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Type of disability, gender, and age affect school satisfaction: Findings from the UK Millennium Cohort Study

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Background. Self-reported school satisfaction is an important indicator of child and adolescent well-being. Few studies have examined how disability, gender, and age affect school satisfaction.

Aim. We sought to determine whether the interaction between disability and gender with regard to self-reported school satisfaction might be specific to particular types of disability and particular ages.

Methods. We undertook secondary analysis of Waves 5 and 6 of the UK's Millennium Cohort Study (MCS), a nationally representative sample of children born 2000–2002. MCS is the fourth in the series of British birth cohort studies.

Result. At 11 years of age (n = 12,207), school satisfaction was significantly higher for girls and those without disabilities. By contrast, at 14 (n = 10,933), school satisfaction was significantly higher for boys and those without disabilities. Subsequent analyses of gender moderation of the association between disability and school satisfaction revealed a significant interaction between gender and disabilities associated with mental health and with dexterity, respectively, at 14 years but not at age 11.

Conclusion. These findings will inform future research endeavours, policy, and practice in psychology, education, and other areas associated with child development and disability.

One important indicator of child and adolescent well-being is school satisfaction. A seminal national study conducted in the United States stated 'Of the constellation of forces that influence adolescent health-risk behaviour, the most fundamental are the social contexts in which adolescents are embedded; the family and school contexts are among the most critical' (Resnick *et al.*, 1997, p. 823). This has been reiterated numerous times in the literature including a recent report from the World Health Organization study of Health Behaviour in School-aged Children (HBSC) which states that liking school serves as a 'protective factor against health-compromising behaviors' whereas not liking school 'is associated with health-risk behaviors, low self-rated health and increased somatic and

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psychological symptoms' (Inchley *et al.*, 2016, p. 51). Indeed, students' sense of belonging at school has long been associated with a range of academic outcomes including: 'self-efficacy, success expectations, achievement values, positive affect, effort, engagement, interest in school, task goal orientation, and school marks' (Furrer & Skinner, 2003, p. 149).

There are psychological theories of how school satisfaction relates to well-being such as the developmental–ecological perspective on adjustment and healthy school environments put forward by Baker, Dilly, Aupperlee, and Patil (2003). See also Forrest, Bevans, Riley, Crespo, and Louis (2013) who explored associations between biopsychosocial stressors and school outcomes as children transition to early adolescence as well as the work on school connectedness by Shochet and colleagues (e.g., Shochet, Dadds, Ham, & Montague, 2006; Shochet & Smith, 2014). With a specific focus on disability, Vaz *et al.* (2015) discussed competence theories in the context of school belonging. Cumming, Marsh, and Higgins (2017) and Marsh (2018) outlined issues relating to disability and school connectedness. See also Schwab, Sharma, and Loreman (2018) regarding inclusion climate and Allodi (2010) regarding social climate in mixed-ability classrooms.

Relatively few studies of school satisfaction have considered participant characteristics such as disability and gender, and their possible intersection. Yet this kind of data disaggregation is seen as a priority for the worldwide monitoring of well-being (UNICEF, 2016; United Nations Economic & Social Council Statistical Commission, 2016). A more recent report states 'Comprehensive and inclusive policy analysis requires data disaggregated by disability status that is cross-cutting with other socioeconomic characteristics to address all people, without exemption, in formulating any developmental policies' (United Nations Economic & Social Commission for Western Asia, 2019, p. 1). It is noteworthy that the large cross-country HBSC study administered by the World Health Organization does not currently disaggregate data by disability.

Previous studies that have examined disability and school satisfaction have produced conflicting results. Watson and Keith (2002) found that children with disabilities who were receiving special education services reported lower school satisfaction than children without disabilities. Similarly, a study by Hebron (2018) reported lower school connectedness in autistic students by comparison with typically developing peers. By contrast, it has sometimes been reported that students with disabilities have higher school satisfaction (e.g., Brantley, Huebner, & Nagle, 2002). Other studies have found no disability-related differences in school satisfaction (Gilman, Easterbrooks, & Frey, 2004; Ginieri-Coccossis *et al.*, 2013; McCullough & Huebner, 2003). Some studies have focused exclusively on students with disabilities rather than comparisons between disabled and non-disabled students (e.g., the study of school belonging among low-income urban youth with disabilities by McMahon, Parnes, Keys, & Viola, 2008). It is important to note that these previous studies included relatively modest sample sizes ($n < 200$ per group). In addition, it is unlikely that these convenience samples were nationally representative.

Recently, Arciuli, Emerson, and Llewellyn (2019) undertook secondary analysis of data from the 2014 Australian Child Wellbeing Project (ACWP: www.australianchildwellbeing.com.au), a large cross-sectional national survey of child and adolescent subjective well-being (Lietz *et al.*, 2015; Redmond *et al.*, 2016). They analysed data from 3,830 Australian adolescents in Year 8 (second year of high school; while ACWP does not specify participant ages, students in Year 8 are typically around 13–14 years of age). Results showed an interaction between disability and gender with disabled girls reporting the lowest school satisfaction. One limitation of the ACWP data set is that it does not provide information regarding different types of disability. Moreover, that study by Arciuli *et al.* (2019 reported on only one age group. An Australian study by Vaz *et al.*

(2015) that collected a separate, smaller set of data found relatively high self-ratings of school belonging in girls and those with disabilities at 12 years of age.

There has been no purpose-designed study to ascertain precise similarities/differences concerning all terminology and constructs such as school satisfaction, school connectedness, school belonging, and other related terms (school environment, school climate etc). One way to examine similarities/differences is by looking at the items used to measure these constructs in previous studies that have focused on disability and mental health. Arciuli *et al.* (2019) analysed the ACWP dataset. Questions pertaining to school satisfaction came from six items in the Longitudinal Study of Australian Children; 'My school is a place where….' (1) '…I feel happy', (2) '…I really like to go each day', (3) '…I find that learning is a lot of fun', (4) '…I feel safe and secure', (5) '…I like learning', and (6) '…I get enjoyment from being there'. Each item was rated on a 4-point Likert scale. For the subset of participants reported by Arciuli *et al.* (2019), these items showed high internal consistency of .91. Watson and Keith (2002) utilized the Quality of Student Life Questionnaire (QSLQ: Keith & Schalock, 1995). The QSLQ has four factors: Satisfaction, Well-Being, Social Belonging, and Empowerment/Control with 10 items per factor, each scored on a 3-point Likert scale. The Satisfaction factor includes items on school and school-related activities such as 'Do you feel you receive fair grades for your efforts?', and 'Do you feel your school work is worthwhile and relevant?' Internal consistency of items within each factor for the participants tested by Watson and Keith was not reported. Brantley et al. (2002) utilized the Multidimensional Students' Life Satisfaction Scale (MSLSS: Huebner, 1994). The MSLSS examines five domains of a child's life: Friends, Family, School, Self, and Living Environment. An example item from the School domain requiring a response on a 4-point Likert scale is 'I look forward to going to school'. In the study by Brantley et al. (2002), internal consistency of School domain items was .71. Gilman *et al.* (2004) used the MSLSS but scored responses on a 6-point Likert scale. The School domain met their .70 threshold for internal consistency in all groups of participants they tested. McCullough and Huebner (2003) also used the MSLSS with responses scored on a 6-point Likert scale, and internal consistency on the School domain was reported as .83 and .86 for the groups of participants they tested. Ginieri-Coccossis *et al.* (2013) used the 24-item KINDL questionnaire where six dimensions, including the 'everyday school functioning' dimension, were assessed via responding using a 5-point Likert scale. Internal consistency for the entire KINDL questionnaire was reported as above the acceptable minimum of .70 although that data did not come from study participants. The Psychological Sense of School Membership questionnaire (PSSM: Goodenow, 1993) has been used by a number of researchers. The PSSM includes 18 items scored on a 5-point Likert scale that probe belonging (e.g., 'I feel proud of belonging to my school'), respect (e.g., 'I am treated with as much respect as other students'), encouragement (e.g., 'People here know how I can do good work'), and acceptance (e.g., 'I am included in lots of activities at [insert name of child's school]'). Shochet *et al.* (2006) used the PSSM in their study and reported internal consistency of .89. McMahon *et al.* (2008) used the PSSM and a 12-item School Satisfaction Survey (from subscales of the Comprehensive Assessment of School Environments Student Satisfaction Survey: Halderson, Kellye, Keefe, & Berge, 2001), among other measures. For the participants they assessed, internal consistency of the PSSM and the School Satisfaction Survey was .88 and .83, respectively. Vaz *et al.* (2015) also used the PSSM, among other measures, but did not report on internal consistency derived from the participants they assessed. Hebron (2018) utilized the PSSM and reported internal consistency for autistic participants of .90 and .74 for typically developing participants. There are similarities across these measures of school

satisfaction, school connectedness, and school belonging – they all pertain to well-being in the school context, and all have reasonably good face validity and acceptable internal consistency. However, there are some differences. We return to this point in our Discussion.

In summary, it is important to examine how multiple and intersecting factors such as disability and gender can influence feelings of well-being and school satisfaction across child development due to the obvious implications for theory as well as policy and practice. As such, our main goal here is to contribute to the sparse literature on how disability and gender might be related to school satisfaction. We report on a large longitudinal data set from the United Kingdom – the Millennium Cohort Study (MCS) – a nationally representative sample of over 18,000 children born 2000–2002. Based on recent analyses of a large nationally representative Australian data set reported by Arciuli *et al.* (2019), we hypothesized that adolescent girls with disabilities living in the United Kingdom would self-report the lowest school satisfaction. However, Arciuli et al. analysed data from Year 8 students (13- to 14-year-olds). We thought it possible that younger girls with disabilities living in the United Kingdom might show a different pattern. The current study moves beyond previous studies in attempting to determine whether the interaction between disability and gender with regard to self-reported school satisfaction might be specific to particular types of disability and particular ages. This undertaking is exploratory in nature, and we did not have directional hypotheses.

Method

We undertook secondary analysis of Waves 5 and 6 of the UK's MCS. MCS is the fourth in the series of British birth cohort studies. It aims to follow throughout their lives a cohort of over 18,000 children born in the United Kingdom between 2000 and 2002. MCS data are managed by the Centre for Longitudinal Studies at the University of London (www.cls.ioe.ac.uk/) and are available to researchers registered with the UK Data Service (http://ukdataservice.ac.uk/). Full details of the design of MCS are available in a series of reports and technical papers (Fitzsimons, 2017; Ipsos MORI, 2016; Mostafa & Ploubidis, 2017), key aspects of which are summarized below.

Data from the MCS have been reported in some previous studies of factors related to the health and well-being of children and adolescents. For example, a number of studies have reported on physical activity levels (Griffiths *et al.*, 2013; Pearce *et al.*, 2019). Other studies have examined television, electronic games use, and social media in relation to mental health (Kelly, Zilanawala, Booker, & Sacker, 2018; Parkes, Sweeting, Wight, & Henderson, 2013), or have examined bullying (Campbell *et al.*, 2019; Chatzitheochari, Parsons, & Platt, 2016). As far as we are aware, data from the MCS have not yet been investigated in terms of how disability and gender might be associated with self-reported school satisfaction.

Sampling

Participant families were randomly selected from Child Benefit Records, a non-means-tested welfare benefit available to all UK children. Sampling was geographically clustered to include all four countries of the United Kingdom (England, Wales, Scotland, and Northern Ireland) and disproportionately stratified to oversample children from ethnic minority groups, disadvantaged communities, and children born in Wales, Scotland and

Northern Ireland (Plewis, 2007). Children and families were drawn from 398 randomly selected electoral wards in the United Kingdom. The first survey (MCS1) took place when children were 9 months old and included a total of 18,551 families. Children were followed up at ages three, five, seven, 11 (MCS5; 12,813 families, 69% retention rate from MCS1), and 14 (MCS6; 11,726 families, 63% retention rate from MCS1). For each family, information was collected on the target child falling within the designated birth date window. For multiple births (e.g., twins, triplets), information was collected on all children. The discrepancy in numbers between the full sample and the analytic sample reported here were primarily driven by missing data on the disability and school satisfaction variables.

Procedure

All data used in the present study were collected by computer-assisted personal interviews with a key adult informant (in approximately 95% of cases the child's biological mother) and, separately, the child themselves.

Measures

Gender

Child gender was based on report by a key adult informant.

Child disability

Child disability was based on report by a key adult informant with four questions asked regarding children aged 11 and 14 years.

1. Does [Cohort member's name] have any physical or mental health conditions or illnesses lasting or expected to last 12 months or more? Response options: 1 'Yes'; 2 'No'
2. Does this (Do any of these) condition(s) or illness(es) affect [Cohort member's name] in any of the following areas? 1 Vision (e.g., blindness or partial sight), 2 Hearing (e.g., deafness or partial hearing), 3 Mobility (e.g., walking short distances or climbing stairs), 4 Dexterity (e.g., lifting and carrying objects, using a keyboard), 5 Learning or understanding or concentrating, 6 Memory, 7 Mental health, 8 Stamina or breathing or fatigue, 9 Socially or behaviourally (e.g., associated with autism, attention deficit disorder or Asperger's Syndrome), 10 Other (please specify)
3. Does this (Do any of these) condition(s) or illness(es) reduce [Cohort member's name]'s ability to carry out day-to-day activities? Response options: 1 'Yes, a lot'; 2 'Yes, a little', or 3 'Not at all?'
4. For how long has [Cohort member's name]'s ability to carry out day-to-day activities been reduced? Would you say…1 'Less than six months', 2 'Between 6 and 12 months', or 3 '12 months or more?'

We identified children as having a disability if the respondent stated that the child had a disability (Q1) that reduced the child's ability to carry out day-to-day activities at least a little (Q3) and had lasted at least 6 months (Q4). Information from Q2 was combined with child disability status used to identify child disability associated with specific functional impairments. The reference category for these variables was children without disability

(i.e., children with disability that was not associated with that impairment were excluded from impairment-based analyses).

School satisfaction

At ages 11 and 14, participating children were asked to self-report on five questions related to school satisfaction.

1. How often do you try your best at school?
2. How often do you find school interesting?
3. How often do you feel unhappy at school?
4. How often do you get tired at school?
5. How often do you feel school is a waste of time?

Response options were the same at each age: (1) '*all of the time*'; (2) '*most of the time*'; (3) '*some of the time*'; and (4) '*never*'. Unweighted sample sizes were 12,207 at age 11 and 10,933 at age 14. The five items demonstrated reasonable internal consistency with scoring on items 3 and 5 reversed (age 11 $\alpha = .71$, age 14 $\alpha = .70$) with alpha being reduced if any item was removed from the scale. We created a simple additive scale of school satisfaction from the five items (with reverse scoring of items 3 and 5) at each age and standardized the scale to give a weighted population mean of 0 and standard deviation of 1. The standardized scale demonstrated a moderate degree of consistency over the 3-year period ($r = .34$, $p < .001$, unweighted $n = 9{,}990$).

Data analysis

All analyses presented below were undertaken in IBM SPSS Statistics v24 using the complex samples module and sample weights provided with the data to adjust for clustering in the initial sampling design and biases in recruitment and retention at each Wave (Jones & Ketende, 2010). In the first stage of analysis, we used simple descriptive analyses to report the overall prevalence of child disability and the association between gender and prevalence of disability. Prevalence rate ratios (PRR) were used to estimate the strength of association between gender and disability prevalence (Knol, Le Cessie, Algra, Vandenbroucke, & Groenwold, 2012). In the second stage of the analyses, univariate general linear models were used to estimate the association between gender, disability status, and school satisfaction, reporting Cohen's *d* as a measure of effect size and using the statistical significance of the gender by disability interaction term as evidence of effect modification or moderation. To avoid the statistical problems associated with the clustering of multiple births within households, the present analyses are restricted to the first named target child in multiple birth households.

Results

The prevalence of child disability, overall and associated with specific functional impairments, is presented in Table 1. The prevalence of disability was significantly higher for boys at both ages (age 11 PRR = 1.68 [95% CI 1.44–1.96]; age 14 PRR = 1.25 [95% CI 1.08–1.44]). At age 11, the prevalence of disability associated with specific impairments was significantly higher for boys for the following impairments: learning (PRR = 2.69 [95% CI 2.04–3.55]); memory (PRR = 2.09 [95% CI 1.28–3.43]); mental health

Table 1. Prevalence of child disability both overall and with regard to specific functional impairments

	Age 11	Age 14
Disability	7.7% (7.1%–8.4%)	10.7% (9.9%–11.5%)
Disability associated with functional impairment in …		
Vision	0.8% (0.6%–1.0%)	1.0% (0.8%–1.4%)
Hearing	0.7% (0.5%–1.0%)	0.6% (0.5%–0.8%)
Mobility	1.3% (1.0%–1.5%)	1.8% (1.5%–2.2%)
Dexterity	0.8% (0.6%–1.0%)	0.8% (0.6%–1.1%)
Learning, understanding, concentrating	3.0% (2.6%–3.4%)	3.7% (3.2%–4.3%)
Memory	1.0% (0.8%–1.2%)	1.4% (1.1%–1.8%)
Mental health	1.2% (0.9%–1.6%)	3.0% (2.5%–3.5%)
Stamina, breathing, fatigue	1.9% (1.7%–2.2%)	2.3% (1.9%–2.7%)
Socially or behaviourally	2.6% (2.2%–3.0%)	4.1% (3.6%–4.7%)
Other	0.2% (0.1%–0.3%)	0.6% (04%–0.9%)

(PRR = 3.35 [95% CI 2.03–5.50]); and social/behavioural (PRR = 4.63 [95% CI 3.29–6.50]). The prevalence of disability associated with specific impairments was not significantly higher for girls for any impairment. At age 14, the prevalence of disability associated with specific impairments was significantly higher for boys for the following impairments: dexterity (PRR = 2.36 [95% CI 1.34–4.16]); learning (PRR = 2.08 [95% CI 1.56–2.78]); memory (PRR = 2.49 [95% CI 1.51–4.09]); and social/behavioural (PRR = 3.52 [95% CI 2.56–4.83]). Again, the prevalence of disability associated with specific impairments was not significantly higher for girls for any impairment.

At age 11, school satisfaction was significantly higher for girls (Cohen's d = 0.10 [95% CI 0.07–0.13], $p < .001$) and children without disabilities (Cohen's d = 0.25 [95% CI 0.19–0.32], $p < .001$). The gender by disability interaction term was not significant ($p = .71$). Estimated group means with 95% confidence intervals (CI) are presented in Figure 1. At age 14, school satisfaction was significantly higher for boys (Cohen's d = 0.09 [95% CI 0.05–0.12], $p < .001$) and children without disabilities (Cohen's d = 0.17 [95% CI 0.10–0.23], $p < .001$). The gender by disability interaction term had a p value of .077. Estimated group means with 95% CI are presented in Figure 2. When stratified by gender, effect sizes for the impact of disability on school satisfaction were higher for girls (Cohen's d = 0.20 [95% CI 0.11–0.30]) than boys (Cohen's d = 0.13 [95% CI 0.04–0.22]).

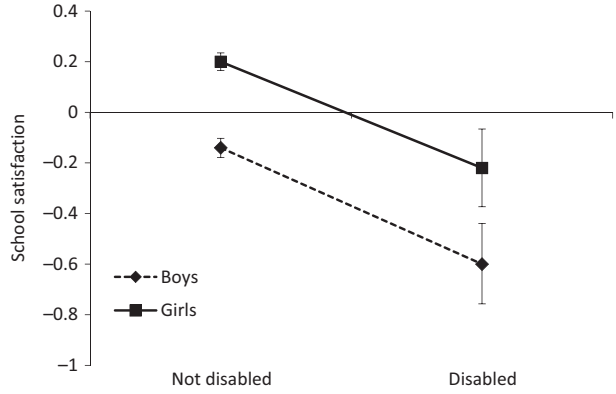

Figure 1. Estimated mean school satisfaction (with 95% CI) at age 11 by gender and disability status.

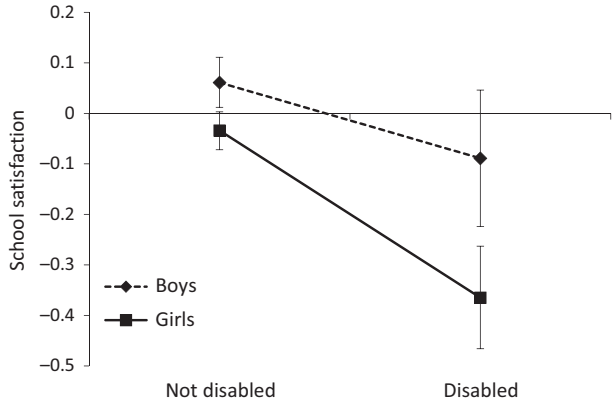

Figure 2. Estimated mean school satisfaction (with 95% CI) at age 14 by gender and disability status.

We explored the trend towards gender moderation of the association between disability status and school satisfaction at age 14 in two ways. First, we repeated the analyses for disability groups based on particular functional impairments. At age 14, the gender by disability interaction term was statistically significant for disability associated with mental health ($p < .001$) and dexterity ($p = .049$). When stratified by gender, effect sizes for the impact of mental health-related disability on school satisfaction were higher for girls (Cohen's $d = 0.43$ [95% CI 0.24–0.61]) than boys (Cohen's $d = 0.09$ [95% CI −0.12 to 0.30]). A similar pattern was evident for dexterity-related disability (girls Cohen's $d = 0.30$ (95% CI −0.10 to 0.71); boys Cohen's $d = 0.02$ [95% CI −0.30 to 0.33]). Estimated means are presented in Figures 3 and 4. These interaction terms were not significant at age 11 ($p = .800$ and $p = .130$, respectively).

Second, we used ordinal regression to examine the association between gender and disability status separately for the five items making up the school satisfaction scale. At age 14, the gender by disability interaction term was statistically significant ($p = .011$) for one item: 'How often do you feel unhappy at school?' When stratified by gender, effect sizes for the impact of disability on feeling unhappy at school were higher for girls (Cohen's $d = 0.34$ [95% CI 0.25–0.44]) than boys (Cohen's $d = 0.21$ [95% CI 0.11–0.30]). Estimated

Figure 3. Estimated mean school satisfaction (with 95% CI) at age 14 by gender and disability (mental health) status.

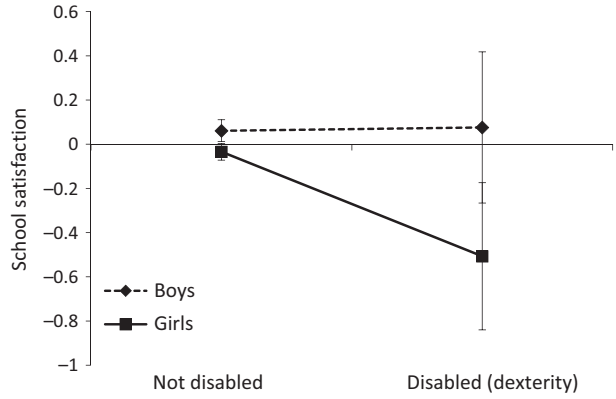

Figure 4. Estimated mean school satisfaction (with 95% CI) at age 14 by gender and disability (dexterity) status.

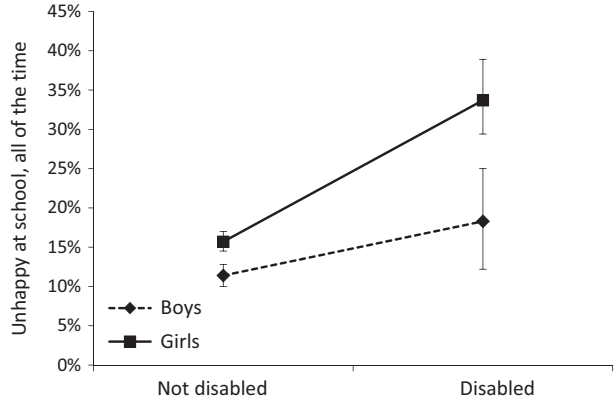

Figure 5. Estimated percentage 'feeling unhappy at school, most/all of the time' (with 95% CI) at age 14 by gender and disability status.

percentages of feeling unhappy most or all of the time are presented in Figure 5. This interaction term was not significant at age 11 (p = .701).

Discussion

We sought to investigate whether type of disability and gender, and their possible intersection, are associated with school satisfaction in children and adolescents living in the United Kingdom. To do this, we undertook secondary analyses of the large, nationally representative, longitudinal data set from the MCS. Our findings are striking in that patterns of school satisfaction appeared to change when examining age 11 versus age 14. At 11 years of age, boys and those with disabilities self-reported the lowest school satisfaction. However, at 14 years of age, girls and those with disabilities reported the lowest satisfaction. Moreover, we discovered an interaction between disability and gender in adolescents at age 14 that was not present at age 11. Our hypothesis that adolescent girls with disabilities would self-report the lowest school satisfaction was

supported. Similar to the findings of Arciuli *et al.* (2019) who examined Year 8 students (13–14 years of age) within a large nationally representative Australian dataset, we found an interaction between disability and gender such that adolescent girls with disabilities aged 14 years who live in the United Kingdom reported significantly lower levels of school satisfaction than predicted by the additive effects of female gender and disability. In line with Vaz *et al.* (2015) who examined school belonging in 12-year-olds in a separate, smaller Australian study, we found that 11-year-old girls with disabilities who live in the United Kingdom had relatively high school satisfaction. However, our findings from the current study differed depending upon the type of disability.

Specifically, our analyses revealed that, at age 14, the intersectionality between disability and gender in terms of self-reported school satisfaction was associated with students who have mental health-related disabilities and those with dexterity-related disabilities. As far as we are aware, the examination of the interaction between disability and gender across different types of disability and ages is novel. More broadly, these results appear to align with some recent international research in so far as depressive symptoms are associated with mental health-related disabilities. For example, research with adolescents living in China showed that relationships between school connectedness and depressive symptoms were stronger in adolescent girls than boys (He *et al.*, 2019; see also the Chinese study by Zhao & Zhao, 2015). Earlier cross-sectional research in the United Kingdom (unrelated to the MCS dataset) also highlighted the link between school connectedness and depressive symptoms in adolescents (Millings, Buck, Montgomery, Spears, & Stallard, 2012). See also the US study by Loukas, Ripperger-Suhler, and Horton (2009) and an Australian study by Shochet and Smith (2014). Identifying previous research on the link between school satisfaction and those with dexterity-related disabilities has proven challenging. In addition, it is worth considering that an adjustment of alpha for multiple comparisons in our current study would render the gender by disability interaction effect for participants with dexterity-related disabilities statistically non-significant.

The causal nature of the relationship between disability and school satisfaction, and the question of why gender might contribute to this relationship in different ways across child development, remains unknown. Interestingly, a longitudinal study of school belonging with students from Latin American, Asian, and European backgrounds showed that girls' feelings of school belonging declined during the adolescent years unlike boy's feelings of school belonging which remained stable (Gillen-O'Neel & Fuligni, 2012). While that study did not explore the possible intersection of disability and gender, discussion relating to changing gender effects over time included both gender differences in extracurricular offerings and gender differences in sensitivity to the quality of student–teacher relations in the later years of high school. In fact, Arciuli *et al.* (2019) found that the association between disability and lower self-reported school satisfaction was mediated by students' perceived levels of teacher support which, in turn, was moderated by student gender. Specifically, more concerns regarding perceived lack of teacher support were reported by girls with disabilities.

The current study contributes to the sparse literature regarding the link between disability and school satisfaction. Of the studies that have investigated this topic, some reported no relationship between disability status and school satisfaction (Gilman *et al.*, 2004; Ginieri-Coccossis *et al.*, 2013; McCullough & Huebner, 2003) while others did find a relationship between disability status and school satisfaction (e.g., Brantley et al., 2002, who found that those with disabilities reported higher satisfaction; Watson & Keith, 2002,

who found that those with disabilities reported lower satisfaction). These previous studies included small convenience samples.

Like the secondary analysis of the nationally representative ACWP data set reported by Arciuli *et al.* (2019), which found lowest self-reported school satisfaction among Australian adolescent girls with disabilities, the current study reports on a nationally representative sample. Unlike Arciuli *et al.* (2019), the current study examined UK data, different types of disabilities, and effects at different ages. The developmental–ecological perspective on healthy school environments put forward by Baker *et al.* (2003) pointed to only small associations between participant characteristics such as gender and school satisfaction (see also Hui & Sun, 2010, and Zullig, Huebner, & Patton, 2011). By contrast, the results of Arciuli *et al.* (2019), and those of the current study, suggest a substantial interaction between gender and disability at age 14 with regard to self-reported school satisfaction. It seems that participant characteristics can combine in powerful ways that affect school satisfaction across child development. It might be that when large nationally representative datasets are disaggregated according to these participant characteristics, these kinds of patterns are more likely to be observed.

Limitations and future directions

A possible limitation of research on self-reported school satisfaction, including that contained within the MCS dataset, is that data are collected at single points in time. An alternative way to explore school satisfaction would be to collect data from students at multiple time points within a given school year. This would reveal more precisely the degree to which school satisfaction might fluctuate over time. Another limitation is that students are rarely asked to provide reflections on the causes of their school satisfaction or lack thereof. Clearly, this kind of data is helpful for understanding subjective well-being across child development. Like all datasets, the MCS has some unique features. The oversampling of children from ethnic minority groups and disadvantaged communities should be considered when comparing with other datasets. Having said that, there were reasons for oversampling including estimated attrition rates. Moreover, this was addressed via sample weights to ensure that results are adjusted to take into account the known effects of oversampling.

As noted, determining the precise underlying causal mechanisms for the patterns of intersectionality we report here is beyond the scope of the current study. It has been hypothesized that gender differences in extracurricular offerings and gender differences in sensitivity to the quality of student–teacher relations in high school might be at play although it is not clear how these factors relate to different types of disability (e.g., Arciuli *et al.*, 2019; Gillen-O'Neel & Fuligni, 2012). There is some research on the intersection of disability and gender (but not necessarily on the same types of disability we have reported here and not on school satisfaction, specifically) that has highlighted increased risk of sexual and physical abuse and increased barriers to physical activity experienced by females with disabilities (Anderson, Wozencraft, & Bedini, 2008; Nosek & Hughes, 2003). Perhaps these kinds of risks and barriers are amplified with increasing age and type of disability in the school environment. These particular issues could be explored in future research in the context of self-reported school satisfaction. Additionally, future research could include independent observations of classroom and playground activity, and social relations (with peers, parents, and teachers), in order to complement subjective reports. This might help us to better understand how school satisfaction can fluctuate based on type of disability, gender, and age. It would also be interesting to explore large nationally representative

datasets from other countries to ascertain whether the intersection between gender and certain types of disabilities in mid-adolescence is a widespread effect.

The current findings will spur additional research and can, in the longer term, inform theory, policy, and practice. With regard to suggestions on how to mitigate against low school satisfaction, Baker and colleagues advocate for preventative policy and practice via the promotion of adjustment. They point to various types of adjustment including skills enhancement for students as well as optimizing the supports that are provided by educators. Denny *et al.* (2010) also discuss the role of schools in promoting students' well-being. However, like Baker et al. (2003), they did not focus on the intersection of disability and gender in moderating school satisfaction. By contrast, Cumming *et al.* (2017) and Marsh (2018) provide discussion on a number of issues directly related to school connectedness and disability. See also Vaz *et al.* (2015) who discuss competence theories in relation to school belonging and disability, and Schwab *et al.* (2018) who discuss inclusion climate in classrooms. As research in this area grows, new theories, policies, and practices might be needed to more effectively facilitate the inclusion of students with diverse needs and accommodate the dynamic nature of school satisfaction across child and adolescent development,

There are similarities/differences in the way that constructs and terminology around school satisfaction, school connectedness, and school belonging have been defined/measured. The self-report measures that we reviewed in our Introduction, and the measure used in the MCS, are similar in containing questions that clearly relate to well-being in a school context, with good face validity and acceptable internal consistency. However, we note some differences. Some measures contain questions relating to academic matters by mentioning 'grades', 'school work', 'work', and/or 'learning' while others do not. Some mention levels of 'interest', 'happiness', and/or 'tiredness' while others do not. Some, but not all, explicitly refer to feeling 'included'. Purpose-designed studies could compare these measures to shed light on similarities/differences among them and to explore whether some measures are more sensitive to the interaction between disability and gender across different ages, types of disability, and perhaps even cultures. Another consideration here would be measurement of school climate and school environment, especially in relation to issues such as body image, a strength-based culture, and accessibility which are likely to be important for the well-being of students with (certain) disabilities. Although not focused on disability, the study by Zullig *et al.* (2011) which looked at the relationship between measures of school climate and school satisfaction provides an example of efforts in this area.

Conclusion

It would be advisable for psychologists and other health professionals working in schools, as well as school managers and teachers, and parents, to gain a better understanding of how school satisfaction is associated with type of disability, gender, and age. Students who represent the diversity present in schools should be invited to participate in these discussions. We hope our findings will inspire additional research and encourage conversations within school communities.

Conflicts of interest

All authors declare no conflict of interest.

Author contribution

Joanne Arciuli and Eric Emerson (Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing).

Data availability statement

We report secondary analyses of data from the UK's MCS. As we state in the Method section of our paper: 'MCS data are managed by the Centre for Longitudinal Studies at the University of London (www.cls.ioe.ac.uk/) and are available to researchers registered with the UK Data Service (http://ukdataservice.ac.uk/)'.

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