

Trends in student perceptions of school connectedness from 2001 to 2024: Context before and immediately after the implementation of the Whole School Approach to emotional and mental wellbeing in Wales

Caitlyn Donaldson

donaldsonc.j@cardiff.ac.uk

Cardiff University

Rebecca Anthony

Cardiff University

Graham Moore

Cardiff University

Amy Edwards

Cardiff University

Zoe Haslam

Cardiff University

Rachel Brown

Cardiff University

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Abstract

Background

School connectedness is an important protective factor for young people's mental health, however, there is an absence of analyses exploring how it has changed over time in primary and secondary schools. This is considered here in the context of the introduction of the Welsh Government Framework for Embedding a Whole School Approach to Emotional and Mental Wellbeing.

Methods

Time trends analysis of six measures of school connectedness was undertaken using data from a large, nationally representative primary (2019–2024; n = 26,675 students) and secondary school (2001–2023; n = 503,059 students) surveys in Wales. Multilevel models were used to explore the impact of time and demographic variables (gender, age, family affluence) on each outcome (staff-student relationships, student relationships, student involvement in decision-making, liking school, school belonging and having an adult to confide in at school).

Results

The analysis found significant evidence of declines in school connectedness over time in primary and secondary schools. Girls tended to have significantly better outcomes than boys in primary school, but significantly worse in secondary and this latter effect was widening over time. Family affluence effects were more pronounced in secondary schools than primary schools, and suggested having higher family affluence was typically associated with more positive perceptions of school. School connectedness tended to decline with increasing student age. There was no evidence of improvements post-introduction of the Whole School Approach.

Conclusions

This study offers an important, novel perspective on how school connectedness has declined over time in primary and secondary schools in Wales. It provides an important context to the introduction of statutory guidance requiring schools to introduce a whole school approach to emotional and mental wellbeing in 2021.

Introduction

Children and young people's experiences at school have been shown to be associated with physical and mental health, quality of life and educational achievements (Aldridge & McChesney, 2018; Bonell et al., 2013; Castelli & Marcionetti, 2024; Erdem & Kaya, 2024; Hawkins et al., 2023). A supportive school environment can be a protective factor for young people's outcomes and associated with greater life satisfaction (Samdal et al., 1998). However, a negative school environment can be a risk factor for poorer mental health and wellbeing, and the development of risky behaviours such as substance use, absenteeism and school dropout (Banaag et al., 2024; Bisset et al., 2007; Gubbels et al., 2019; Markham et al., 2008; Moore, 2025). The role of school in supporting young people's mental health has become particularly relevant within the context of substantial worsening of young people's mental health in recent years (Anthony et al., 2024; ten Have et al., 2023). School connectedness may be one cause of this among many, as young people today have experienced a prolonged period of austerity, the COVID-19 pandemic and are moving towards adulthood in an increasingly uncertain world (Batcheler et al., 2025; BMA, 2016; Verian, 2025).

Whole school approach to emotional and mental wellbeing

Schools have a long and important history as settings for interventions to improve children and young people's health and wellbeing (e.g. Jacob et al., 2021; Langford et al., 2015; Shackleton et al., 2016).

This role is reflected in recent Welsh Government legislation. In 2021, the Welsh Government introduced statutory guidance on embedding a whole school approach (WSA) to emotional and mental wellbeing for all schools in Wales (Welsh Government, 2021). Whole school approaches seek to effect school-wide change through co-ordination between curriculum, learning and teaching; school ethos and environment; and family and partnerships (Cavanagh et al., 2024). There is evidence that they can improve mental health outcomes and perceptions of school climate as well as reduce bullying and smoking (Bonell et al., 2018; Lekamge et al., 2025; Shinde et al., 2018).

Central to the Welsh approach is that a positive cultural environment is created in schools where positive relationships between students and staff members are supported. The framework has three core values - developing a sense of belonging for staff and students, building a sense of efficacy and having your voice heard. Schools are required to develop action plans that consider how different aspects of school are supporting emotional and mental wellbeing, including school ethos, curriculum, provision for children and young people with specific needs, school transitions, and leadership (Welsh Government, 2021). By autumn 2023, 85% of secondary schools in Wales had begun to implement the WSA, although many were still in the early stages (School Health Research Network, 2024). A year later, primary schools were at a similar stage, with 86% beginning to implement the WSA and a quarter still at the scoping stages (Ouerghi et al., 2026).

This paper seeks to explore the trends in school connectedness in the years leading up to the implementation of the WSA in Wales, and shortly thereafter. While it would be hoped that a whole school approach would positively shift school culture and that this would be reflected in more favourable student perceptions of their connectedness to school, the implementation has not taken place in isolation of other changes in education or wider society. It is important therefore to understand trends in school connectedness prior to and post implementation of the framework while also considering potential effects of the Covid-19 pandemic.

School connectedness

The concept of 'school connectedness' is a widely used, but not well-defined term in education research (García-Moya et al., 2019; Peng & Patterson, 2025). It seeks to capture young people's sense of belonging at school, often focusing on strength of relationships with peers and school staff (Centers for Disease Control and Prevention, 2009; Goodenow & Grady, 1993; Wilson, 2004). There has also been exploration of how school connectedness might relate to a young person's connection to the values and culture of a school as well as their perceptions about how their future aspirations are being fulfilled (Markham et al., 2021).

Due to differences in definition, there is a lack of consensus on operationalisation of the construct. This is further exacerbated by the range of terms used, that are closely related, if not synonymous, with school connectedness, such as school belonging, school attachment, school affiliation and school bonding. The term 'school climate' also often incorporates school connectedness as one of its key dimensions (Grazia & Molinari, 2021) and school-level aggregated values of school connectedness can be used to operationalise one aspect of school climate (Donaldson et al., 2025). In a scoping review, García-Moya et al., (2019) found 10 scales being used to measure school connectedness (e.g. the psychological sense of school membership scale, the national longitudinal study of adolescents' health school connectedness scale, the Hemingway measure of school connectedness), each taking slightly different approach. However, analysis of the scales suggested that there were five key domains that tend to be included within school connectedness measures – child perceptions of: acceptance/care; belonging; liking/enjoyment; respect; and support (García-Moya et al., 2019).

Despite divergence in measurement and definition, there is however consistency in the evidence of school connectedness as a protective factor for many health and education-related outcomes for young people. Raniti et al., (2022)'s systematic review found a significant protective effect of school connectedness for future depression and anxiety in young people aged 14–24, while a meta-analysis concluded that school connectedness has a protective effect on sexual health, violence, substance abuse and mental health outcomes (Rose et al., 2024). Whole school interventions that promote student commitment to their school community have also been shown to be effective at preventing substance use and violence (Melendez-Torres et al., 2023). Furthermore, research from primary schools highlights the importance of school belonging to mental health as early as age 8, with 37% of variability in emotional health profiles being predicted by school belonging and socioeconomic status variables (Castro-Kemp et al., 2020).

In terms of educational outcomes, there is some evidence of a protective effect of school connectedness against school truancy and school exclusion. Using Millennium Cohort Study data, Cameron et al., (2025) found that a high level of satisfaction with school at age 7 and 11 was associated with lower rates of exclusion and truancy at age 14.

Impacts of the Covid-19 pandemic on education

School closures due to the pandemic affected an estimated 1.5 billion children and young people and resulted in large inequalities in access to online and other forms of learning (OECD, 2020). A review across 27 countries found that the pandemic increased rates of school dropout and led to learning loss for many young people, with the greatest effects found in low-income countries (Moscoviz & Evans, 2022). The pandemic also reduced mixing between peers of different levels of socioeconomic status within the school context, resulting in loss of human capital accumulation for low-income young people (Agostinelli et al., 2022). Research on school connectedness during the pandemic found that school connectedness maintained an important association with mental health (Perkins et al., 2021) and that teacher connectedness was significantly associated with academic self-efficacy (Daley et al., 2025). Young people who had poor school connectedness before the pandemic were also more likely to experience anxiety on returning to school (Widnall et al., 2021).

Post-pandemic, data are still being collected to understand how sustained the impacts of COVID-19 are on a range of school outcomes. However, it is clear that school attendance in particular continues to be affected. Data from the US shows that chronic absenteeism remains widespread, particularly in schools serving low-income communities. The percentage of young people who were chronically absent at least once over a three-year period increased from 17% pre-pandemic to 38% post-pandemic (Swiderski et al., 2025). Welsh Government data similarly shows that persistent absence rates (defined as 10% or more of half days missed) were 37.1% in the 2023/24 school year, a slight decrease from 2022/23 (40.1%), but still more than double pre-pandemic rates (Welsh Government, 2024). This is particularly relevant to school connectedness, as in order to build a sense of connection to school, attendance is essential (Bowles & Scull 2019). The WSA Framework was introduced in 2021 at a time of significant disruption, meaning better understanding of the impact of this is key to interpreting any post-implementation changes in young people's emotional and mental wellbeing.

Trends in school connectedness

There is a gap in research evidence around how school connectedness has changed over time for young people in primary and secondary schools, and how trends might differ by gender, socioeconomic status or age. Research from schools' data from 32 European and North American countries suggests that prior to the pandemic (2002–2018) trends in school pressure and liking school at age 15 varied between countries and often within countries by gender (Löfstedt et al., 2020). In Sweden, PISA data analysis found that decreases in school belonging between 2000–2018 were driven by disproportionately large declines in foreign-born students, students with low socioeconomic status and students with low academic attainment (Högberg et al., 2021). More recent PISA 2022 data suggests a continued average decline in school belonging between 2018 and 2022 across OECD countries, however this trend is mixed at the country-level (PISA, 2023). This analysis has not been extended to explore more recent post-pandemic changes, nor has there been exploration of trends in the wider dimensions of school connectedness.

This research will use large datasets from the School Health Research Network (SHRN) in Wales, to examine the stability or change of perceived school connectedness, from 2001 to 2024 in Wales overall and by gender, family affluence and age. It will use six different outcome measures that enable assessment of stability or change in different aspects of school connectedness, including relationships between students, student relationships with teachers, student involvement in decision-making, school belonging, school liking and having access to an adult at school to confide in. Analyses of these trends will provide important contextual information that can inform evaluation and interpretation of WSA outcomes. There are three key research questions:

1. Have there been changes in student perceptions of school connectedness over time, prior to, and immediately after the implementation of the WSA?
2. Do trends in student perceptions of school connectedness since 2001 vary by age, gender and family affluence?
3. Are there significant interaction effects between year of survey completion and (i) age; (ii) gender; or (iii) family affluence?

Method

The WSA was introduced in the academic year 2021-2022 (Welsh Government, 2021). The 2021 primary school survey took place between April and July 2021, prior to the introduction of the WSA, while the 2021 secondary school survey took place in September to December 2021, during the first year of implementation. All subsequent surveys were post-implementation of the WSA.

Primary school survey

Cross-sectional survey data were collected from children in primary schools in Wales in 2019, 2021, 2022-2023 and 2024. The 2019 data collection was to replicate the sampling methods from earlier nationally representative surveys led by the research team from 2007-2014 (Moore et al., 2011, 2015), although earlier surveys did not include measures of school connectedness. The 2021 survey re-engaged schools who took part in the 2019 survey and also included a booster sample from 4 out of 22 local authorities in Wales. Both 2019 and 2021 surveys focused on year 6 students (age 10-11), with a small number of year 5 students also participating (age 9-10). More details on sampling for both surveys are available elsewhere (Moore et al., 2021, 2022).

The 2022-23 survey took place over a longer time frame (Sept 2022-March 2023) than the other surveys. Both 2022-23 and 2024 surveys included students from years 3-6 (age 7-11) and increased both the number of participants and number of students involved (Donaldson et al., 2023, 2025; Moore et al., 2024). In both surveys, all primary schools in Wales were invited to participate.

In 2019, researchers attended schools to administer the survey, in 2021, 2022-23 and 2024, data were collected through an online survey administered by teachers. In all cases, consent was based on a three stage process, including school agreement, parental opt out consent and child assent at the point of data collection. Children were advised that participation was voluntary, that they could choose which

questions to answer, and could stop at any time without giving a reason. More details on consent processes have previously been reported (Donaldson et al., 2025; Moore et al., 2022, 2024). Ethical approval was obtained from the XXX University School of Social Sciences Research Ethics Committee.

Total sample size across the survey waves was 26,675 students.

Secondary school survey

Repeat cross-sectional data were taken from surveys secondary schools in Wales in 2001, 2003, 2005, 2009, 2013, 2017, 2019, 2021 and 2023. Secondary school questionnaires prior to and including 2013 were completed as part of the Health Behaviour in School-aged Children (HBSC) study: a collaborative cross-national survey of adolescent health and wellbeing, supported by the World Health Organization (HBSC, 2025). From 2017 onwards, national data were collected via the Student Health and Well-being survey, led by the Wales-wide School Health Research Network (SHRN) at XXX University (SHRN, 2025). Data obtained from these surveys constitute nationally representative samples of secondary school pupils. Up until and including 2013, schools were selected using a two-stage sampling process in which they were first stratified according to local authorities and free-school meal eligibility, and then randomly selected. Head teachers from each school were contacted through letters and follow-up phone calls and provided written consent for their school to participate. Selected schools then randomly chose one class (approximately 25 students) in each year group to participate. All surveys, excluding 2001 and 2005, assessed individuals in every school year (approximate ages 11–16 years). Surveys carried out in 2001 and 2005 did not include students in Years 8 or 10. The current study uses individuals across all school years where available, with illustrations of trends restricted to those in Years 7, 9 and 11.

Prior to 2017 trained fieldworkers attended each data collection to ensure sufficient support and participating schools received £150 to cover any costs incurred through participation. Since 2017, surveys have been teacher-led and delivered by SHRN to all maintained secondary schools in Wales, with no fieldworkers or financial incentives. All surveys post-2017 were completed during the first school term (September–December), but some earlier surveys, including 2001/2002 and 2005/2006, were completed in the second school term (January–April).

Ethical approvals for SHRN surveys were obtained from the XXX University School of Social Sciences Research Ethics Committee.

Total sample size across the survey waves was 503,059 students.

Measures

Socio-demographics

Gender

In both surveys, students reported their gender as either boy, girl, refusal to answer, or neither word describes me from 2019 onwards. The latter response was absent from earlier secondary school surveys. Those who stated that neither gender described them were excluded from analyses as temporal change could not be examined due to the lack of longer-term data. Excluded data for primary: in 2019 ($n = 2$; 0.1%); 2021 ($n = 18$, 1.0%); 2023 ($n = 182$, 2.0%); 2024 ($n = 124$; 1.0%). For secondary: in 2019 ($n = 1472$, 1.2%), 2021 ($n = 3691$, 3.0%) and 2023 ($n = 1921$, 1.48%). The final sample for each survey year included just students who reported their gender as either girl or boy.

School year

For primary schools, the study is restricted to responses from children in the final year of primary school (year 6; aged 10-11), because inclusion of younger pupils occurred only in the most recent dataset.

In the secondary school survey, students reported their school grade (UK school years 7–11 corresponding to the five years of compulsory secondary education from 11 to 16 years). This was used as a proxy for age.

There was no missing data for school year across the surveys.

Socioeconomic status

The Family Affluence Scale (FAS) comprises indicators of material affluence and is used here as a proxy for socioeconomic status (Boyce et al., 2006; Torsheim et al., 2016).

For the primary school survey, five items were used consistently across the four surveys: the household's number of bathrooms, cars, computers, whether the child had their own bedroom and whether their family had a dishwasher. Items were scored, summed (range 0-10), standardised to have a mean of zero and standard deviation and treated as continuous within the models.

For the secondary school survey, only three items were used consistently across the surveys: the household's number of cars, number of computers, whether the individual had their own bedroom. Surveys from 2013 onwards include two additional items on dishwasher ownership and number of bathrooms. An item on 'holidays outside of Wales' was included in all surveys except for the 2021 survey due to patterns of holiday taking impacted by COVID-19 restrictions (Page et al., 2023). Due to these changes over time in available items, and a changing distribution over time (when using just the three consistent items which ranges from 0-6, the distribution of scores changed extensively – in 2001 just 12% of young people scored a six; this increased to 48% in 2023), tertiles of high, medium and low family affluence were created based on each survey year distribution, using all available family affluence questions for each year.

There was a small amount of missing data for family affluence (see Tables 1 and 2).

Outcome measures

Items were broadly the same across primary and secondary school surveys. Secondary school items are listed below and slight differences with the primary survey are highlighted in Appendix 1. These were due to slight simplifications of wording for younger children.

Staff-student relationships

Three questions assessed student's relationships with their teachers (to what extent they agree or disagree with: I feel that my teachers accept me as I am; I feel that my teachers care about me as a person; I feel a lot of trust in my teachers). These items were scored on a Likert scale from 0 to 4. The three items were summed so that higher scores indicated higher levels of social support from teachers (range 0 to 12).

Student relationships

Three questions assessed students' relationships with each other (the students in my classes enjoy being together; Most of the students in my classes are kind and helpful; Other students accept me as I am). These items were scored on a Likert scale from 0 to 4. The three items were summed so that higher scores indicated higher levels of peer connectedness (range 0 to 12).

Student involvement in decision-making

Three questions assessed levels of involvement in school decision-making (to what extent they feel that: 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 0 to 4. The three items were summed so that higher scores indicated higher levels of school connectedness (range 0 to 12).

Liking school

Students were asked 'How do you feel about school at present?' and offered four answer options: I like it a lot (4); I like it a bit (3); I don't like it very much (2); and I don't like it at all (1). This item was dichotomized as positive (answer options 3 and 4) and negative (answer options 1 and 2) school satisfaction.

School belonging

Students were asked how much they agree with the statement "I feel like I belong in this school" and offered five answer options: Strongly agree (5); Agree (4); Neither agree nor disagree (3); Disagree (2); Strongly disagree (1). We dichotomized this variable as positive (answer options 4 and 5) and negative (answer options 1 to 3) school belonging.

Adult at school to confide in

Students were asked how much they agree with the statement "I feel there is at least one teacher I can go to if I have a problem" and offered five answer options: Strongly agree (5); Agree (4); Neither agree nor disagree (3); Disagree (2); Strongly disagree (1). We dichotomized this variable as positive (answer options 4 and 5) and negative (answer options 1 to 3) trust.

Analyses

Multilevel ordinal logistic regressions tested change in staff-student relationships, student relationships and student decision-making over time and multilevel logistic regressions tested change in proportion of positive school liking, school belonging and adult to confide in over time. Survey year was treated as a categorical predictor, with and without adjustments for age, gender, and family affluence. A reference category of 2019 was used for the primary school survey. For secondary school data, a reference year was chosen based on descriptive analyses that revealed at which point a general worsening trend began within the data. For most outcomes, this was the earliest available data point and ranges from 2009 to 2017 (Appendix 2). All statistical analyses were conducted using STATA version 18.

As there are insufficient time points post-implementation of the WSA to formally test for a change in trend, we only comment on visual indication of change in trend post-WSA.

To test for interaction effects between survey year and the key demographic variables (age, gender and family affluence), a series of extended models were run. For primary school data, these included a survey year*gender interaction, a survey year*family affluence interaction and a model including both interactions. For secondary schools, this was extended to also test for an interaction effect between survey year*age. The lincom and margins plot commands were used to model these interaction effects (Appendices 4 and 6).

As sensitivity analyses, an additional series of models were run for the primary school data using weighted regressions based on participation by local authority in line with previous analyses using the 2019 and 2021 survey data (Moore et al., 2021, 2022) (Appendices 3 and 4). As no substantive departures from the unweighted analyses were found, findings reported below are based on unweighted estimates.

Results

Descriptive statistics are available in Tables 1 and 2 for gender, family affluence tertiles and age across each survey round. Trends graphs based on mean values for each outcome and split by gender are provided for all outcomes in Figures 1 and 2. Additional trends graphs by other demographics are provided in Appendix 4 (primary schools) and Appendix 5 (secondary schools).

RQ1 Have there been changes in student perceptions of school connectedness over time, prior to, and immediately after the implementation of the WSA?

Trends graphs for primary school indicate relatively flat relationships over time, with some evidence of declines in school liking (Figure 1). There is no indication of change in trend post-implementation of the WSA. Statistically, the unadjusted models provided evidence of a significant decline for staff-student relationships (OR=0.74, $p<0.001$; OR=0.85, $p=0.003$), liking school (OR=0.84, $p=0.020$; OR=0.66, $p<0.001$), and school belonging (OR=0.77, $p<0.001$; OR=0.86, $p=0.031$) in 2023 and 2024, respectively, relative to the reference year of 2019. For student relationships, there were significantly lower perceptions in 2023 (OR=0.69, $p<0.001$) relative to 2019, but was no longer significant in 2024 (OR=0.92, $p=0.124$). Odds of having an adult to confide in was significantly lower in 2021 (OR=0.79, $p=0.015$) and 2024 (OR=0.77, $p<0.001$) relative to 2019, but not in 2023 (OR=0.87, $p=0.072$). There was no evidence of a time trend in school decision-making. There was evidence of a negative linear trend across survey years for staff-student relationships ($p=0.0029$), liking school ($p<0.001$) and having a trusted adult ($p<0.001$) (Table 3).

In secondary schools, the trends graphs show more convincing evidence of change over time, with no evidence of any dramatic shift in change immediately post-introduction of the WSA (Figure 2). Those outcomes that were declining prior to the WSA continue to decline. Statistically, there is evidence of significant declines in all six outcomes in 2023 relative to the reference years [staff-student relationships (OR=0.77, $p<0.001$), student relationships (OR=0.38, $p<0.001$), student decision making (OR=0.76, $p<0.001$), liking school (OR=0.31, $p<0.001$), school belonging (OR=0.72, $p<0.001$), adult to confide in (OR=0.88, $p<0.001$)]. All outcomes had significant negative linear trends ($p<0.001$) (Table 4).

RQ2: Do trends in student perceptions of school connectedness since 2001 vary by age, gender and family affluence?

In primary school, after controlling for cohort effect, girls had significantly higher perceptions of staff-student relationships (OR=1.19, $p<0.001$), student decision-making (OR=1.16, $p<0.001$), liking school (OR=1.48, $p<0.001$) and higher odds of having an adult to confide in (OR=1.31, $p<0.001$), than boys. However, girls had significantly lower perceptions of student relationships (OR=0.86, $p<0.001$) than boys (Table 3). In secondary school, girls reported significantly lower staff-student relationships (OR=0.62, $p<0.001$), student relationships (OR=0.57, $p<0.001$), student decision making (OR=0.80, $p<0.001$), liking school (OR=0.75, $p<0.001$) and school belonging (OR=0.65, $p<0.001$) than boys. As the only item which remained in line with primary school gender differences, girls reported significantly higher odds of having an adult within the school that they could confide in than boys (OR=1.08, $p<0.001$) (Table 4).

In primary school, higher levels of family affluence were associated with significantly lower perceptions of student decision-making ($OR=0.97$, $p=0.013$) and lower odds of having a trusted adult at school ($OR=0.96$, $p=0.048$) but significantly higher odds of liking school ($OR=1.05$, $p=0.002$) and feeling a sense of belonging at school ($OR=1.08$, $p<0.001$). In secondary school, being in a medium or high family affluence tertile was associated with significantly more positive outcomes than being in a low family affluence tertile for all except student decision making, where findings are more mixed. Subgroup analysis by school year found a general trend of declines in all school connectedness outcomes with increasing age (Table 4).

RQ3: Are there significant interaction effects between year of survey completion and (i) age; (ii) gender; or (iii) family affluence?

In the primary school analyses there were two significant interaction effects. Margins plots and lincom estimates for each of these are provided in Appendix 4. For liking school, the best fitting model included an interaction between survey year and family affluence. It suggests that there is little association of family affluence with liking school in the 2019 and 2023 survey, however, in 2021, having higher family affluence was significantly associated with liking school ($OR=1.28$, $p<0.001$). This was replicated (although less strongly) in 2024 ($OR=1.07$, $p=0.003$) (Appendix 4). For the trusted adult outcome, an interaction was found between survey year and gender. It suggests that being a girl was associated with higher odds of having a trusted adult in 2019, 2023 and 2024, but in 2021, the odds converged with those of boys, resulting in no significance between the groups ($OR=1.04$, $p=0.768$) (Appendix 4).

In the secondary school data, the most complex model, including three interactions was the best fit for all outcomes. Interactions between survey year and the three covariates are reported in Appendix 6.

Most notably, gender interaction effects suggest a significant widening of differences between boys and girls over time for five out of the six outcomes (staff-student relationships, student relationships, student decision making, liking school, school belonging), with girls' perceptions declining more steeply. Figure 2 highlights that boys and girls responses tracked each other very closely up until around 2017/9, with clear gender differences emerging thereafter.

Family affluence interactions tested whether there were differences in survey year effect within each family affluence tertile. We found that within each tertile group, all outcomes were significantly less positive in 2023 relative to the reference year.

Discussion

There has been considerable change within the Welsh education system in recent years. In 2021, statutory guidance came into effect that required schools to implement a whole school approach to emotional and mental wellbeing (Welsh Government, 2021). This was followed in 2022 by changes to the school curriculum to include greater emphasis on health and wellbeing (Welsh Government, 2019). Coinciding with these changes was the COVID-19 pandemic, which has had well-documented impacts on young people's mental health, school attendance and education outcomes (Hammerstein et al., 2021; Kauhanen et al., 2023; Moscoviz & Evans, 2022; Swiderski et al., 2025; Windarwati et al., 2022). School connectedness is an important protective factor for young people's mental health (Bond, 2007) and one of the key foci of the whole school approach (Welsh Government, 2021). This paper provides contextual evidence of the long-term trends in school connectedness from large surveys in Welsh primary and secondary schools within which these changes have occurred, with the most recent data being drawn from surveys that were carried out post-implementation of the WSA and post-COVID.

We found evidence of declines in school connectedness in primary and secondary school students over time. Primary school analyses found statistical support for declines in staff-student relationships, liking school and sense of school belonging between 2019 and 2024. As earlier data are not available, it is not possible to say whether these declines pre-dated 2019. However, in secondary schools, where earlier data are available it suggests that declines in all six school connectedness outcomes were already apparent before the pandemic and before the introduction of WSA legislation. These declines also reflect evidence of declines in young people's mental health over the same period (Anthony et al., 2024).

For some of the outcomes it is difficult to ascertain how meaningful the change is. Trends graphs for the primary school outcomes appear relatively flat, even where analysis suggests a significant decline. While future surveys will be better placed to determine whether trends continue, this initial analysis potentially provides an early warning of declines in school connectedness over recent years that can be used to inform intervention. In secondary school, particularly for liking school and belonging outcomes, there is much clearer evidence of meaningful decline. Where there was clear and unambiguous evidence of declines prior to WSA, these appear to have continued beyond it. In the secondary school data, student relationships, liking school and belonging all show some decline immediately before WSA and then continued decline post-implementation. However, this is not evidence that WSA has not made any difference as whole school approaches often take a long time to have any meaningful impact (Cavanagh et al., 2024; Goldberg et al., 2019).

Subgroup trends offer evidence of which groups find building and sustaining school connectedness most challenging. This can support schools in decision-making around how to design and implement their own WSA strategies.

Most notably, for most outcomes, girls reported greater school connectedness in primary school than boys, but in secondary school, their perceptions tended to decline below those of boys. Interaction effects, particularly in the secondary school data, highlight that this gender disparity is widening over time, with girls' perceptions declining more steeply than boys. This effect has continued post-implementation of the WSA. These changes are reflected in earlier analyses from the same datasets that show increases in emotional difficulties and in perceptions of school pressure in girls in secondary over the same time period (Anthony et al., 2024; Armitage et al., 2025). There is also recent evidence of increases in misogynistic behaviour within schools and girls feeling less safe within the school environment (BBC News, 2025; Girlguiding, 2025; Jerrim & Kaye, 2025).

There is consistent evidence of age group differences in school connectedness. Mean values suggest that perceptions are highest in year 6 (final year of primary) and then decline with age. The reasons for these differences will lie in part due to developmental change, but may also reflect contextual change within the school environment, including increasing exam pressure (Armitage et al., 2025) and declines in academic motivation (Gnambs & Hanfstingl, 2016; Wang et al., 201). However, there is also some evidence that year 11 students (age 15–16) may not always follow this pattern, reporting more positive perceptions than year 10 students for some outcomes. This needs to be interpreted carefully within the context of increased absences post-pandemic, with highest persistent absences in Wales being in year 11 students. Recent data found that 45% of year 11 students were persistently absent in 2023-24 (absent for 10% or more of half-day school sessions) compared to 28% of year 7 students (Welsh Government, 2024). Only students in school could respond to the survey, and therefore the young people with lowest levels of school connectedness and highest levels of absence are less likely to be represented in the data.

Having higher socioeconomic status was associated with greater sense of school belonging and liking school in both primary and secondary schools. However, in primary school having lower socioeconomic status was associated with greater perceptions of having an adult to confide in, which was not reflected in secondary school data. This may reflect contextual differences in schools, where primary schools, due to smaller size, and the younger age of students, may be better placed to provide this support. Of particular interest in primary schools is the increased importance of high family affluence to liking school during 2021, possibly reflecting experiences of children being reintroduced to school post-pandemic. Research has found that the closing of schools during the pandemic resulted in greater learning losses for students from low-income neighbourhoods than those from more affluent areas (Agostinelli et al., 2022). Higher levels of family affluence were protective of educational inequality during the pandemic by providing greater access to digital devices and internet (Baker et al., 2020) and more familial support (Shen, 2023). There is also evidence that barriers to implementation of the WSA are not equally distributed across schools. This includes greater demands on schools and staff capacity in areas with higher pre-existing mental health challenges and with higher economic deprivation, as well as limited Welsh medium resources (Brown et al., 2025; Greenway et al., 2025). This provides a pathway by which inequality in school connectedness may be further exacerbated by WSA implementation.

Finally, it is worth considering whether there may be qualitative differences in how primary and secondary schools have engaged with the WSA. These may be in part due to contextual differences between primary and secondary schools, not least size, that may make it easier for the WSA to diffuse throughout primary schools. There is also evidence to suggest that primaries were more likely to already be operating in definably 'whole school' ways prior to the WSA (Estyn, 2019). Future survey rounds will be needed to further explore these potential differences, and comparison with other countries may help disentangle effects due to COVID recovery and those that might be due to the WSA.

Strengths and limitations

This study provides an important and novel perspective on trends in school connectedness in primary and secondary schools. It offers insights into how these trends are shaped by demographic characteristics and provides systems-level context for the effects seen. However, there are also a number of limitations to highlight.

In the primary school data, the sample size was relatively smaller in the first two survey rounds than the latter two, although careful sampling was carried out to preserve representativeness. A sensitivity analysis has been run weighting the data by local authority to account for any bias and indicates no substantive departure from the unweighted estimates.

Due to changes in the survey question about gender where a 'neither word describes me' option was added to 'boy' and 'girl' in 2019, all missing data for gender, or 'neither word describes me' responses have been excluded from the analysis for comparison across survey years. In the primary school data, this resulted in a very small number of exclusions, particularly in 2019, but there are more exclusions from the secondary data. It is possible that this group of young people have qualitatively different experiences of school, for example,

experiencing greater difficulties with peer relationships than other young people, and future research should explore their perceptions. There are also other groups who may experience particular challenges with building school connectedness, for example, young people with additional learning needs (Hebron, 2018). Future research should consider these groups of young people.

It is not possible to attribute any changes in school connectedness to a specific cause. The whole school approach has not been rolled out uniformly across schools, and many schools will already have been highly engaged in supporting young people's school connectedness and mental health prior to the introduction of the legislation. In addition, COVID, the new Curriculum for Wales and increases in the cost of living make unpicking impacts impossible. However, this study provides an important contextual perspective to inform the evaluation of the WSA. To build on this evidence, long term monitoring of the WSA should include capturing measures of school connectedness alongside measures of mental health.

Conclusion

The importance of school connectedness to young people's mental health outcomes has been well documented in data from primary and secondary schools. This study shows evidence of declines in school connectedness over time and highlights inequality across gender, age and socioeconomic status associated with these trends. There is no clear evidence of improvement in longstanding trends post-WSA, but longer term data are needed. Given the broader context of high student absence rates, challenges to staff wellbeing, and economic difficulties for families, this paper offers essential contextual grounding for understanding the implementation and subsequent impacts of the WSA on young people's connectedness to school.

Declarations

Author Contribution

All authors were involved in the conceptualisation of the manuscript. CD and RA analysed and interpreted the data; CD and RA wrote the manuscript and prepared the figures. RB and GM acquired financial support for the project and led on conceptualisation, research design and supervision. All authors read and approved the final manuscript.

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Data Availability

The data that support the findings of this study are available from the School Health Research Network (shrn@cardiff.ac.uk) on reasonable request.

Ethical approval and consent to participate

Ethical approval for all data collection and subsequent secondary data analysis was granted by XXX University School of Social Sciences Research Ethics Committee.

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Tables

Table 1: Sample characteristics of 10-11 year olds participating in the Welsh schools surveys in our study between 2019-2024 (primary school data).

	2019 (n=2,168)	2021 (n=1,845)	2023 (n=8,936)	2024 (n=13,726)
Number of schools surveyed	73	76	345	499
Gender				
Boy	1,103 (50.9%)	883 (47.9%)	4,351 (48.7%)	6,822 (49.7%)
Girl	1,050 (48.4%)	920 (49.9%)	4,380 (49.0%)	6,719 (49.0%)
Missing (.)	15 (0.7%)	42 (2.3%)	205 (2.3%)	185 (1.4%)
Family affluence				
Low	748 (34.5%)	535 (29.0%)	4,418 (49.4%)	4,139 (30.2%)
Medium	839 (38.7%)	722 (39.1%)	1,634 (18.3%)	4,943 (36.0%)
High	539 (24.9%)	462 (25.0%)	2,063 (23.1%)	3,402 (24.8%)
Missing (.)	42 (1.9%)	126 (6.8%)	821 (9.2%)	1,242 (9.1%)

Table 2: Sample characteristics of 11-16 year olds participating in the Welsh school surveys in our study between 2001 and 2023 (secondary school data)

	2001/02 (n=4,104)	2003/04 (n=7,057)	2005/06 (n=4,409)	2009/10 (n=9,194)	2013/14 (n=9,055)	2017/18 (n=103,971)	2019/20 (n=117,916)	2021/22 (n=119,513)	2023/24 (n=127,840)
Number of schools surveyed	61	64	70	83	82	193	201	204	204
Age									
Year 7	1,463 (35.7%)	1,451 (20.6%)	1,527 (34.6%)	1,923 (20.9%)	1,893 (20.9%)	22,634 (21.8%)	26,550 (22.5%)	25,935 (21.7%)	27,924 (21.8%)
Year 8	-	1,505 (21.3%)	-	2,026 (22.0%)	1,879 (20.8%)	22,421 (21.6%)	25,541 (21.7%)	25,171 (21.1%)	27,191 (21.3%)
Year 9	1,433 (34.9%)	1,506 (21.3%)	1,534 (34.8%)	1,908 (20.8%)	1,897 (21.0%)	22,208 (21.4%)	24,054 (20.4%)	25,075 (21.0%)	26,294 (20.6%)
Year 10	-	1,346 (19.1%)	-	1,687 (18.4%)	1,778 (19.6%)	19,704 (19.0%)	21,866 (18.5%)	22,757 (19.0%)	23,923 (18.7%)
Year 11	1,208 (29.4%)	1,249 (17.7%)	1,348 (30.6%)	1,650 (18.0%)	1,608 (17.8%)	17,004 (16.4%)	19,905 (16.9%)	20,575 (17.2%)	22,508 (17.6%)
Gender									
Boy	2,116 (51.6%)	3,425 (48.5%)	2,172 (49.3%)	4,594 (50.0%)	4,565 (50.4%)	50,452 (48.5%)	58,115 (49.3%)	60,315 (50.5%)	63,993 (50.1%)
Girl	1,974 (48.1%)	3,631 (51.5%)	2,237 (50.7%)	4,565 (50.0%)	4,457 (49.2%)	51,458 (49.5%)	58,610 (49.7%)	57,219 (47.9%)	62,387 (48.8%)
Missing (.)	14 (0.3%)	1 (0.0%)	0 (0.0%)	35 (0.4%)	33 (0.4%)	2,061 (2.0%)	1,191 (1.0%)	1,979 (1.7%)	1,460 (1.1%)
Family affluence									
Low	1,151 (28.1%)	1,745 (24.7%)	1,144 (26.0%)	2,929 (31.9%)	3,317 (36.6%)	33,597 (32.3%)	38,267 (32.5%)	31,338 (26.2%)	41,529 (32.5%)
Medium	1,545 (37.7%)	2,704 (38.3%)	1,687 (38.3%)	3,272 (35.6%)	2,843 (31.4%)	30,700 (29.5%)	34,078 (28.9%)	45,215 (37.8%)	36,090 (28.2%)
High	952 (23.2%)	1,932 (27.4%)	1,302 (29.5%)	1,681 (18.3%)	2,619 (28.9%)	33,366 (32.1%)	38,465 (32.6%)	37,518 (31.4%)	41,548 (32.5%)
Missing (.)	456 (11.1%)	676 (9.6%)	276 (6.3%)	1,312 (14.3%)	276 (3.1%)	6,308 (6.1%)	7,106 (6.0%)	5,442 (4.6%)	8,673 (6.8%)

Table 3: Primary school analysis: Regression models examining change over time in school connectedness outcomes among students in Wales between 2019 and 2024. FAS = family affluence scale.

Staff-student relationships					Student relationships				Student decision making			
Main effect of cohort (unadjusted) (N=24,510)			Main effect of cohort (adjusted for gender, family affluence) (N=22,506)		Main effect of cohort (unadjusted) (N=23,797)		Main effect of cohort (adjusted for gender, family affluence) (N=21,933)		Main effect of cohort (unadjusted) (N=23,560)		Main effect of cohort (adjusted for gender, family affluence) (N=21,756)	
OR, 95%CI	P value		OR, 95%CI	P value	OR, 95%CI	P value	OR, 95% CI	P value	OR, 95%CI	P value	OR, 95% CI	P value
<u>2019</u>	<u>ref</u>	-	<u>ref</u>	-	<u>ref</u>	-	<u>ref</u>	-	<u>ref</u>	-	<u>ref</u>	-
2021	0.94 (0.82, 1.08)	0.397	0.98 (0.85, 1.13)	0.759	1.04 (0.91, 1.19)	0.525	1.06 (0.93, 1.22)	0.378	1.03 (0.90, 1.18)	0.642	1.04 (0.90, 1.20)	0.566
2023	0.74 (0.66, 0.83)	<0.001	0.78 (0.69, 0.87)	<0.001	0.69 (0.62, 0.77)	<0.001	0.69 (0.62, 0.78)	<0.001	1.03 (0.92, 1.15)	0.617	1.04 (0.93, 1.17)	0.495
2024	0.85 (0.76, 0.95)	0.003	0.89 (0.80, 0.99)	0.034	0.92 (0.83, 1.02)	0.124	0.93 (0.84, 1.04)	0.192	1.03 (0.93, 1.15)	0.560	1.05 (0.94, 1.17)	0.415
Girl	-	-	1.19 (1.14, 1.25)	<0.001	-	-	0.86 (0.82, 0.90)	<0.001	-	-	1.16 (1.10, 1.21)	<0.001
FAS	-	-	0.98 (0.95, 1.00)	0.098	-	-	1.01 (0.99, 1.04)	0.281	-	-	0.97 (0.94, 0.99)	0.013
Linear-by-linear test for trend	z=-2.974; p=0.0029		-		z=-0.843; p=0.3992		-		z=-0.479; p=0.6320			

Liking school				School belonging				Adult to confide in				
Main effect of cohort (unadjusted) (N=25,379)		Main effect of cohort (adjusted for gender, family affluence) (N=23,200)		Main effect of cohort (unadjusted) (N=24,379)		Main effect of cohort (adjusted for gender, family affluence) (N=22,394)		Main effect of cohort (unadjusted) (N=24,688)		Main effect of cohort (adjusted for gender, family affluence) (N=22,651)		
OR, 95%CI	P value	OR, 95%CI	P value	OR, 95%CI	P value	OR, 95%CI	P value	OR, 95%CI	P value	OR, 95%CI	P value	P value
2019	ref	-	ref	-	ref	-	ref	-	ref	-	ref	-
2021	0.92 (0.77, 1.11)	0.381	0.92 (0.76, 1.11)	0.390	0.91 (0.77, 1.09)	0.306	0.93 (0.78, 1.12)	0.439	0.79 (0.65, 0.95)	0.015	0.81 (0.66, 0.99)	0.037
2023	0.84 (0.72, 0.97)	0.020	0.88 (0.75, 1.02)	0.090	0.77 (0.67, 0.89)	<0.001	0.82 (0.71, 0.95)	0.007	0.87 (0.74, 1.01)	0.072	0.90 (0.77, 1.05)	0.178
2024	0.66 (0.57, 0.76)	<0.001	0.66 (0.57, 0.76)	<0.001	0.86 (0.75, 0.99)	0.031	0.90 (0.79, 1.04)	0.143	0.77 (0.66, 0.89)	0.001	0.79 (0.68, 0.92)	0.003
Girl	-	-	1.48 (1.38, 1.57)	<0.001	-	-	1.05 (0.99, 1.12)	0.131	-	-	1.31 (1.22, 1.41)	<0.001
FAS	-	-	1.05 (1.02, 1.09)	0.002	-	-	1.08 (1.05, 1.12)	<0.001	-	-	0.96 (0.93, 1.00)	0.048
Linear-by-linear test for trend	z=-9.019; p<0.001		-	z=-0.785; p=0.4326				z=-4.019; p<0.001				

Table 4: Secondary school analysis: Regression models examining change over time in school connectedness outcomes among students in Wales between 2001 and 2023. FAS = family affluence scale.

Staff-student relationships					Student relationships				Student decision making			
Main effect of cohort (unadjusted)		Main effect of cohort (adjusted for gender, age, family affluence)			Main effect of cohort (unadjusted)		Main effect of cohort (adjusted for gender, age, family affluence)		Main effect of cohort (unadjusted)		Main effect of cohort (adjusted for gender, age, family affluence)	
(N=229,460)		(N=216,589)			(N=252,423)		(N=238,055)		(N=417,596)		(N=396,472)	
OR, 95%CI	P value	OR, 95%CI	P value		OR, 95%CI	P value	OR, 95% CI	P value	OR, 95%CI	P value	OR, 95% CI	P value
2001	-	-	-	-	0.91 (0.85, 0.98)	0.010	0.82 (0.76, 0.88)	<0.001	-	-	-	-
2003	-	-	-	-	0.88 (0.83, 0.94)	<0.001	0.86 (0.81, 0.92)	<0.001	-	-	-	-
2005	-	-	-	-	0.74 (0.69, 0.79)	<0.001	0.68 (0.63, 0.73)	<0.001	-	-	-	-
2009	:	:	:	:	ref	:	ref		-	-	-	-
2013	ref	:	ref	:	0.72 (0.68, 0.77)	<0.001	0.69 (0.65, 0.74)	<0.001	ref	:	ref	:
2017	0.97 (0.93, 1.02)	0.198	1.00 (0.95, 1.05)	0.884	0.55 (0.52, 0.58)	<0.001	0.52 (0.49, 0.55)	<0.001	0.90 (0.86, 0.94)	<0.001	0.90 (0.87, 0.94)	<0.001
2019	1.09 (1.04, 1.15)	<0.001	1.10 (1.05, 1.16)	<0.001	0.58 (0.55, 0.61)	<0.001	0.54 (0.51, 0.58)	<0.001	0.90 (0.87, 0.94)	<0.001	0.89 (0.86, 0.93)	<0.001
2021	0.86 (0.83, 0.90)	<0.001	0.87 (0.83, 0.91)	<0.001	0.48 (0.46, 0.51)	<0.001	0.45 (0.43, 0.48)	<0.001	0.82 (0.79, 0.86)	<0.001	0.84 (0.80, 0.87)	<0.001
2023	0.77 (0.73, 0.80)	<0.001	0.76 (0.73, 0.79)	<0.001	0.38 (0.36, 0.40)	<0.001	0.35 (0.34, 0.37)	<0.001	0.76 (0.73, 0.79)	<0.001	0.76 (0.73, 0.79)	<0.001
Girl	-	-	0.62 (0.61, 0.63)	<0.001	-	-	0.57 (0.56, 0.58)	<0.001	-	-	0.80 (0.79, 0.81)	<0.001
FAS: medium	-	-	1.07 (1.05, 1.09)	<0.001			1.22 (1.20, 1.24)	<0.001			1.02 (1.01, 1.03)	0.005
FAS: high	-	-	1.11 (1.09, 1.14)	<0.001			1.40 (1.37, 1.42)	<0.001			1.01 (1.00, 1.02)	0.204
Grade 8	-	-	0.45 (0.44, 0.46)	<0.001	-	-	0.56 (0.55, 0.57)	<0.001	-	-	0.48 (0.47, 0.49)	<0.001
Grade 9	-	-	0.32 (0.31, 0.32)	<0.001	-	-	0.44 (0.43, 0.45)	<0.001	-	-	0.29 (0.29, 0.30)	<0.001
Grade 10	-	-	0.28 (0.28, 0.29)	<0.001	-	-	0.37 (0.36, 0.38)	<0.001	-	-	0.20 (0.20, 0.20)	<0.001
Grade 11	-	-	0.32 (0.31, 0.33)	<0.001	-	-	0.39 (0.38, 0.40)	<0.001	-	-	0.17 (0.17, 0.18)	<0.001

Linear- by-linear test for trend	z=-25.081; p<0.001	-	z=-67.235; p<0.001	-	z=-22.209, p<0.001	-
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Liking school				School belonging				Adult to confide in				
Main effect of cohort (unadjusted)		Main effect of cohort (adjusted for gender, age, family affluence)		Main effect of cohort (unadjusted)		Main effect of cohort (adjusted for gender, age, family affluence)		Main effect of cohort (unadjusted)		Main effect of cohort (adjusted for gender, age, family affluence)		
(N=196,686)		(N=184,852)		(N=375,845)		(N=355,140)		(N=373,493)		(N=351,737)		
	OR, 95%CI	P value	OR, 95%CI	P value	OR, 95%CI	P value	OR, 95% CI	P value	OR, 95%CI	P value	OR, 95% CI	P value
2001	0.82 (0.75, 0.90)	<0.001	0.74 (0.67, 0.81)	<0.001	1.20 (1.10, 1.32)	<0.001	1.12 (1.02, 1.23)	0.020	-	-	-	-
2003	0.79 (0.73, 0.85)	<0.001	0.75 (0.69, 0.82)	<0.001	1.04 (0.96, 1.13)	0.303	1.05 (0.96, 1.13)	0.281	-	-	-	-
2005	0.75 (0.69, 0.82)	<0.001	0.67 (0.61, 0.74)	<0.001	-	-	-	-	-	-	-	-
2009	ref	:	ref	-	-	-	-	-	-	-	-	-
2013	0.92 (0.84, 0.99)	0.031	0.86 (0.79, 0.93)	<0.001	-	-	-	-	-	-	-	-
2017	0.49 (0.46, 0.53)	<0.001	0.46 (0.43, 0.50)	<0.001	ref	:	ref	:	ref	:	ref	:
2019	0.47 (0.44, 0.51)	<0.001	0.43 (0.40, 0.47)	<0.001	1.05 (1.03, 1.06)	<0.001	1.04 (1.02, 1.06)	<0.001	1.11 (1.09, 1.14)	<0.001	1.10 (1.08, 1.13)	<0.001
2021	0.44 (0.41, 0.47)	<0.001	0.41 (0.38, 0.43)	<0.001	0.92 (0.89, 0.94)	<0.001	0.90 (0.88, 0.92)	<0.001	0.89 (0.87, 0.92)	<0.001	0.88 (0.86, 0.91)	<0.001
2023	0.31 (0.29, 0.34)	<0.001	0.28 (0.26, 0.30)	<0.001	0.72 (0.70, 0.73)	<0.001	0.70 (0.68, 0.71)	<0.001	0.88 (0.87, 0.90)	<0.001	0.88 (0.86, 0.89)	<0.001
Girl	-	-	0.75 (0.74, 0.77)	<0.001	-	-	0.65 (0.64, 0.66)	<0.001	-	-	1.08 (1.06, 1.09)	<0.001
FAS: medium	-	-	1.15 (1.12, 1.18)	<0.001	-	-	1.22 (1.20, 1.25)	<0.001	-	-	1.10 (1.08, 1.12)	<0.001
FAS: high	-	-	1.31 (1.28, 1.34)	<0.001	-	-	1.39 (1.36, 1.41)	<0.001	-	-	1.15 (1.13, 1.17)	<0.001
Grade 8	-	-	0.44 (0.43, 0.46)	<0.001	-	-	0.55 (0.54, 0.56)	<0.001	-	-	0.63 (0.62, 0.65)	<0.001
Grade 9	-	-	0.36 (0.35, 0.38)	<0.001	-	-	0.41 (0.40, 0.42)	<0.001	-	-	0.49 (0.48, 0.50)	<0.001
Grade 10	-	-	0.29 (0.28, 0.30)	<0.001	-	-	0.33 (0.32, 0.34)	<0.001	-	-	0.44 (0.43, 0.45)	<0.001
Grade 11	-	-	0.25 (0.24, 0.26)	<0.001	-	-	0.31 (0.30, 0.31)	<0.001	-	-	0.51 (0.49, 0.52)	<0.001
Linear-by-linear	z=-51.936; p<0.001	-	-	-	z=-33.724; p<0.001	-	-	-	z=-19.580; p<0.001	-	-	-

Figures

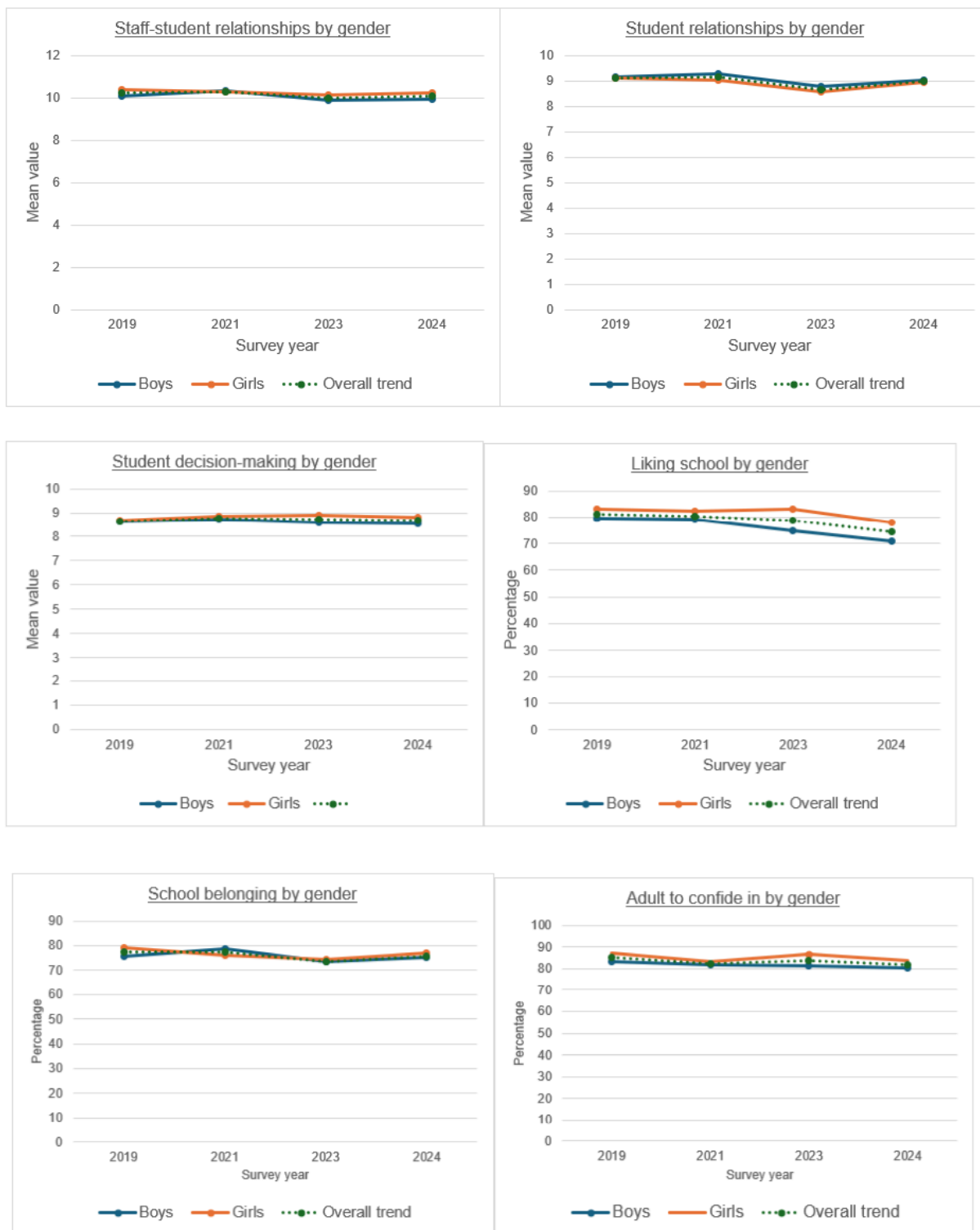


Figure 1

Trend graphs for primary school data by gender and overall trend. Staff-student relationships, student relationships and student decision-making are provided by mean values (and treated as ordinal variables in the analysis); liking school, belonging and adult to confide in are

provided by percentage. For liking school this is percentage that like school a lot or a bit; for school belonging and adult to confide in, this is percentage that agree or strongly agree with the statement. These are in line with the dichotomized variables used in the analysis.

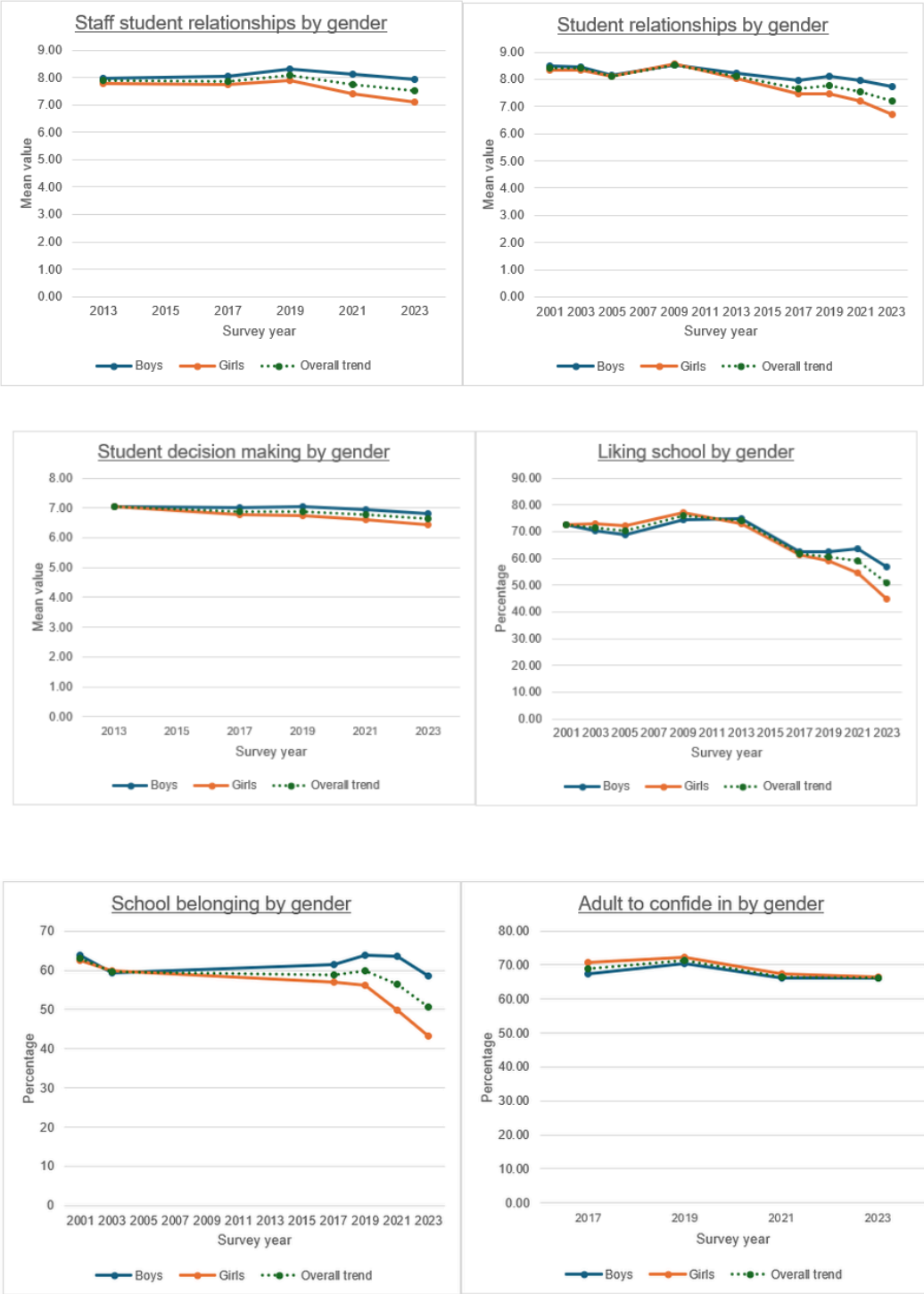


Figure 2

Trend graphs for secondary school data by gender and overall trend. Staff-student relationships, student relationships and student decision-making are provided by mean values (and treated as ordinal variables in the analysis); liking school, belonging and adult to confide in are provided by percentage. For liking school this is percentage that like school a lot or a bit; for school belonging and adult to confide in, this is percentage that agree or strongly agree with the statement. These are in line with the dichotomized variables used in the analysis.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [1.Appendices13surveyitemsandweightedestimates.docx](#)
- [2.Appendix4primaryschoolregressionestimates.docx](#)
- [3.Appendix5secondaryschoolregressionestimates.docx](#)
- [4.Appendix6secondaryschoolincomandmarginsplots.docx](#)