

Mental health, bullying and school connectedness: A comparative analysis of school transition at age 11 from within the Welsh education system

Caitlyn Donaldson¹  | Kelly Morgan¹  | Nicholas Page¹ |
Lianna Angel¹ | Graham Moore^{1,2} 

¹Centre for Development, Evaluation, Complexity and Implementation in Public Health Improvement, School of Social Sciences, Cardiff University, Cardiff, UK

²Wolfson Centre for Young People's Mental Health, Cardiff University, Cardiff, UK

Correspondence

Caitlyn Donaldson, Centre for Development, Evaluation, Complexity and Implementation in Public Health Improvement, Cardiff University, Sbarc, Maindy Road, Cardiff, CF24 4HQ, UK.

Email: donaldsoncj@cardiff.ac.uk

Funding information

Llywodraeth Cymru; Health and Care Research Wales; Medical Research Council; Wolfson Foundation; Public Health Wales

Abstract

While transition from primary to secondary school is a positive experience for many young people, for others, it may be a difficult period of adjustment. Socioeconomic status (SES) may influence the likelihood of a positive or negative transition experience owing to differences in psychosocial (self-esteem, self-efficacy, social support) and flexible (cultural capital, financial support, power) resources to respond to the challenges presented by a new school environment. Welsh all-age schools do not have a typical primary to secondary school transition and offer an opportunity for comparative analysis to explore the impact of transition on young people. This analysis used multilevel and structural equation modelling to assess differences in mental health and bullying outcomes in year 7 (first year of secondary education) in young people in all-age schools compared with those in secondary schools. It also considered whether school connectedness might explain these differences. It found that school type did not significantly predict outcomes at a population level; however, there was evidence of an interaction between SES and school attended for some outcomes. Peer problems, conduct problems and bullying victimisation were lower for children with low SES when attending all-age schools. For children with high SES,

This is an open access article under the terms of the [Creative Commons Attribution](https://creativecommons.org/licenses/by/4.0/) License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2024 The Authors. *British Educational Research Journal* published by John Wiley & Sons Ltd on behalf of British Educational Research Association.

the same outcomes tended to be more positive if the children attended secondary schools. There was no evidence that school connectedness mediated the relationship between school type and mental health or bullying outcomes. Findings provide tentative evidence that all-age schools may act to reduce health inequalities caused by SES.

KEYWORDS

all-age schools, mental health, school transition, socioeconomic status

Key insights

What is the main issue that the paper addresses?

This paper considers whether mental health and bullying outcomes differ between children who have experienced a school transition at age 11, and those that haven't, using data from schools in Wales.

What are the main insights that the paper provides?

It finds that there is some evidence of differences in outcomes based on socioeconomic status (SES). Young people from low SES backgrounds may benefit from attending an all-age school (without a school transition), while young people from high SES backgrounds may benefit from transitioning to a secondary school.

INTRODUCTION

Globally, a school transition often occurs in early adolescence and is typically accompanied by a change in physical environment, new teacher and student relationships and expectations of greater autonomy (Symonds & Galton, 2014). It can also be accompanied by changes in mental health for some young people (Evans et al., 2018; Jindal-Snape et al., 2020). While transition is perceived as an exciting and positive experience for some young people, others worry about it, and young people from low socioeconomic (SES) backgrounds are more likely than their peers to simultaneously look forward to and worry about the move ahead (Moore et al., 2021). Mental health difficulties following transition may be more likely for young people with additional learning needs and those from poorer backgrounds (Anderson et al., 2000; Evans et al., 2018; Jindal-Snape et al., 2020). There is some evidence from Welsh analysis that increases in mental health symptoms are a particular issue when young people transition to a secondary school with a more affluent intake than their primary school (Moore et al., 2020). Bullying also often increases in the post-transition period (Juvonen & Graham, 2014; Pellegrini, 2002), with some evidence suggesting that bullying victimisation may be more closely linked to the transition process than bullying perpetration, where increases may occur independently of transition as part of developmental processes (Wang et al., 2016). Previous research into what worries young people most about transition found

that, of young people who were quite or very worried about transition, bullying was the most common concern. It was also a greater worry for young people from low affluence backgrounds than their more affluent peers (Moore et al., 2021). Students who remain in the same all-age school across the transition from year 6–7 are likely to retain some of their current peer group and not need to negotiate as many new peer relationships as those who undertake a typical primary to secondary school transition. This should help reduce fears of bullying and remaining with friends is likely to be protective for vulnerable young people. However, it is also the case that for young people who experience bullying in their primary years, remaining in the same school throughout their educational career has the potential to prevent them from being separated from peers who have previously bullied them. These young people may find that a transition to a different school is better for their mental health and reduces risk of future bullying, assuming that the new school offers a supportive environment (Smith et al., 2003).

Transition to secondary school may be more problematic for young people from less affluent backgrounds because it requires psychosocial and cultural resources more commonly associated with higher socioeconomic status (Donaldson et al., 2023). The school environment that young people transition into may also pose greater challenges for less affluent young people if the dominant culture is middle class and they struggle to connect to the cultural orders within the school (Bernstein, 1975; Markham & Aveyard, 2003). This may result in a decrease in mental health and increase risk of being identified as vulnerable and a target for bullying. This contrasts with young people from more affluent families, who are more likely to possess the flexible resources – cultural capital, power, finances – that can ease the burden of the transition process and reduce cultural incongruence between their own backgrounds and the school environment (Bourdieu, 1986; Link & Phelan, 2010). These differences in resources may allow young people from more affluent backgrounds to perceive a change of school as offering greater opportunities for personal growth and development of new relationships, rather than a potential threat to their mental health (Sirsch, 2003). There is also evidence that the experiences of young people from lower affluence backgrounds have of transition are different to those from more affluent families because of the likely schools attended. Research from England found that poorer students typically transitioned to lower performing secondary schools than their more affluent peers even when sharing a primary school, and experienced more fracturing of their friendships (Burgess et al., 2008). This is in part likely to be due to the lack of flexible resources that allows for choice about which secondary school to attend – for example, by moving house to a ‘better’ catchment (Leech & Campos, 2003) or having the skills and knowledge to successfully appeal school entry decisions (Taylor et al., 2002). However, as a counterpoint to this, when young people transition from a lower SES primary school to a higher SES secondary school (often the schools with most demand for places) there is evidence of decreases in wellbeing for this group of young people (Moore et al., 2020).

School connectedness is a factor that has been associated with young people's mental health and bullying within schools. The concept has been defined, theorised and measured in different ways within educational and health research; however, it tends to focus on young people's perceptions of school – the extent to which they feel they belong, feel cared about and listened to, as well as their perceptions of the quality of their relationships with teachers and peers, and their level of engagement in school life (García-Moya et al., 2019; Hodges et al., 2018; Kim et al., 2022). Low school connectedness is associated with poorer mental functioning across adolescence and into early adulthood (Lester et al., 2013; Raniti et al., 2022; Vaz et al., 2014), higher levels of suicidal ideation in school-aged youth in general, as well as in high risk and sexual minority populations (Marraccini & Brier, 2017) and higher aggression in US middle and high school students (Duggins et al., 2016). A meta-analysis of the relationships between school belonging, an important component of school

connectedness, and academic outcomes found a consistent positive relationship across all ages and levels of student SES (Korpershoek et al., 2020). School connectedness has been shown to decrease over the transition period, and has a strong reciprocal relationship with depression, which begins before the primary to secondary transition and continues to self-perpetuate beyond this period (Lester et al., 2013).

Previous research has compared systems with and without a school transition in order to explore differences in young people's outcomes. Madjar and Cohen-Malayev (2016) used data from an Israeli context to compare student perceptions of disruptive behaviours in class and teacher support in elementary schools where young people transitioned to middle school at age 12, with perceptions of students in elementary schools without this transition. The authors found that schools with a transition offered more teacher support to students and had lower disruptive behaviour in the pre-transition period than schools without the transition, but post-transition the two types of school were not significantly different. They also found that despite those transitioning having more basic needs met and lower psychological control exerted by teachers pre-transition than in the no-transition schools, post-transition their outcomes became relatively less favourable. In a paper focusing on mental health outcomes, Nielsen et al. (2017) compared the school systems in Denmark and Australia. In the former, there is no primary to secondary school transition, while in the latter, young people transition from primary school to secondary school at age 12–13. In the Australian sample there was no statistically significant changes in emotional symptoms, conduct problems or school connectedness over the transition period. This was contrasted with the Danish sample where, despite not experiencing a school transition, low school connectedness, emotional symptoms and conduct problems increased with age. The authors suggest that these differences may be due to systemic differences between the educational systems in the two countries – in Australia the system may have developed to support young people through the transition process, while school connectedness is not specifically prioritised for Danish students.

Evidence on school transition is situated within the context of the educational system and culture in which it was produced. This means that the relationships (or 'demi-regularities') observed in these studies are likely to hold across some contexts, but not others (Alderson, 2021). It is therefore valuable to consider how data from Wales may add to international understandings of school transition.

In Wales, one of the four nations of the UK, most young people transition from primary to secondary school at age 11. Wales has a population of 3.1 million people, spread across 22 local authority areas (Office for National Statistics, 2022). Decision-making over education has been devolved to Welsh Government since 1999, and in the intervening years, education policy and practice has diverged from other systems in the UK in terms of both curriculum and ethos (Evans, 2022). This has been most clearly articulated through the new curriculum for Wales, launched in September 2022 (Welsh Government, 2021b). At secondary level, schools in Wales may be English-medium, Welsh-medium, bilingual or English medium with significant use of Welsh (Welsh Government, 2021a). With their focus on preserving the Welsh language and culture, there are likely to be differences in ethos between Welsh- and English-medium schools in Wales, and there is some evidence of differences in educational outcomes between these school types (Johnes, 2020). While in Wales most young people experience a primary to secondary transition at age 11 as they move from year 6 to year 7, there are increasing numbers of state-maintained schools providing education for young people from the age of 3 to 16 or 3 to 18. These are referred to as 'middle' schools, 'all-through' schools and 'all-age' schools depending on the source. Young people attending all-age schools may remain in the same school throughout their childhood and not experience a school-to-school transition. State-maintained all-age schools are also present in other parts of the UK. In England, there were 88 state-funded all-age schools in 2014,

rising to 160 in 2023 (Department for Education, 2014, 2023). In Scotland, there were 28 publicly funded mainstream all-age schools in 2023 (Scottish Government, 2023), but none in Northern Ireland (L. Robinson, 21.09.23, personal communication). Publicly available data suggest that at the end of 2022 there were 27 all-age schools operating in Wales across 12 local authorities, of which the earliest opened in 2012 (Figure 1) (Welsh Government, 2022). Only five were classed as new schools by Welsh Government when they opened, and the remaining 22 were the result of amalgamations or renaming of older primary and secondary schools. This means that some all-age schools have retained multiple physical sites with a shared management team (at least seven out of the 27) while others have a single physical site, although they may vary in the extent to which primary and secondary age students share common teachers and facilities. While located throughout rural and urban areas, it is notable that there are no all-age schools in the local authorities that serve the four largest cities in Wales (Cardiff, Swansea, Newport and Wrexham). Of the 27 all-age schools, eight are Welsh medium, seven are bilingual and 12 are English medium. It has been argued that all-age schools may have economic benefits, increase community connectedness and reduce school exclusions owing to older students mediating the behaviour of younger students (Reynolds et al., 2018).

The growing presence of all-age schools in Wales offers a natural experiment that allows transition within the primary to secondary school system to be compared with a no-transition, all-age school comparator within the Welsh context. We hypothesise that young people with lower SES may receive some protection from immediate negative effects of transition by attending an all-age school. However, given that many young people at all levels of affluence look forward to the changes associated with transition and that transitions offer opportunities for both adaptive as well as maladaptive development, attending an all-age school might also remove a developmentally beneficial experience for some young people.

Using data from secondary and all-age schools in Wales, this paper will seek to answer the following research questions (RQs):

RQ1: Are there differences in mental health and bullying outcomes in year 7 students attending all-age schools compared with those attending secondary schools?

RQ2: Does school connectedness mediate the relationship between school type and the outcome variables?

RQ3: Does the association between school type and outcome vary by student SES?

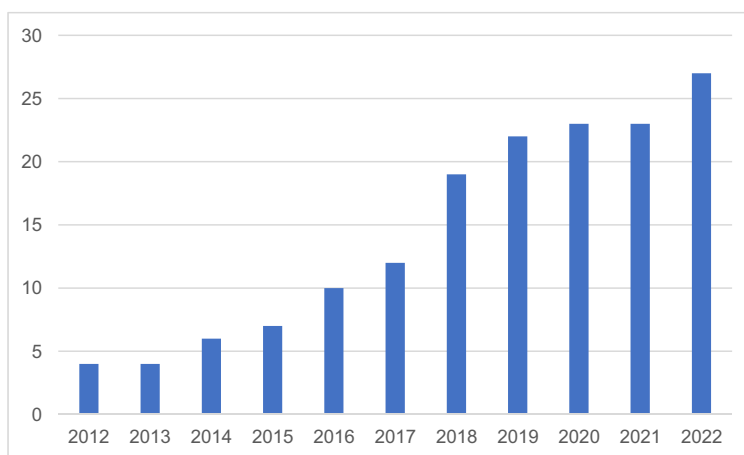


FIGURE 1 Numbers of all-age schools in Wales by year of opening (based on schools operating at the end of 2022). Data from My Local School website.

METHODS

School sampling

The My Local School website, which contains data from Stats Wales about Welsh schools, was used to obtain schools' data. Data use is licensed under the Open Government Licence v3.0 (The National Archives, 2022). In December 2022, there were 27 all-age schools in Wales across 12 out of 22 Welsh local authority areas. Of these 27, 23 had data on free school meal eligibility and the number of pupils registered. The four schools without data had all opened during 2022 and so were less than a year old. Data were extracted on percentage of students eligible for free school meals (%FSM) and pupil numbers for the 23 all-age schools (years 7 and above) as well as all secondary schools within the same local authorities. Based on these figures, each all-age school was matched with a similar school from within their local authority. Local authority, %FSM and school size were selected to ensure that, as far as possible within the limitations of the schools available, matched schools were serving a similar demographic and shared a similar school environment. This resulted in an initial 46 schools with available national data.

The School Health Research Network (SHRN) Student Health and Wellbeing (SHW) survey takes place every two years in mainstream secondary and all-age schools (Page et al., 2021). Of the 23 all-age schools, 21 had taken part in the 2021 round of the survey. The two schools without data, and their two matched secondary schools, were therefore excluded from the analysis. One secondary school did not have any students in year 7 participating in the survey and so was swapped with an alternative school. This resulted in 42 schools being included in the final sample (Figure 2).

All schools were successfully matched by local authority. For all-age schools, the mean %FSM was 19.5% and mean school size was 665.0 students. For secondary schools, the mean %FSM was 18.4% and mean school size was 863.4 students. These matching

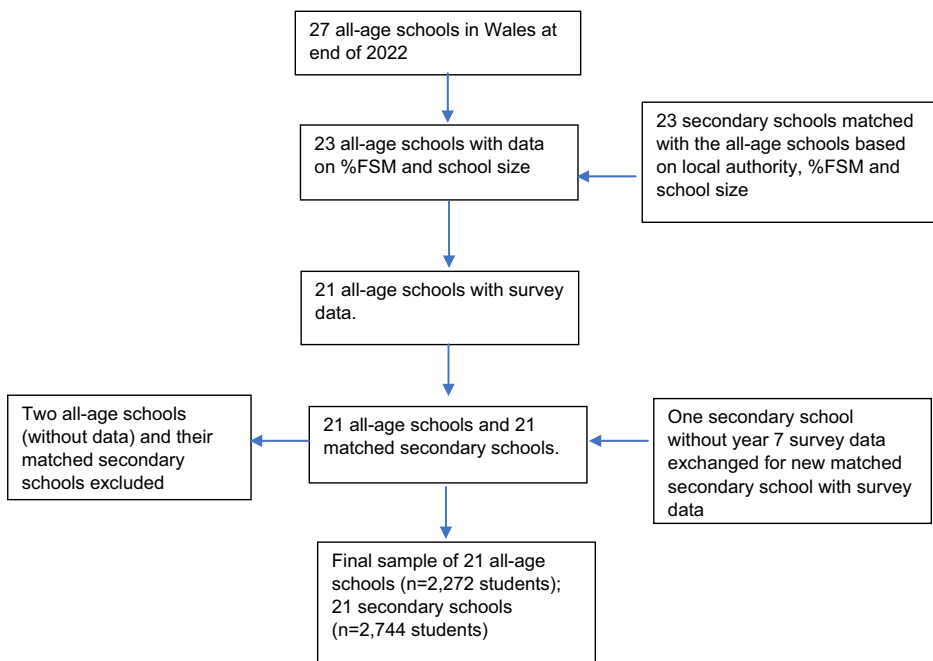


FIGURE 2 Flowchart of school selection and final sample.

variables were also included in the modelling to further control for any remaining differences. Of the all-age schools, 10 were English medium, six were bilingual and five Welsh medium. Of the secondary schools, 14 were English medium, six bilingual and one Welsh medium.

The total sample size of year 7 pupils was 5016, of which 2272 students (45.3%) were in all-age schools and 2744 were in secondary schools (54.7%).

Measures

Two primary mental health outcomes were selected based on their availability in the SHW survey. The first was the Short Warwick Edinburgh Mental Wellbeing Scale (SWEMWBS) (Warwick Medical School, 2021), a positively worded scale for mental wellbeing that has been validated for use in the adolescent population (Melendez-Torres et al., 2019), and the second the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 2001), which assesses mental health difficulties.

SWEMWBS is a seven-item scale, with responses rated on a Likert scale from 1 to 5. Scores are summed over these items, giving a possible range of 5–35. In line with Stewart-Brown et al. (2009), raw scores were transformed and the scale had good internal reliability (Cronbach's $\alpha=0.82$). Categorical operation of low (7.0–19.5), average (>19.5 to <27.5) and high (27.5–35.0) levels of wellbeing were based on Warwick Medical School (2021). The SDQ consists of five subscales, each with five items, scored from 0 to 2. For each subscale items are summed to create a total for that subscale. Four of the scales (emotional difficulties, conduct problems, peer problems and hyperactivity) are summed to create an overall difficulties score (Youth in Mind, 2016). Internal reliability ranged from 0.55 for peer problems to 0.78 for emotional difficulties. As a secondary outcome measure of mental health, the psychological subscale of the international Health Behaviour in School-Aged Children (HBSC) symptom checklist (HBSC-SCL) was included in analyses. It is a validated four-item measure (Garipey et al., 2016), with each item scored from 1 to 5. Items capture how often the following have been experienced in the last 6 months: irritability, feeling low, nervousness and difficulty sleeping. Items were reverse scored and summed to form a total scale score (range 4–20), with higher values indicating better psychological health (Cronbach's $\alpha=0.76$). This scale is used within the HBSC surveys that take place in over 50 countries across Europe, Asia and North America and is therefore useful for future comparison with other school systems (HBSC, 2023).

The SHW survey asks students whether they have taken part in bullying or been bullied in school in the past couple of months. It provides an explanation of what bullying is, stating 'We say a person is being bullied when another person or a group of people repeatedly say or do unwanted nasty and unpleasant things to him or her. It is also bullying when a person is teased in a way he or she does not like or when he or she is left out of things on purpose. The person that bullies has more power than the person being bullied and wants to cause harm to him or her. It is not bullying when two people of about the same strength or power argue or fight.' Both questions were dichotomised (0=no; 1=yes). Four questions were available within the survey to assess levels of school connectedness (to what extent they feel that: teachers care about them; pupil ideas are taken seriously; pupils get a say in organising school activities; pupils get a lot of chances to help decide and plan school projects). These items were scored on a Likert scale from 1 to 5. Factor analysis suggested that it was reasonable to treat them as one factor. The four items were summed so that higher scores indicated higher levels of school connectedness (range 4–20). Cronbach's α was 0.77.

The family affluence scale (FAS) was used as a proxy for student SES. Five items were used to assess bedroom occupancy; car, computer and dishwasher ownership; and number

of family bathrooms (Currie et al., 2008) (Cronbach's $\alpha=0.53$). Based on scale score, students were assigned to either low (0–5), medium (6–7), or high (8–10) FAS classification.

Students were asked about their gender, with response options 'girl', 'boy', 'neither word describes me' or 'I do not want to answer'. Owing to small numbers, students who answered 'neither word describes me' ($n=114$: 66 in secondary schools; 48 in all-age schools) were excluded from the multilevel modelling but are included in the sample statistics. Appendix S1 provides sample characteristics by gender, and highlights that the excluded group is particularly vulnerable to both mental health problems and bullying.

For each school, school-level FSM was measured as the percentage of students eligible to receive free school meals, while total number of students in years 7 and above within the school was used as a proxy for school size. These data were obtained from the My Local School website.

Missing data

For all measures used in the analysis that included multiple items, if half of the items were completed, an average score was prorated for use in the analysis. If fewer than half of the items were used, the scale was marked as missing. Listwise deletion was used within the main analyses.

Analysis

A series of models were run using Stata 17.0. All mental health measures used multilevel linear regression and bullying measures used multilevel logistic regression, with students nested within schools (Goldstein, 2010; Leckie, 2010). Gender, family affluence, percentage of students eligible for free school meals and school size (log transformed) were first added to the regression models, and then the school type binary variable. Generalised structural equation modelling was used to model a possible multilevel mediation between school type and each dependent variable via school connectedness (Krull & MacKinnon, 2001; StataCorps Ltd, 2021). As no mediation was found, school connectedness was included within the regression models as an additional predictor. Finally, an interaction between FAS and school type was modelled for each outcome variable. Both main effects were mean centred prior to computing the interaction term in order to avoid multicollinearity (Iacobucci et al., 2016) and the FAS variable was included as a random effect within the multilevel linear interaction models in line with Heisig and Schaeffer (2019), except for within the prosocial model, where it prevented convergence.

RESULTS

Table 1 presents the demographic characteristics of students and Table 2 the sample statistics of the key survey measures, broken down by school type. The two groups of students were broadly comparable based on type of school attended. The all-age school sample had a slightly lower proportion of students with high levels of family affluence and two parent families, and a slightly higher proportion of young people with White British ethnicity (Table 1). Mental health outcomes tended to slightly favour secondary schools – for example, for mental wellbeing (SWEMWBS), 30.5% of students in secondary schools had low wellbeing, while this rose to 33.4% in all-age schools. Bullying statistics were broadly comparable across school types (Table 2).

TABLE 1 Sample demographics by school type.

	All-age schools (<i>n</i> = 2272)	Secondary schools (<i>n</i> = 2744)
Gender		
Female	1125 (49.5%)	1370 (49.9%)
Male	1063 (46.8%)	1269 (46.3%)
Neither word describes me	48 (2.1%)	66 (2.4%)
Missing	36 (1.6%)	39 (1.4%)
Family affluence		
Low	357 (15.7%)	382 (13.9%)
Medium	843 (37.1%)	875 (31.9%)
High	1056 (46.5%)	1476 (53.8%)
Missing	16 (0.7%)	11 (0.4%)
Ethnicity		
White British	1913 (84.2%)	2276 (82.9%)
White Other	63 (2.8%)	93 (3.4%)
Mixed or multiple ethnic group	31 (1.4%)	52 (1.9%)
Other ethnic group	102 (4.5%)	149 (5.4%)
Missing	163 (7.2%)	174 (6.3%)
Family in main home		
Both parents	1237 (54.5%)	1586 (57.8%)
Single mother	302 (13.3%)	331 (12.1%)
Single father	34 (1.5%)	47 (1.7%)
Stepfamily	169 (7.4%)	179 (6.5%)
Kinship care	24 (1.1%)	28 (1.0%)
Foster or residential home	11 (0.5%)	14 (0.5%)
Other	1 (0.0%)	7 (0.3%)
Missing	494 (21.7%)	552 (20.1%)

Tables 3 and 4 present the final two regression models for each dependent variable – the first column without the interaction term and the second with it included. All earlier models are available in Appendices S2–S11.

RQ1. Are there differences in mental health and bullying outcomes in year 7 students attending all-age schools compared with those attending secondary schools?

The only outcome variable with a significant main effect of school type prior to introduction of the interaction term was prosocial behaviour ($p=0.021$). For this outcome, being in an all-age school was associated with higher prosocial behaviour in year 7 than being in a secondary school. No other model had a significant main effect for school type; however, there was a trend towards outcomes being more favourable for secondary school students than those in all-age schools.

RQ2. Does school connectedness mediate the relationship between school type and the outcome variables?

TABLE 2 Mental health, bullying and school connectedness descriptive statistics.

	All-age schools (<i>n</i> = 2272)	Secondary schools (<i>n</i> = 2744)
SWEMWBS		
High wellbeing (27.5–35.0)	205 (9.0%)	291 (10.6%)
Average wellbeing (>19.5- <27.5)	1195 (52.6%)	1459 (53.1%)
Low wellbeing (7.0–19.5)	758 (33.4%)	838 (30.5%)
Missing	114 (5.0%)	156 (5.7%)
Mean score (SD)	21.6 (4.7)	22.0 (4.7)
SDQ total difficulties		
Close to average (0–14)	1100 (48.4%)	1411 (51.4%)
Slightly raised (15–17)	255 (11.2%)	307 (11.2%)
High (18–19)	141 (6.2%)	152 (5.5%)
Very high (20–40)	320 (14.1%)	369 (13.5%)
Missing	456 (20.1%)	505 (18.4%)
Mean (SD)	12.9 (6.9)	12.4 (6.9)
SDQ emotional difficulties		
Close to average (0–4)	1093 (48.1%)	1380 (50.3%)
Slightly raised (5)	200 (8.8%)	264 (9.6%)
High (6)	196 (8.6%)	202 (7.4%)
Very high (7–10)	372 (16.4%)	437 (15.9%)
Missing	411 (18.1%)	461 (16.8%)
Mean (SD)	4.0 (2.7)	3.8 (2.8)
SDQ conduct problems		
Close to average (0–3)	1444 (63.6%)	1792 (65.3%)
Slightly raised (4)	171 (7.5%)	234 (8.5%)
High (5)	146 (6.4%)	135 (4.9%)
Very high (6–10)	105 (4.6%)	132 (4.8%)
Missing	406 (17.9%)	451 (16.4%)
Mean (SD)	2.2 (1.9)	2.1 (1.9)
SDQ hyperactivity		
Close to average (0–5)	1208 (53.2%)	1512 (55.1%)
Slightly raised (6)	216 (9.5%)	282 (10.3%)
High (7)	162 (7.1%)	188 (6.9%)
Very high (8–10)	260 (11.4%)	296 (10.8%)
Missing	426 (18.8%)	466 (17.0%)
Mean (SD)	4.5 (2.5)	4.4 (2.6)
SDQ peer problems		
Close to average (0–2)	1125 (49.5%)	1442 (52.6%)
Slightly raised (3)	299 (13.2%)	349 (12.7%)
High (4)	205 (9.0%)	210 (7.7%)
Very high (5–10)	226 (10.0%)	285 (10.4%)
Missing	417 (18.4%)	458 (16.7%)
Mean (SD)	2.3 (1.8)	2.2 (1.8)

TABLE 2 (Continued)

	All-age schools (<i>n</i> = 2272)	Secondary schools (<i>n</i> = 2744)
SDQ prosocial		
Close to average (7–10)	1477 (65.0%)	1789 (65.2%)
Slightly lowered (6)	183 (8.1%)	243 (8.9%)
Low (5)	121 (5.3%)	153 (5.6%)
Very low (0–4)	82 (3.6%)	111 (4.1%)
Missing	409 (18.0%)	448 (16.3%)
Mean (SD)	7.9 (1.8)	7.8 (1.8)
HBSC psychological subscale		
Mean (SD)	10.1 (4.4)	10.1 (4.6)
Bullying perpetration		
No	1624 (71.5%)	1962 (71.5%)
Yes	235 (10.3%)	293 (10.7%)
Missing	413 (18.2%)	489 (17.8%)
Bullying victimisation		
No	1259 (55.4%)	1522 (55.5%)
Yes	655 (28.8%)	792 (28.9%)
Missing	358 (15.8%)	430 (15.7%)
School connectedness		
Mean (SD)	15.3 (2.9)	15.2 (3.0)

Abbreviations: HBSC, Health Behaviour in School-aged Children Study; SDQ, Strengths and Difficulties Questionnaire; SWEWMBS, Short Warwick Edinburgh Mental Wellbeing Scale.

Descriptive statistics suggested little difference between mean and standard deviation values of school connectedness in all-age schools compared with secondary schools overall (Table 2); however, for young people from low and medium affluence families, school connectedness was higher in all-age schools than in secondary schools (Appendix S12). Introducing the school connectedness variable into the analysis had little impact on the main effect of school type, and mediation analysis found no evidence of an indirect effect from school type to dependent variable for any outcome (Table 5; Appendix S13). Despite this, school connectedness was consistently significantly associated with better mental health and bullying outcomes across all the models. It was therefore retained in the models as a predictor variable rather than a mediator.

RQ3. Does the association between school type and outcome vary by student SES?

While none of the interactions reached statistical significance at the 5% threshold ($p < 0.05$), bullying victimisation neared significance ($p = 0.060$) and the interaction effect is apparent in Figure 3. Notably the lines representing secondary schools are far steeper than those in all-age schools, suggesting that all-age schools have a more consistent association with bullying victimisation across all levels of SES. For children with low SES, attending a secondary school appears to increase the probability of being bullied compared with attending an all-age school. This probability reverses at high levels of

TABLE 3 Full multilevel linear models for all mental health outcomes without and with interaction term.

	SWEWMBs (n = 3926)	SDQ total difficulties (n = 3638)	SDQ emotional difficulties (n = 3690)	SDQ conduct problems (n = 3681)	SDQ peer problems (n = 3673)	SDQ hyperactivity (n = 3670)	SDQ prosocial behaviour (n = 3688)	HBSC psychological subscale (n = 3858)
Residual variance	18.35 [17.55, 19.18] 17.51, -1.29 [-1.56, -1.02], p < 0.001	39.58 [37.79, 41.45] 37.73, 6.32 [6.04, 6.62] 6.21, 1.27 [1.10, 1.43], p < 0.001	6.32 [6.04, 6.62] 6.21, 1.27 [1.10, 1.43], p < 0.001	3.17 [3.02, 3.32] 3.02, -0.27 [-0.38, -0.15], p < 0.001	2.92 [2.79, 3.06] 2.79, -0.10 [-0.21, 0.02], p = 0.091	5.81 [5.55, 6.09] 5.55, 0.07 [-0.09, 0.23], p = 0.092	2.97 [2.84, 3.11] 2.84, 0.50 [0.39, 0.62], p < 0.001	17.37 [16.61, 18.17] 16.61, 0.99 [0.73, 1.26], p < 0.001
Female	0.28 [0.19, 0.35], p < 0.001	-0.49 [-0.61, -0.37], p < 0.001	-0.16 [-0.21, -0.12], p < 0.001	-0.08 [-0.12, -0.05], p < 0.001	-0.12 [-0.16, -0.09], p < 0.001	-0.12 [-0.17, -0.08], p < 0.001	0.04 [0.01, 0.07], p = 0.014	-0.18 [-0.26, -0.10], p < 0.001
Family affluence	0.27 [0.19, 0.35], p < 0.001	-0.49 [-0.61, -0.37], p < 0.001	-0.16 [-0.21, -0.12], p < 0.001	-0.08 [-0.12, -0.05], p < 0.001	-0.12 [-0.16, -0.09], p < 0.001	-0.12 [-0.17, -0.08], p < 0.001	0.04 [0.01, 0.07], p = 0.014	-0.18 [-0.26, -0.10], p < 0.001
School FSM	-0.02 [-0.04, 0.00], p = 0.106	0.03 [-0.00, 0.06], p = 0.079	0.01 [-0.01, 0.02], p = 0.076	0.01 [0.00, 0.02], p = 0.011	0.01 [-0.00, 0.02], p = 0.009	0.01 [-0.01, 0.02], p = 0.180	-0.01 [-0.02, 0.00], p = 0.010	0.03 [-0.00, 0.05], p = 0.057
School size	0.02 [-0.39, 0.44], p = 0.909	0.07 [-0.55, 0.70], p = 0.815	0.16 [-0.09, 0.41], p = 0.207	-0.02 [-0.17, 0.14], p = 0.834	-0.02 [-0.15, 0.15], p = 0.984	-0.03 [-0.25, 0.19], p = 0.789	0.05 [-0.07, 0.18], p = 0.411	-0.04 [-0.53, 0.46], p = 0.890
All-age school	-0.25 [-0.86, 0.16], p = 0.237	0.34 [-0.28, 0.96], p = 0.279	0.15 [-0.10, 0.40], p = 0.278	0.07 [-0.08, 0.23], p = 0.328	0.07 [-0.09, 0.23], p = 0.315	0.04 [-0.18, 0.25], p = 0.352	0.14 [0.02, 0.27], p = 0.021	-0.10 [-0.60, 0.41], p = 0.708
School connectedness	0.43 [0.39, 0.48], p < 0.001	-0.67 [-0.74, -0.60], p < 0.001	-0.19 [-0.21, -0.16], p < 0.001	-0.14 [-0.16, -0.12], p < 0.001	-0.13 [-0.15, -0.11], p < 0.001	-0.20 [-0.23, -0.18], p < 0.001	0.14 [0.12, 0.16], p < 0.001	-0.36 [-0.40, -0.31], p < 0.001
All-age school × family affluence	-0.06 [-0.23, 0.12], p = 0.536	0.13 [-0.12, 0.38], p = 0.312	0.01 [-0.09, 0.10], p = 0.908	0.06 [-0.01, 0.13], p = 0.113	0.05 [-0.02, 0.13], p = 0.150	0.00 [-0.10, 0.10], p = 0.985	0.01 [-0.05, 0.08], p = 0.707	0.02 [-0.15, 0.19], p = 0.804
Secondary school residual variance	0.19 [0.07, 0.48], p < 0.001	0.42 [0.16, 1.12], p < 0.001	0.07 [0.03, 0.18], p = 0.003	0.02 [0.00, 0.07], p = 0.071	0.03 [0.01, 0.08], p = 0.081	0.04 [0.01, 0.13], p = 0.013	0.00 [0.00, 9.34], p = 0.827	0.39 [0.19, 0.77], p = 0.001
Likelihood ratio test	p < 0.001	p < 0.001	p < 0.001	p = 0.034	p = 0.156	p = 0.002	p = 0.079	p < 0.001

Abbreviations: FSM, free school meals; HBSC, Health Behaviour in School-aged Children Study; SDQ, Strengths and Difficulties Questionnaire; SWEWMBs, Short Warwick Edinburgh Mental Wellbeing Scale.

TABLE 4 Multilevel logistic regression models for bullying outcomes without and with interaction term.

	Bullying perpetration (n = 3648)	Bullying victimisation (n = 3722)
Female	-0.34 [-0.54, -0.13], p=0.001	-0.34 [-0.54, -0.13], p=0.001
Family affluence	-0.07 [-0.13, -0.01], p=0.014	-0.06 [-0.10, -0.02], p=0.004
School FSM	0.01 [-0.01, 0.02], p=0.365	0.00 [-0.01, 0.01], p=0.568
School size	-0.08 [-0.34, 0.18], p=0.536	-0.05 [-0.26, 0.16], p=0.629
All-age school	-0.10 [-0.36, 0.15], p=0.435	0.02 [-0.18, 0.23], p=0.831
School connectedness	-0.10 [-0.13, -0.07], p<0.001	-0.09 [-0.12, -0.07], p<0.001
All-age school x family affluence	0.02 [-0.09, 0.14], p=0.678	0.08 [-0.00, 0.16], p=0.060
Secondary school residual variance	0.04 [0.01, 0.23]	0.04 [0.02, 0.12]
Likelihood ratio test: vs single level logistic model	p=0.072	p=0.002

Abbreviation: FSM, free school meals.

TABLE 5 Mediation analysis for all outcome variables.

	SWEMWBS	SDQ total difficulties	SDQ emotional difficulties	SDQ conduct problems	SDQ hyperactivity	SDQ peer problems	SDQ prosocial behaviour	HBSC psychological subscale	Bullying perpetration	Bullying victimisation
Direct effect 'a' (All-age school → Outcome)	-0.25 [-0.66, 0.16], $p=0.237$	0.34 [-0.28, 0.96], $p=0.280$	0.15 [-0.10, 0.40], $p=0.230$	0.08 [-0.08, 0.23], $p=0.329$	0.04 [-0.18, 0.25], $p=0.726$	0.07 [-0.09, 0.23], $p=0.383$	0.14 [0.02, 0.27], $p=0.021$	-0.10 [-0.60, 0.41], $p=0.707$	-0.10 [-0.36, 0.15], $p=0.435$	0.02 [-0.18, 0.23], $p=0.831$
Direct effect 'c' (School Connectedness → Outcome)	0.43 [0.39, 0.48], $p<0.001$	-0.67 [-0.74, -0.60], $p<0.001$	-0.19 [-0.21, -0.16], $p<0.001$	-0.14 [-0.16, -0.12], $p<0.001$	-0.20 [-0.23, -0.18], $p<0.001$	-0.13 [-0.15, -0.11], $p<0.001$	0.14 [0.12, 0.16], $p<0.001$	-0.36 [-0.40, -0.31], $p<0.001$	-0.10 [-0.13, -0.07], $p<0.001$	-0.09 [-0.12, -0.07], $p<0.001$
Indirect effect 'b*c' (All-age → School Connectedness * School Connectedness → Dependent)	0.05 [-0.10, 0.20], $p=0.504$	-0.08 [-0.30, 0.15], $p=0.504$	-0.02 [-0.08, 0.04], $p=0.504$	-0.02 [-0.06, 0.03], $p=0.504$	-0.02 [-0.09, 0.05], $p=0.504$	-0.01 [-0.06, 0.03], $p=0.504$	0.02 [-0.03, 0.06], $p=0.504$	-0.04 [-0.16, 0.08], $p=0.504$	-0.01 [-0.05, 0.02], $p=0.506$	-0.01 [-0.04, 0.02], $p=0.505$
Total effect 'a + b × c'	-0.20 [-0.63, 0.23], $p=0.373$	0.27 [-0.39, 0.92], $p=0.430$	0.13 [-0.12, 0.38], $p=0.318$	0.06 [-0.10, 0.22], $p=0.468$	0.02 [-0.21, 0.24], $p=0.896$	0.06 [-0.11, 0.23], $p=0.503$	0.16 [0.03, 0.29], $p=0.017$	-0.14 [-0.65, 0.38], $p=0.603$	-0.11 [-0.37, 0.14], $p=0.389$	0.01 [-0.20, 0.22], $p=0.912$

Note: Letters a, b and c relate to paths within the path diagram in Appendix 13.

affluence, so that the probability of being bullied is higher for more affluent children when they attend an all-age school. For bullying perpetration, despite a non-significant interaction term ($p=0.678$), the graph in Figure 4 demonstrates that for young people of low affluence, the probability of bullying others is higher in secondary schools for both genders, but this difference between school types disappears at high levels of affluence. For the SDQ conduct problems interaction term ($p=0.113$) and for peer problems ($p=0.150$) at low SES, attending a secondary school is associated with higher levels of conduct and peer problems than attending an all-age school (Figures 5 and 6), but this trend reverses at high levels of SES.

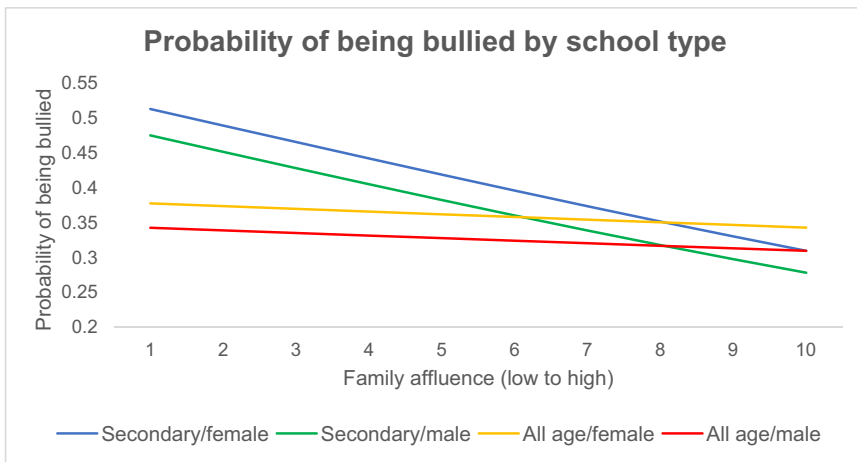


FIGURE 3 Bullying victimisation (predicted probabilities). Model holds all other variables within the model at their mean values. School connectedness (pupil-level mean)= 15.3; percentage free school meal eligibility (school-level mean)= 19.0%; log school size (school-level mean)=6.5.

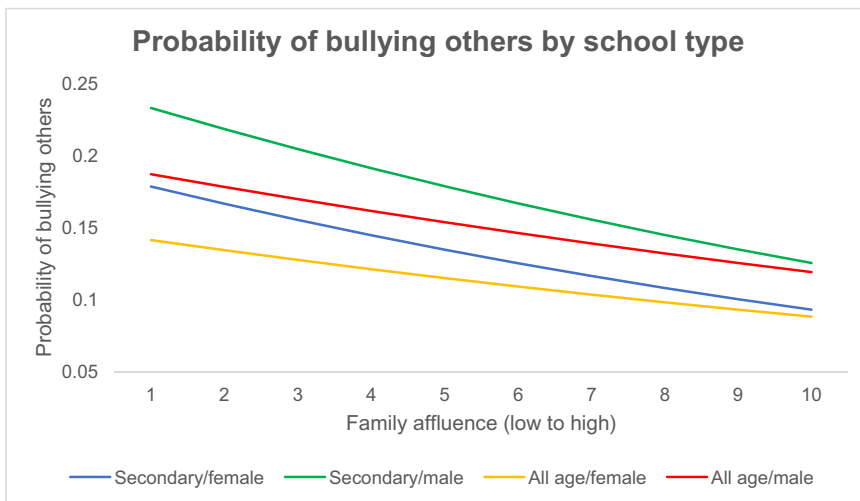
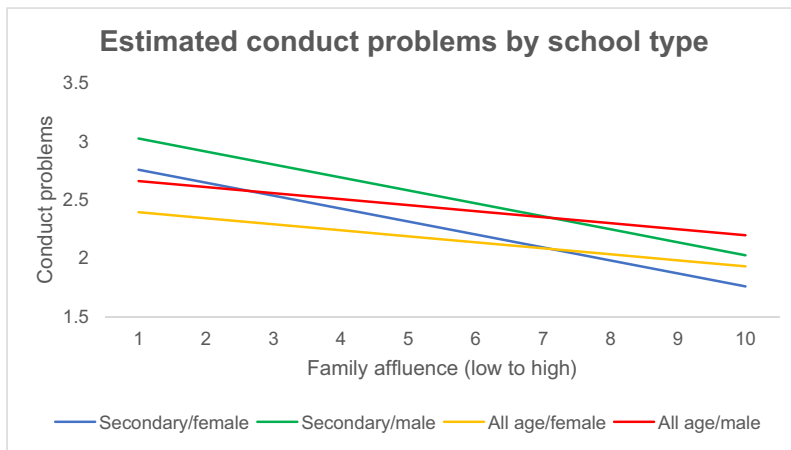
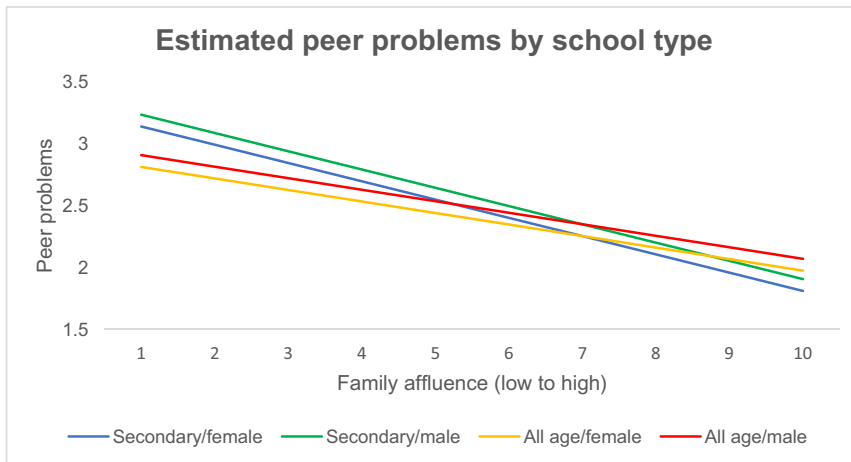


FIGURE 4 Bullying perpetration (predicted probabilities). Model holds all other variables within the model at their mean values. School connectedness (pupil-level mean)= 15.3; percentage free school meal eligibility (school-level mean)= 19.0%; log school size (school-level mean)=6.5.



FIGURES 5 Estimated conduct problems (predicted mean values) by family affluence, school type and gender. Model holds all other variables within the model at their mean values. School connectedness (pupil-level mean)=15.3; percentage free school meal eligibility (school-level mean)=19.0%; log school size (school-level mean)=6.5.



FIGURES 6 Estimated peer problems (predicted mean values) by family affluence, school type and gender. Model holds all other variables within the model at their mean values. School connectedness (pupil-level mean)=15.3; percentage free school meal eligibility (school-level mean)=19.0%; log school size (school-level mean)=6.5.

DISCUSSION

This analysis has sought to explore whether all-age schools, which do not include a typical primary to secondary transition, have different student mental health and bullying outcomes compared with secondary schools. While a number of individual-level characteristics, including gender and family affluence, were significantly associated with the outcomes considered, only prosocial behaviour was significantly associated with school type, and favoured students attending an all-age school. Across the other outcomes, the direction of effect tended to be slightly more favourable for secondary schools than all-age schools, although the findings were not significant. There was no evidence that school connectedness

is implicated in a pathway from all-age school status to mental health and bullying outcomes. Higher school-level FSM eligibility was associated with less favourable outcomes for some of the mental health measures, but there was no evidence of a relationship between school size and either mental health or bullying. The addition of an interaction term between family affluence and school type suggested that for some of the outcome variables, in particular conduct problems, peer problems, and bullying victimisation, being in an all-age school may offer some protection against mental health difficulties and bullying for less affluent students. There was some evidence, although inconsistent across measures, that while the mental health of more affluent young people may be benefited by transitioning to a secondary school, the same transition process may harm the mental health of less affluent students. All-age schools thus may act to reduce inequalities when they remove the transition experience from young people's educational trajectory.

School connectedness has frequently been implicated as a mediator in the study of young people's mental health in an educational context. Oldfield et al. (2016) found that it partially mediated the relationship between parental attachment and prosocial behaviour in young people aged 11–16, although not conduct problems or emotional difficulties, while Shochet et al. (2008) found evidence for partial mediation between parental attachment and adolescent depressive symptoms. It has also been demonstrated to partially mediate the relationship between childhood abuse and the development of depression in adolescents (Yang et al., 2022) and between social skills and preadolescent depressive symptoms (Ross et al., 2010). Shochet and Smith (2014) found evidence of a partial mediation between classroom environment, assessed using a scale focused on the relational aspects of the environment (involvement, affiliation and teacher support), and childhood depression. The relationship may also act in reverse, with findings that school connectedness may mediate the relationship between emotional difficulties and academic attainment (Pate et al., 2017). As this study found little evidence of a significant main effect between school type and the outcome variables, it was no surprise that school connectedness could not be modelled as a mediator. However, it was consistently shown to be a significant predictor of mental health and bullying outcomes in its own right. This highlights the potential role of school connectedness as a target for school interventions to improve a range of child health and educational outcomes. A systematic review of interventions that sought to improve school connectedness in order to reduce risk behaviour in young people aged 5–18 years found that lack of consistency with measuring school connectedness and inadequate evaluations made it difficult to draw conclusions on intervention effectiveness (Chapman et al., 2013). However, Raniti et al.'s (Raniti et al., 2022) systematic review found two intervention studies that targeted school connectedness in order to reduce depression in adolescents, one of which focused on the US middle to high school transition and appeared to show an impact 1.5 years later via improvements in child self-esteem (Blossom et al., 2020) and the other found evidence that the intervention created a more nurturing school climate which mediated reductions in depressive symptoms, as well as decreased bullying and perpetration of violence in secondary school students (Singla et al., 2021). Although school climate has been conceptualised in different ways by different authors (e.g. Lewno-Dumdie et al., 2020; Rudasill et al., 2018; Wang & Degol, 2016), school connectedness is typically included as one of its component parts, and in the case of this study, school climate was measured using subscales to assess the respondent's relationships with teachers and peers, sense of belonging, commitment to academic studies and participation in school activities. There has been recent work to develop theoretical models on which to develop these interventions; however, the authors highlight the ongoing issue with lack of consensus around definitions and measurement (Kim et al., 2022).

It is worth considering why many of the effects observed in this analysis did not reach statistical significance, contrary to our expectations. It is notable that only three of the 21

all-age schools included in this analysis were formed before the year 7 cohort surveyed had started school, and the remaining schools opened after the students had started primary school (ranging from reception to the start of year 6). At least 17 of the 21 schools were formed through the amalgamation of older primary and secondary schools. It is therefore likely that many of the young people within the all-age school cohort had experienced a potentially disruptive school transition prior to starting year 7. Several all-age schools had retained multiple sites, and transition for students in these all-age schools may not be very different from a typical primary to secondary school transition. Furthermore, transition information from the websites of most of the all-age schools highlighted their relationship with local primary school clusters and the support provided to young people transitioning into the all-age school in year 7. Schools tended to have higher student capacity in year 7 than in year 6, and catchment areas for year 7 entry may be wider than for entry into reception, evidencing that even in all-age schools, there is a primary to secondary transition for many students. In this dataset, students in year 7 were asked to select the primary school they had attended. There is a reasonably high level of missingness in the data for this question (14%) which may affect estimates, but 14 of the 21 secondary schools had no middle schools selected as primary school attended, and the remaining seven had very low numbers selecting middle schools (mean two students; range 1–6 students). For middle schools, one school had no students selecting their middle school as their primary school, but this school also had 23 students stating that their primary school was not available on the list offered, suggesting that it may not have been provided as an option. For the remaining 20 schools, for those students who answered the question, the average school percentage of children who attended the same middle school during their primary years was 35.2% (range 2.6–66.7%). Estyn (2022) suggests that the percentage of all-age school students in year 7 that have transitioned from an external primary, ranges from 20% up to 94%. However, despite this movement of students, it appears that having a core group who remain in the school across the transition period may have a visible impact on outcomes, particularly for less affluent young people. With a larger number of schools than was available in this sample, it might be possible to characterise types of all-age schools and look at whether there are different potential mechanisms acting to influence young people's health outcomes. Future research using international data might enable transition types to be conceptualised more fully and their impacts on mental health and bullying better understood. It is also relevant that this data was collected following two rounds of COVID-19 school closures which may have impacted upon transition experiences. Repeating the analysis with data collected in future rounds of the survey may lead to different conclusions.

The specific Welsh context of this research is also important to understanding and situating the findings. The nature of Welsh identity is fluid and multiple, defined by geography, history, language and multiculturalism (Bowie, 1993; Jackson, 2014; Selleck, 2018). Ethnographic research of former mining areas highlights how their community and history continue to create cultural capital despite deprivation (Williams, 2020). A small number of the schools included in this study are from within the South Wales coalfield region; however, the extent to which the students within them would class themselves as being from ex-mining communities would require further analysis, particularly as secondary schools may serve wide catchment areas. It is also possible that while cultural capital may be higher in some areas than might be expected given other demographic characteristics, there may remain a level of cultural incongruence between community and school cultures that is particularly noticeable for students transitioning to a new secondary school, compared with those remaining in the same all-age school at age 11 (Bernstein, 1975; Kumar, 2006). Future research using qualitative methods could build on previous analysis that has sought to better understand child perceptions of wellbeing within schools in Wales (Sabolova et al., 2020) as well as the ways that gender, class and race can create

discourses around what is defined as bullying, and appropriate responses (Ringrose & Renold, 2010).

This research has a number of limitations. Firstly, even with the explanation of what bullying means, young people might not recognise what they are experiencing as bullying for reporting purposes. They may also not wish to admit bullying others within the survey – although it is made clear that all responses are anonymised and will not be shared with school staff. The research also only focused on two outcomes – mental health and bullying – and can therefore not speak to other potential benefits of all-age schools (e.g. efficiency savings, academic impacts), and future analyses should consider how schools without a transition may support other important priorities. It should also consider whether there are differences in young people who stay in all-age schools from 3 to 16 and those who transition into all-age schools at age 11, as there is some evidence from schools that young people who stay in the same all-age school from year 6 to 7 make better academic progression than those who enter the school for first time in year 7 (Estyn, 2022). Finally, in order to understand which relationships within this analysis might transfer to other locations outside of Wales, they should be further research to replicate the findings elsewhere.

CONCLUSION

The transition from primary to secondary education may be problematic for some young people, resulting in decreases in mental health and increases in bullying victimisation. Our analysis provides some evidence that the impact of a typical primary to secondary school transition may be more negative for students from lower SES families. All-age schools, which do not require young people to transition to a new school at age 11, may remove a potential risk factor for declines in mental health for students with low SES.

ACKNOWLEDGEMENTS

We thank the wider School Health Research Network research team for their contributions to delivering the Student Health and Wellbeing survey, as well as all the schools and students in Wales who participated.

FUNDING INFORMATION

This work was supported by the Centre for Development, Evaluation, Complexity and Implementation in Public Health Improvement, which is funded by Welsh Government through Health and Care Research Wales. The research was also supported by the Wolfson Centre for Young People's Mental Health, established with a grant from the Wolfson Foundation. The School Health Research Network is a partnership between The Centre for Development, Evaluation, Complexity and Implementation in Public Health Improvement at Cardiff University, Wales Institute of Social and Economic Research and Data, Welsh Government, Public Health Wales, and Cancer Research UK. Joint funding from the Welsh Government's Minister for Education and Welsh Language, Minister for Health and Social Services, and Deputy Minister for Mental Health and Wellbeing, and support from Public Health Wales, is gratefully acknowledged for the 2021/22 survey. The Network's early development was supported by a Medical Research Council partnership grant (MR/L002787/1).

CONFLICT OF INTEREST STATEMENT

The authors have no competing interests to declare.

DATA AVAILABILITY STATEMENT

Data from the School Health Research Network Student Health and Wellbeing Survey are available upon reasonable request (shrn@cardiff.ac.uk). Publicly available schools' data are available via the My Local School website (<https://mylocalschool.gov.wales/>).

ETHICS STATEMENT

Ethical approval for School Health Research Network data collection and subsequent secondary data analysis was granted by Cardiff University School of Social Sciences Research Ethics Committee (SREC/4251).

ORCID

Caitlyn Donaldson  <https://orcid.org/0000-0003-3307-1991>

Kelly Morgan  <https://orcid.org/0000-0002-8685-1177>

Graham Moore  <https://orcid.org/0000-0002-6136-3978>

REFERENCES

- Alderson, P. (2021). *Critical realism for health and illness research: A practical introduction*. Policy Press.
- Anderson, L. W., Jacobs, J., Schramm, S., & Splittgerber, F. (2000). School transitions: Beginning of the end or a new beginning? *International Journal of Educational Research*, 33, 325–339.
- Bernstein, B. (1975). *Class, codes and control: Volume 3 Towards a theory of educational transmissions* (2nd ed.). Routledge and Kegan Paul.
- Blossom, J. B., Adrian, M. C., Stoep, A. V., & McCauley, E. (2020). Mechanisms of change in the prevention of depression: An indicated school-based prevention trial at the transition to high school. *Journal of the American Academy of Child & Adolescent Psychiatry*, 59(4), 541–551. <https://doi.org/10.1016/j.jaac.2019.05.031>
- Bourdieu, P. (1986). The forms of capital. In J. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). Greenwood.
- Bowie, F. (1993). Wales from within: Conflicting interpretations of Welsh identity. In S. MacDonald (Ed.), *Inside European identities: Ethnography in Western Europe*. Berg.
- Burgess, S., Johnstone, R., Key, T., Propper, C., & Wilson, D. (2008). The transition of pupils from primary to secondary school in England. *Transactions of the Institute of British Geographers*, 33(3), 388–403.
- Chapman, R. L., Buckley, L., Sheehan, M., & Shochet, I. (2013). School-based programs for increasing connectedness and reducing risk behavior: A systematic review. *Educational Psychology Review*, 25(1), 95–114. <https://doi.org/10.1007/s10648-013-9216-4>
- Currie, C., Molcho, M., Boyce, W., Holstein, B., Torsheim, T., & Richter, M. (2008). Researching health inequalities in adolescents: The development of the health behaviour in school-aged children (HBSC) family affluence scale. *Social Science and Medicine*, 66(6), 1429–1436. <https://doi.org/10.1016/j.socscimed.2007.11.024>
- Department for Education. (2014). *Schools, pupils and their characteristics: January 2014*. <https://www.gov.uk/government/statistics/schools-pupils-and-their-characteristics-january-2014>
- Department for Education. (2023). *Schools, pupils and their characteristics: Academic year 2022/23*. <https://explore-education-statistics.service.gov.uk/find-statistics/school-pupils-and-their-characteristics>
- Donaldson, C., Moore, G., & Hawkins, J. (2023). Conceptualising the primary to secondary school transition within the theoretical framework of ecosocial theory. *International Journal of Educational and Life Transitions*, 2(1), 1–17. <https://doi.org/10.5334/ijelt.61>
- Duggins, S. D., Kuperminc, G. P., Henrich, C. C., Smalls-Glover, C., & Perilla, J. L. (2016). Aggression among adolescent victims of school bullying: Protective roles of family and school connectedness. *Psychology of Violence*, 6(2), 205–212. <https://doi.org/10.1037/a0039439>
- Estyn. (2022). *All-age schools in Wales: A report on the challenges and successes of establishing all-age schools*.
- Evans, D., Borriello, G. A., & Field, A. P. (2018). A review of the academic and psychological impact of the transition to secondary education. *Frontiers in Psychology*, 9, 1482. <https://doi.org/10.3389/fpsyg.2018.01482>
- Evans, G. (2022). Back to the future? Reflections on three phases of education policy reform in Wales and their implications for teachers. *Journal of Educational Change*, 23(3), 371–396. <https://doi.org/10.1007/s10833-021-09422-6>
- García-Moya, I., Bunn, F., Jiménez-Iglesias, A., Paniagua, C., & Brooks, F. M. (2019). The conceptualisation of school and teacher connectedness in adolescent research: A scoping review of literature. *Educational Review*, 71(4), 423–444. <https://doi.org/10.1080/00131911.2018.1424117>

- Gariepy, G., McKinnon, B., Sentenac, M., & Elgar, F. J. (2016). Validity and reliability of a brief symptom checklist to measure psychological health in school-aged children. *Child Indicators Research*, 9(2), 471–484. <https://doi.org/10.1007/s12187-015-9326-2>
- Goldstein, H. (2010). *Multilevel Statistical Models* (4th Edition). Wiley.
- Goodman, R. (2001). Psychometric properties of the strengths and difficulties questionnaire. *Journal of the American Academy of Child and Adolescent Psychiatry*, 40(11), 1337–1345. <https://doi.org/10.1097/00004583-200111000-00015>
- HBSC. (2023). *Health behaviour in school-aged children*. <https://hbsc.org/>
- Heisig, J. P., & Schaeffer, M. (2019). Why you should always include a random slope for the lower-level variable involved in a cross-level interaction. *European Sociological Review*, 35(2), 258–279. <https://doi.org/10.1093/esr/jcy053>
- Hodges, A., Cordier, R., Joosten, A., Bourke-Taylor, H., & Speyer, R. (2018). Evaluating the psychometric quality of school connectedness measures: A systematic review. *PLoS One*, 13(9), e0203373. <https://doi.org/10.1371/journal.pone.0203373>
- Iacobucci, D., Schneider, M. J., Popovich, D. L., & Bakamitsos, G. A. (2016). Mean centering helps alleviate “micro” but not “macro” multicollinearity. *Behavior Research Methods*, 48(4), 1308–1317. <https://doi.org/10.3758/s13428-015-0624-x>
- Jackson, L. (2014). The multiple voices of belonging: Migrant identities and community practice in South Wales. *Environment and Planning A: Economy and Space*, 46(7), 1666–1681. <https://doi.org/10.1068/a46248>
- Jindal-Snape, D., Hannah, E. F. S., Cantali, D., Barlow, W., & MacGillivray, S. (2020). Systematic literature review of primary–secondary transitions: International research. *Review of Education*, 8(2), 526–566. <https://doi.org/10.1002/rev3.3197>
- Johnes, G. (2020). Medium efficiency: Comparing inputs and outputs by language of instruction in secondary schools in Wales. *Wales Journal of Education*, 22(2), 52–66. <https://doi.org/10.16922/wje.22.2.3>
- Juvonen, J., & Graham, S. (2014). Bullying in schools: The power of bullies and the plight of victims. *Annual Review of Psychology*, 65(1), 159–185. <https://doi.org/10.1146/annurev-psych-010213-115030>
- Kim, H., Carney, J. V., & Hazler, R. J. (2022). Promoting school connectedness: A critical review of definitions and theoretical models for school-based interventions. *Preventing School Failure: Alternative Education for Children and Youth*, 1–9, 256–264. <https://doi.org/10.1080/1045988X.2022.2119359>
- Korpershoek, H., Canrinus, E. T., Fokkens-Bruinsma, M., & de Boer, H. (2020). The relationships between school belonging and students' motivational, social-emotional, behavioural, and academic outcomes in secondary education: A meta-analytic review. *Research Papers in Education*, 35(6), 641–680. <https://doi.org/10.1080/02671522.2019.1615116>
- Krull, J. L., & MacKinnon, D. P. (2001). Multilevel modeling of individual and group level mediated effects. *Multivariate Behavioral Research*, 36(2), 249–277.
- Kumar, R. (2006). Students' experiences of home–school dissonance: The role of school academic culture and perceptions of classroom goal structures. *Contemporary Educational Psychology*, 31(3), 253–279. <https://doi.org/10.1016/j.cedpsych.2005.08.002>
- Leckie, G. (2010). *Introduction to Multilevel Modelling. Stata Practical Comparing Groups using Multilevel Modelling*. LEMMA (Learning Environment for Multilevel Methodology and Applications). <http://www.bristol.ac.uk/cmm/learning/course.html>
- Leech, D., & Campos, E. (2003). Is comprehensive education really free?: A case-study of the effects of secondary school admissions policies on house prices in one local area. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 166(1), 135–154. <https://doi.org/10.1111/1467-985X.00263>
- Lester, L., Waters, S., & Cross, D. (2013). The relationship between school connectedness and mental health during the transition to secondary school: A path analysis. *Australian Journal of Guidance and Counselling*, 23(2), 157–171. <https://doi.org/10.1017/jgc.2013.20>
- Lewno-Dumdie, B. M., Mason, B. A., Hajovsky, D. B., & Villeneuve, E. F. (2020). Student-report measures of school climate: A dimensional review. *School Mental Health*, 12(1), 1–21. <https://doi.org/10.1007/s12310-019-09340-2>
- Link, B., & Phelan, J. (2010). Social conditions as fundamental causes of health inequalities. In C. E. Bird (Ed.), *Handbook of medical sociology* (pp. 1–17). Vanderbilt University Press.
- Madjar, N., & Cohen-Malayev, M. (2016). Perceived school climate across the transition from elementary to middle school. *School Psychology Quarterly*, 31(2), 270–288. <https://doi.org/10.1037/spq0000129>
- Markham, W. A., & Aveyard, P. (2003). A new theory of health promoting schools based on human functioning, school organisation and pedagogic practice. *Social Science & Medicine*, 56(6), 1209–1220. [https://doi.org/10.1016/s0277-9536\(02\)00120-x](https://doi.org/10.1016/s0277-9536(02)00120-x)
- Marraccini, M. E., & Brier, Z. M. F. (2017). School connectedness and suicidal thoughts and behaviors: A systematic meta-analysis. *School Psychology Quarterly*, 32(1), 5–21. <https://doi.org/10.1037/spq0000192>

- Melendez-Torres, G. J., Hewitt, G., Hallingberg, B., Anthony, R., Collishaw, S., Hall, J., Murphy, S., & Moore, G. (2019). Measurement invariance properties and external construct validity of the short Warwick-Edinburgh mental wellbeing scale in a large national sample of secondary school students in Wales. *Health and Quality of Life Outcomes*, 17, 139. <https://doi.org/10.1186/s12955-019-1204-z>
- Moore, G., Angel, L., Brown, R., van Godwin, J., Hallingberg, B., & Rice, F. (2021). Socio-economic status, mental health difficulties and feelings about transition to secondary school among 10–11 year olds in Wales: Multi-level analysis of a cross sectional survey. *Child Indicators Research*, 14(4), 1597–1615. <https://doi.org/10.1007/s12187-021-09815-2>
- Moore, G. F., Anthony, R., Hawkins, J., Van Godwin, J., Murphy, S., Hewitt, G., & Melendez-Torres, G. (2020). Socioeconomic status, mental wellbeing and transition to secondary school: Analysis of the school Health Research network/health behaviour in school-aged children survey in Wales. *British Educational Research Journal*, 46(5), 1111–1130. <https://doi.org/10.1002/berj.3616>
- Nielsen, L., Shaw, T., Meilstrup, C., Koushede, V., Bendtsen, P., Rasmussen, M., Lester, L., Due, P., & Cross, D. (2017). School transition and mental health among adolescents: A comparative study of school systems in Denmark and Australia. *International Journal of Educational Research*, 83, 65–74. <https://doi.org/10.1016/j.ijer.2017.01.011>
- Office for National Statistics. (2022). *Population and household estimates, Wales: Census 2021*. <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/populationandhouseholdestimateswales/census2021>
- Oldfield, J., Humphrey, N., & Hebron, J. (2016). The role of parental and peer attachment relationships and school connectedness in predicting adolescent mental health outcomes. *Child and Adolescent Mental Health*, 21(1), 21–29. <https://doi.org/10.1111/camh.12108>
- Page, N., Hewitt, G., Young, H., Moore, G., & Murphy, S. (2021). Student health and wellbeing in Wales: Report of the 2019/20 school health research network student health and wellbeing survey. DECIPHer. 1–180.
- Pate, C. M., Maras, M. A., Whitney, S. D., & Bradshaw, C. P. (2017). Exploring psychosocial mechanisms and interactions: Links between adolescent emotional distress, school connectedness, and educational achievement. *School Mental Health*, 9(1), 28–43. <https://doi.org/10.1007/s12310-016-9202-3>
- Pellegrini, A. D. (2002). Bullying, victimization, and sexual harassment during the transition to middle school. *Educational Psychologist*, 37(3), 151–163. https://doi.org/10.1207/S15326985EP3703_2
- Raniti, M., Rakesh, D., Patton, G. C., & Sawyer, S. M. (2022). The role of school connectedness in the prevention of youth depression and anxiety: A systematic review with youth consultation. *BMC Public Health*, 22(1), 2152. <https://doi.org/10.1186/s12889-022-14364-6>
- Reynolds, D., Napieralla, K., Parketny, J., & Jenkins, M. (2018). *All-age schools: The changing landscape of Welsh education*. (pp. 1–18). Swansea University.
- Ringrose, J., & Renold, E. (2010). Normative cruelties and gender deviants: The performative effects of bully discourses for girls and boys in school. *British Educational Research Journal*, 36(4), 573–596. <https://doi.org/10.1080/01411920903018117>
- Ross, A. G., Shochet, I. M., & Bellair, R. (2010). The role of social skills and school connectedness in preadolescent depressive symptoms. *Journal of Clinical Child & Adolescent Psychology*, 39(2), 269–275. <https://doi.org/10.1080/15374410903532692>
- Rudasill, K. M., Snyder, K. E., Levinson, H., Adelson, L., & J. (2018). Systems view of school climate: A theoretical framework for research. *Educational Psychology Review*, 30(1), 35–60. <https://doi.org/10.1007/s10648-017-9401-y>
- Sabolova, K., Birdsey, N., Stuart-Hamilton, I., & Cousins, A. L. (2020). A cross-cultural exploration of children's perceptions of wellbeing: Understanding protective and risk factors. *Children and Youth Services Review*, 110, 104771. <https://doi.org/10.1016/j.childyouth.2020.104771>
- Scottish Government. (2023). *School contact details: April 2023*. <https://www.gov.scot/publications/school-contact-details/>
- Selleck, C. (2018). “We are not fully Welsh”: Hierarchies of belonging and “new” speakers of Welsh. In C. Smith-Christmas, N. P. Ó. Murchadha, M. Hornsby, & M. Moriarty (Eds.), *New speakers of minority languages*. Palgrave MacMillan.
- Shochet, I. M., Homel, R., Cockshaw, W. D., & Montgomery, D. T. (2008). How do school connectedness and attachment to parents interrelate in predicting adolescent depressive symptoms? *Journal of Clinical Child & Adolescent Psychology*, 37(3), 676–681. <https://doi.org/10.1080/15374410802148053>
- Shochet, I. M., & Smith, C. L. (2014). A prospective study investigating the links among classroom environment, school connectedness and depressive symptoms in adolescents. *Psychology in the Schools*, 51(5), 480–492. <https://doi.org/10.1002/pits.21759>
- Singla, D. R., Shinde, S., Patton, G., & Patel, V. (2021). The mediating effect of school climate on adolescent mental health: Findings from a randomized controlled trial of a school-wide intervention. *Journal of Adolescent Health*, 69(1), 90–99. <https://doi.org/10.1016/j.jadohealth.2020.09.030>

- Sirsch, U. (2003). The impending transition from primary to secondary school: Challenge or threat? *International Journal of Behavioral Development*, 27(5), 385–395. <https://doi.org/10.1080/01650250344000082>
- Smith, P. K., Ananiadou, K., & Cowie, H. (2003). Interventions to reduce school bullying. *The Canadian Journal of Psychiatry*, 48(9), 591–599. <https://doi.org/10.1177/070674370304800905>
- StataCorps Ltd. (2021). Example 42g — One- and two-level mediation models (multilevel). *Structural Equation Modeling Reference Manual*. <https://www.stata.com/manuals13/semexample42g.pdf>
- Stewart-Brown, S., Tennant, A., Tennant, R., Platt, S., Parkinson, J., & Weich, S. (2009). Internal construct validity of the Warwick-Edinburgh mental well-being scale (WEMWBS): A Rasch analysis using data from the Scottish health education population survey. *Health and Quality of Life Outcomes*, 7, 15. <https://doi.org/10.1186/1477-7525-7-15>
- Symonds, J. E., & Galton, M. (2014). Moving to the next school at age 10-14 years: An international review of psychological development at school transition. *Review of Education*, 2(1), 1–27. <https://doi.org/10.1002/rev3.3021>
- Taylor, C., Gorard, S., & Fitz, J. (2002). Market frustration? Admission appeals in the UK education market. *Educational Management & Administration*, 30(3), 243–260. <https://doi.org/10.1177/0263211X020303001>
- The National Archives. (2022). *Open government licence for public sector information*. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>
- Vaz, S., Falkmer, M., Parsons, R., Passmore, A. E., Parkin, T., & Falkmer, T. (2014). School belongingness and mental health functioning across the primary-secondary transition in a mainstream sample: Multi-group cross-lagged analyses. *PLoS One*, 9(6), e99576. <https://doi.org/10.1371/journal.pone.0099576>
- Wang, M.-T., & Degol, J. L. (2016). School climate: A review of the construct, measurement, and impact on student outcomes. *Educational Psychology Review*, 28(2), 315–352. <https://doi.org/10.1007/s10648-015-9319-1>
- Wang, W., Brittain, H., McDougall, P., & Vaillancourt, T. (2016). Bullying and school transition: Context or development? *Child Abuse and Neglect*, 51, 237–248. <https://doi.org/10.1016/j.chiabu.2015.10.004>
- Warwick Medical School. (2021). Collect, score, analyse and interpret WEMWBS. <https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs/using/howto>
- Welsh Government. (2021a). Guidance on school categories according to Welsh-medium provision. <https://www.gov.wales/sites/default/files/publications/2021-12/guidance-on-school-categories-according-to-welsh-medium-provision.pdf>
- Welsh Government. (2021b). Introduction to curriculum for Wales guidance. <https://hwb.gov.wales/curriculum-for-wales/introduction/>
- Welsh Government. (2022). My local school: Sharing information about local schools. <https://mylocalschool.gov.wales/>
- Williams, G. (2020). Poverty, place and learning. In V. Cooper & N. Holford (Eds.), *Exploring childhood and youth*. Routledge.
- Yang, Y., Ma, X., Kelifa, M. O., Li, X., Chen, Z., & Wang, P. (2022). The relationship between childhood abuse and depression among adolescents: The mediating role of school connectedness and psychological resilience. *Child Abuse & Neglect*, 131, 105760. <https://doi.org/10.1016/j.chiabu.2022.105760>
- Youth in Mind. (2016). Scoring the Strengths & Difficulties Questionnaire for age 4-17. Youthinmind. [https://www.sdqinfo.com/py/sdqinfo/b3.py?language=Englishqz\(UK\)](https://www.sdqinfo.com/py/sdqinfo/b3.py?language=Englishqz(UK))

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Donaldson, C., Morgan, K., Page, N., Angel, L. & Moore, G. (2024). Mental health, bullying and school connectedness: A comparative analysis of school transition at age 11 from within the Welsh education system. *British Educational Research Journal*, 00, 1–23. <https://doi.org/10.1002/berj.3985>