=value for Explanatory Variables Not Involved in Interactions**

<b>Factor</b>	<b>Comparison</b>	<b>Difference</b>	<b>95% CI</b>	<b>p-value</b>
Relational bullying	<b>Monthly compared with never</b>	<b>-4.576</b>	<b>(-3.648, -5.504)</b>	<b>p &lt; .001</b>
	<b>Weekly compared with never</b>	<b>-5.352</b>	<b>(-4.178, -6.526)</b>	<b>p &lt; .001</b>
	Weekly compared with monthly	-0.776	(0.547, -2.099)	p = .250
Verbal bullying	<b>Monthly compared with never</b>	<b>-2.140</b>	<b>(-0.889, -3.391)</b>	<b>p = .001</b>
	<b>Weekly compared with never</b>	<b>-2.446</b>	<b>(-1.21, -3.682)</b>	<b>p &lt; .001</b>
	Weekly compared with monthly	-0.305	(1.24, -1.85)	p = .699
Physical bullying	Monthly compared with never	-0.742	(1.301, -2.784)	p = .477
	Weekly compared with never	-1.426	(0.411, -3.263)	p = .128
	Weekly compared with monthly	-0.685	(1.854, -3.224)	p = .597

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FAS	Medium FAS compared with Low FAS	0.785	(-0.31, 1.88)	p = .160
	<b>High FAS compared with Low FAS</b>	<b>1.532</b>	<b>(2.638, 0.426)</b>	<b>p = .007</b>
	<b>High FAS compared with Medium FAS</b>	<b>0.747</b>	<b>(1.25, 0.244)</b>	<b>p = .004</b>

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FSM	<b>Not receiving FSM compared with receiving FSM</b>	<b>0.924</b>	<b>(1.743, 0.105)</b>	<b>p = .027</b>
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Ethnicity*	<b>Chinese compared with White/White British</b>	<b>-1.803</b>	<b>(-0.086, -3.52)</b>	<b>p = .040</b>
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CI = confidence interval; FAS = family affluence scale; FSM = free school meals

\*Only significant comparisons for ethnicity are presented due to numerous non-significant comparisons

**Table 2. Estimated Difference in KIDSCREEN-10 Score, 95% CI and Relevant p=value  
For Age Category Comparisons by Sex**

Comparison of age categories	Sex	
	Male	Female
13 compared with 11	<b>-3.129</b> <b>(-4.046, -2.212)</b> <b>p &lt; .001</b>	<b>-5.014</b> <b>(-5.918, -4.11)</b> <b>p &lt; .001</b>
15 compared with 11	<b>-4.892</b> <b>(-5.918, -4.11)</b> <b>p &lt; .001</b>	<b>-8.997</b> <b>(-9.914, -8.08)</b> <b>p &lt; .001</b>
15 compared with 13	<b>-1.763</b> <b>(-2.702, -0.824)</b> <b>p &lt; .001</b>	<b>-3.983,</b> <b>(04.886, -3.08)</b> <b>p &lt; .001</b>

CI = confidence interval

**Table 3. Estimated Difference in KIDSCREEN-10 Score, 95% CI and Relevant p=value  
For Sex Comparisons by Age**

Comparisons of sex	Age		
	11 years	13 years	15 years
Female compared with male	-0.175 (-0.857, 0.663) p = .682	<b>-2.060</b> <b>(-2.931, -1.189)</b> <b>p &lt; .001</b>	<b>-4.280</b> <b>(-5.137, -3.423)</b> <b>p &lt; .001</b>

CI = confidence interval