

This is an Open Access document downloaded from ORCA, Cardiff University's institutional repository: <https://orca.cardiff.ac.uk/id/eprint/136847/>

This is the author's version of a work that was submitted to / accepted for publication.

Citation for final published version:

Rice, Frances , Ng-Knight, Terry, Riglin, Lucy, Powell, Victoria, Moore, Graham F. , McManus, Chris I., Shelton, Katherine H. and Frederickson, Norah 2021. Pupil mental health, concerns and expectations about secondary school as predictors of adjustment across the transition to secondary school: A longitudinal multi-informant study. *School Mental Health* 13 , pp. 279-298. 10.1007/s12310-021-09415-z

Publishers page: <http://dx.doi.org/10.1007/s12310-021-09415-z>

Please note:

Changes made as a result of publishing processes such as copy-editing, formatting and page numbers may not be reflected in this version. For the definitive version of this publication, please refer to the published source. You are advised to consult the publisher's version if you wish to cite this paper.

This version is being made available in accordance with publisher policies. See <http://orca.cf.ac.uk/policies.html> for usage policies. Copyright and moral rights for publications made available in ORCA are retained by the copyright holders.





Pupil Mental Health, Concerns and Expectations About Secondary School as Predictors of Adjustment Across the Transition to Secondary School: A Longitudinal Multi-informant Study

Frances Rice¹ · Terry Ng-Knight² · Lucy Riglin¹ · Victoria Powell¹ · Graham F. Moore³ · I. Chris McManus⁴ · Katherine H. Shelton⁵ · Norah Frederickson⁴

Accepted: 27 January 2021 / Published online: 22 March 2021
© The Author(s) 2021

Abstract

The transition from primary to secondary schooling is challenging and involves a degree of apprehension. The extent to which pre-existing mental health difficulties, as well as pupil, parent, and teacher concerns and expectations about secondary school predict adaptation to secondary school, is unclear. In a three-wave, prospective longitudinal study, we examined associations between pre-transition concerns and expectations about moving to secondary school with mental health difficulties and demographic factors. We then evaluated whether these constructs predicted multiple indicators of adaptive pupil functioning at the end of the first year of secondary school (academic attainment, classmate behaviour rating, school liking and loneliness at school). We found children's concerns reduced across the transition period. Concurrent associations were identified between both concerns about secondary school and lower parent and teacher expectations that children would settle in well at secondary school, with mental health difficulties and special educational needs. Investigating associations with multiple indicators of adaptive functioning at secondary school, multivariable regression analyses controlling for a range of baseline factors (e.g. special educational needs), found children's concerns about secondary school to be specifically associated with loneliness. In contrast, children's mental health difficulties and both parent and teacher expectations of how well children would settle into secondary school were associated with a wider range of indicators of adaptive functioning at secondary school. When examining all predictors simultaneously, primary school teacher expectations showed longitudinal association with a wide range of indicators of successful transition. These findings suggest that assessing primary school teacher expectations may be useful for monitoring and supporting pupils through this transition period and could usefully inform school-based interventions to support transition and mental health.

Keywords Transition · Attainment · Longitudinal · Mental health · School

✉ Frances Rice
ricef2@cardiff.ac.uk

- ¹ Division of Psychological Medicine and Clinical Neurosciences, MRC Centre for Neuropsychiatric Genetics and Genomics, Wolfson Centre for Young People's Mental Health, Cardiff University, Cardiff, UK
- ² School of Psychology, University of Surrey, Guildford, UK
- ³ Centre for Development Evaluation Complexity and Implementation in Public Health Improvement (DECIPHer), Wolfson Centre for Young People's Mental Health, School of Social Sciences, Cardiff University, Cardiff, UK
- ⁴ Department of Clinical, Educational and Health Psychology, University College London, London, UK
- ⁵ School of Psychology, Cardiff University, Cardiff, UK

The Transition to Secondary School

The transition from primary to secondary school has been identified as a challenging period for children that has the potential to influence pupils' later mental health and academic attainment (Gillison et al., 2008; Rice, Frederickson, & Seymour, 2011; Riglin et al., 2013; Viner et al., 2012; West, Sweeting, Young, 2010; Zeedyk et al., 2003). Children making the transition to secondary school face a range of new experiences and expectations including new routines, changes in relationships with peers and teachers and meeting new academic standards (McLaughlin & Clarke, 2010; Seidman, Lawrence, Allen, & French, 1996; Wigfield et al., 1991; Zeedyk et al., 2003).

Periods of transition can influence short- and longer-term functioning (Fares et al., 2006; Rutter, 1989; Viner et al., 2012; West et al., 2010). For instance, the transition to secondary school has been associated with decreases in academic achievement and compliant behaviour and with changes in interpersonal relationships (Alspaugh, 1998; Burchinal, Roberts, Zeisel, & Rowley, 2008; Chung, Elias, & Schneider, 1998; Hirsch & Rapkin, 1987; Theriot & Dupper, 2010; Witherspoon & Ennett, 2011). Children who experience difficulties adjusting to the challenges of secondary school have been shown to be at increased risk of subsequent depression (West et al., 2010) and becoming less motivated (Richardson et al., 2015). For example, young people who retrospectively reported experiencing a more difficult transition to secondary school (at age 13) had higher symptoms of depression during adolescence which persisted beyond school leaving age (West et al., 2010). The academic pressures of secondary school have been linked to increasing rates of school burnout, which in turn is associated with mental health difficulties such as depressive symptoms (Fiorelli, De Stasio, Di Chiacchio, Pepe, & Salmela-Aro, 2017). Despite evidence indicating the importance of the transition to secondary school for children's mental health, functional and academic outcomes (West et al., 2010), there remain relatively few longitudinal, prospective research studies that track development across the transition period (Benner, 2011; Roberts, 2015; West et al., 2010).

Transition and the Need for Longitudinal Follow-Up

The transition to secondary school involves a period of assimilation, where concerns may initially be present for the majority, but where persistent apprehensiveness may indicate difficulties. Evidence suggests that school transition is almost always accompanied by concern for children, their parents and their teachers (Rice, Frederickson, & Seymour, 2011; Zeedyk et al., 2003). While these concerns usually represent a normative and short-lived response, for some children this anxiety is long-lasting and concerning, with evidence linking school and social anxiety to poor academic attainment (Van Armeringen, Mancini, & Fravolden, 2003; Weeks, Coplan, & Kingsbury, 2009) and continuing psychiatric difficulties throughout adult life (Angold, Costello, Farmer, Burns, & Erkanli, 1999; Gregory et al., 2007; Last, Perrin, Hersen, & Kazdin, 1996). It should also be recognised that transition to secondary school can be a period of concern for pupils' support figures such as their teachers, and their parents who may face parallel challenges of adjustment to new identities, expectations, roles and interactions (Hanewald, 2013). Thus, although nearly all children express some concerns about moving to secondary school,

for most, these decline at the end of the first term (Evangelou et al., 2008; Pratt & George, 2005; Rice et al., 2011). For children with mental health difficulties, however, symptoms may become troubling for children and teachers at academic transitions when expectations for academic performance and behaviour are likely to change (Richardson et al., 2015). Existing data describe children's concerns cross-sectionally before and after transition (Evangelou et al., 2008; Rice et al., 2011), but there is a lack of longitudinal research tracking how these concerns change over time. Nor is there data about links to mental health and how successfully pupils adjust and adapt to their new secondary school.

Transition as an Opportunity for Intervention

Given the inter-relations between children's mental health, academic attainment and connectedness to school, schools provide an opportunity for effective intervention to support young people's mental health and development (Bonell et al., 2018; Fazel et al., 2014; Viner et al., 2012). The transition to secondary school is an important developmental period because children who experience difficulties adjusting to this challenge have been shown to be at increased risk of later emotional difficulties (West et al., 2010). More generally, transitions have been identified as periods of heightened susceptibility to both adaptive and maladaptive change (Rutter 1989) meaning that they may be useful points at which to introduce intervention programmes (Vitaro & Tremblay, 2008). There are also pragmatic, procedural reasons to support this assertion in that many primary and secondary schools implement formal induction programs to support pupils through school transition. Neal, Rice, Ng-Knight, Riglin and Frederickson (2016) examined the longitudinal association between a wide range of the elements included in such programmes and children's anxiety post-transition. Findings highlighted the value for typically developing pupils of systemic strategies such as 'Bridging Units'—work projects pupils begin in primary school and complete in secondary school. By contrast, for atypically developing pupils with special educational needs or disabilities, such systemic strategies were associated with higher post-transition anxiety, suggesting the need for a more personalised approach. Moreover, studies comparing the perspectives of key stakeholders regarding their most salient concerns and the types of support desired, highlight discrepancies between the priorities of teachers and the areas for intervention identified by children and their parents (Bagnall, Skipper, & Fox, 2019; Zeedyk et al., 2003). The potential value of additional programmes targeted at vulnerable groups of pupils has also been highlighted (Evangelou et al., 2008; Mac Iver, & Epstein, 1991; Rice et al., 2011). In

several countries, there is variation in the sorts of approaches employed by schools in their transition programs (Evangelou et al., 2008; Roberts, 2015; Victorian Auditor-General, 2015) and relatively little research has been done on how to best identify pupils who may be at increased risk of poor outcome following transition and on evaluating tools and resources for the purpose of identifying such pupils (Galton et al., 1999; Evangelou et al., 2008). This is an aspect which we hope the investigation reported in this paper will help to address. Such work would be useful in identifying individuals most in need of additional support as well as for aiding the systematic evaluation, refinement and development of transition support programmes (Hollon et al., 2002; Moore et al., 2015; Sutherland et al., 2010).

Defining Adaptive Functioning Post-transition

Adaptive functioning following the transition to secondary school can be broadly conceptualised as involving both academic attainment and connectedness to school (West et al., 2010). Specifically, indicators of positive functioning following the transition to secondary school include meeting expected standards of academic attainment and appropriate classroom behaviour, as well as developing bonds with the new school through good quality peer and teacher relationships (Appleton, Christenson, Kim, & Reschly, 2006; Birch & Ladd 1996; Ladd et al., 1996; Ladd 1989). In addition to indicators of pupil achievement and classroom behaviour (Bailey & Baines, 2012; Benner, 2011; Galton et al., 1999) research on the transition to secondary school should also consider areas of adjustment that are particularly important to children such as social integration and connectedness to secondary school (Pratt & George, 2005; Rice et al., 2011). This argument is underscored by observations that schools play an important role in children's academic, cognitive, social, emotional and psychological development (Fazel et al., 2014; McNeely & Falci, 2004; Resnick et al., 1997; Richardson et al., 2015) and by research indicating that school attachment (which includes a feeling of belonging to school, liking school and positive peer relationships at school; Libbey, 2004) is associated with indicators of school performance, such as academic performance and mental health (Libbey, 2004; Shochet, Dadds, Ham, & Montague, 2006; Viner et al., 2012).

The Current Study

School adjustment is generally considered to be a multidimensional construct (e.g. Battistich, Solomon, Kim, Watson, & Schaps, 1995; Rutter, Maughan, Mortimore, Ouston, &

Smith, 1979), and numerous attitudes and areas of functioning are known to be adversely affected by the transition to secondary school. For example, both behavioural and cognitive engagement decline during the secondary school period (Engels, Pakarinen, Lerkkanen, & Verschueren, 2019), children's satisfaction with school decreases (Hirsch & Rapkin, 1987) and academic attainment tends to decline (Alspaugh, 1998; Rosenblatt & Elias, 2008). Nevertheless, assessing change in single aspects of children's functioning will not provide a comprehensive assessment of successful transition, so multi-domain, multi-contextual measurement strategies are required (Cicchetti, 1993).

To date, no single theoretical framework is specifically concerned with measuring the success of transitions to secondary school. Thus, we draw on research into early school transitions, as this is the only body of work that defines pupil functioning in the context of school transitions (Birch & Ladd, 1996; Ladd & Kochenderfer, 1996). Ladd and Kochenderfer (1996) identified the four primary cognitive and interpersonal demands placed on children entering a new school as: progressing academically; meeting the expectations of the new school and teachers; becoming comfortable in the new school environment; and gaining acceptance by peers. This framework emphasises that children's post-transition functioning should not only be defined using traditional measures of academic performance, but also in terms of their behaviour at school, their own perceptions of school and their social experiences in school (e.g. Birch & Ladd, 1996). In the current study, we selected measures of each of these four domains to measure the extent to which pupils successfully adapt to secondary school.

Post-transition functioning in each domain was operationalised following suggestions in Birch and Ladd (1996), where: (1) *academic performance* was measured using readily available data from school records on teacher assessments of pupils' attainment; (2) *behaviour* was assessed using peer ratings of pupils' behaviour. We focused on classmate ratings given that children spend significant amounts of time with their classroom peers, and in the UK, schools do not consistently keep central records on behavioural infractions; (3) *perceptions of school* were assessed by asking pupils' to report how much they like their new school; (4) *social experiences in school* were assessed by asking pupils' to report on their feelings of loneliness at school. Measures were chosen for both theoretical alignment with the domains identified and to include a wide range of assessment methods (objective records, peer nominations, self-reports) and thus reduce the likelihood of spurious associations due to common method variance (e.g. Rutter, Pickles, Murray, Eaves, 2001).

This study involved a three-wave investigation of pupils making the transition to secondary school. It tracked pupils over a 12-month period beginning in the last year of primary

school (wave 1) and ending at the end of the first year of secondary school (wave 3). Information from child-, parent- and teacher-reported questionnaires, peer assessments, academic attainment and socio-demographic factors from school records were collected.

The aims of this study were to:

1. Describe the concerns about secondary school commonly reported by children and how these change pre- and post-transition.
2. Identify the demographic, attainment and mental health characteristics of children who expressed higher levels of concerns about secondary school and/or were expected by parents and teachers as unlikely to settle in well at secondary school.
3. Examine whether concerns and expectations about secondary school and mental health difficulties prior to transition predicted multiple indicators of adaptive functioning at secondary school (academic attainment, classmate-rated behaviour and school attachment).
4. Evaluate which pre-transition measures (concerns, expectations and mental health difficulties) may be more practically useful in predicting later adaptive outcomes.

Method

Participants and Design

Children, their parents and teachers were recruited from nine secondary schools in the South East of England, UK. All secondary schools were mixed-sex, non-selective secondary schools which were collectively representative of secondary schools in the local region in terms of demographic factors including socioeconomic disadvantage, examination pass rates and the proportions of pupils from minority ethnic backgrounds (Department for Education, 2011; Ng-Knight et al., 2016). Data collection was conducted on three occasions over a twelve-month period. The first assessment (Wave 1; pre-transition) took place during the last term of the last year of primary school (year 6; children aged 10–11 years). Data at wave 1 were available from 744 children (child response rate = 39%), 745 parents (parent response rate = 35%) and 504 primary school teachers (primary teacher response rate = 65%). The second assessment (Wave 2, post-transition) took place during the first term of the first year of secondary school (year 7; children aged 11–12 years). Data at wave 2 were available from 1712 children (response rate 89%). The third assessment (Wave 3, post-transition) took place during the last term of the first year of secondary school (year 7; pupils aged 11–12 years), and data were available from 1646 children (response rate = 88%).

At the first assessment, parents whose child was due to move from a primary school to the participating secondary schools were sent questionnaires for parent and child by post. Where parents provided consent, primary school teachers were contacted by letter and asked to complete a questionnaire. At the second and third assessments, questionnaires for pupils were administered at in-school assessments. Academic attainment data were collected from school records at the end of the first year of secondary school. The analyses presented here primarily focus on the subsample with data available pre-transition and post-transition at the end of the first year of secondary school when adaptive pupil outcomes were assessed ($N = 623$ for analyses of pupil-rated wave 1 data; $N = 653$ for parent-rated wave 1 data and $N = 433$ for primary teacher-rated wave 1 data). There were 667 individuals with data at baseline from either pupil, parent or teacher report who also completed the follow-up at wave 3 (see results Table 1). This sub-sample had slightly higher academic attainment scores than the full sample but showed similar levels of psychological adjustment at secondary school (Ng-Knight et al., 2018). Inverse probability weighting (IPW; Seaman & White, 2013) was used to address potential bias caused by missing data at baseline (see statistics section). This study was reviewed and approved by the university research ethics committee. Parents were given the opportunity to opt their children out of the study at each assessment. Informed pupil assent was obtained prior to questionnaire administration, and children were able to withdraw at any time.

Measures

Pre-transition Predictor Variables

Transition Concerns

Pupil concerns about secondary school were assessed with an adapted version of the School Concerns Questionnaire

Table 1 Characteristics of the sample completing baseline and follow-up assessments

Characteristic	%	Range by school (minimum %, maximum %)
Eligible for free school meals	14.5	4.2, 28.4
English as a first language	72.7	22.8, 98.4
Black, Asian and Minority Ethnic Group	37.2	3.3, 91.0
Any Special Educational Need	15.3	9.8, 33.3
Gender (% male)	50.2	41.1, 59.6

Note $N = 667$

(Rice et al., 2011). Pupils were required to rate their level of concern for each of 20 items on a 10-point Likert scale from 0 not at all worried to 10 extremely worried with a possible range of 0 to 200. Potential concerns about secondary school included: ‘size of school, following a timetable, being bullied, being able to do the work’. Three additional items (losing old friends, discipline and detentions, getting lost) were included in this adapted version because these were the three most frequently reported additional concerns described by pupils when they were given the opportunity to write down and rate up to two additional concerns (Rice et al., 2011). Pupil concerns were assessed on three occasions: once pre-transition and twice post-transition (wave 1 $\alpha=0.920$; wave 2 $\alpha=0.921$; wave 3 $\alpha=0.919$; the questionnaire is shown in supplementary material).

Expectations of Settling into Secondary School

This was assessed using parent and teacher reports on a questionnaire designed for use in this study (The Secondary Transition Adjustment Rating Tool; START). This measure comprises four items which relate to academic performance, social relationships with peers, social relationships with teachers and the new routine, rated on a 5-point scale from 1 = strongly agree to 5 = strongly disagree with a possible range of 5 to 25 (see Fig. 1). These items were

designed to concisely assess the major areas of adaptation to secondary school. Items were reverse coded and total scores calculated so that higher scores indicated expectations of better post-transition adjustment (parent $\alpha=0.762$; teacher $\alpha=0.827$).

Academic Attainment at Primary School

Academic attainment at baseline was measured using the average score of results of formal National Curriculum Tests in Maths and English. The range was below level 2 (lowest) to level 6 (highest) which was coded on a numeric scale with a range of 1 through 6 ($\alpha=.762$).

Mental Health

Parents completed the Strengths and Difficulties Questionnaire (SDQ) (Goodman 1997) to assess children’s mental health pre-transition. The SDQ includes 20-items comprising four problem scales (conduct ($\alpha=0.457$), emotional problems ($\alpha=0.738$), peer problems ($\alpha=0.654$) and hyperactivity ($\alpha=0.764$) and provides a brief, valid screening measure to detect a range of mental health difficulties. There is also a summed score of the four problem scales which captures total difficulties ($\alpha=0.829$) with a possible range of 0 to 40. The internal consistency estimates observed in

The Secondary Transition Adjustment Rating Tool (START)

Question stems

Parents (pre-transition): Do you expect your child to settle in well at secondary school?

Teachers (pre-transition): Do you expect this child to settle in well at secondary school?

Parents (post-transition): My child has settled in well at secondary school...

Teachers (post-transition): This child has settled in well at secondary school...

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
● Academically	1	2	3	4	5
● Socially (with peers)	1	2	3	4	5
● Socially (with teachers)	1	2	3	4	5
● To the new routine	1	2	3	4	5

Fig. 1 The Secondary Transition Adjustment Rating Tool (START)

the current sample are in line with those reported previously (Goodman, 2001).

Post-transition Outcome Variables

Academic Attainment at Secondary School

Academic attainment was assessed at wave 3 (at the end of the first year of secondary school) by teacher ratings of pupils' attainment in English, Mathematics and Science. For seven of the nine participating schools these were teacher-rated National Curriculum attainment levels where the range was 2c (lowest) to 8b (highest). The number represents the key stage level and the letter whether pupils have just started to work at that level (c), is working well within that level (b), or reached the top of that level (a). Typically, pupil attainment is at levels 4 to 5 by the end of Year 7, when these data were collected. Data were recoded into a continuous scale for analysis purposes (ranging from 1 (2c) through to 20 (8b)). For the two remaining schools, teacher-rated International Middle Years Curriculum attainment levels were used and the four levels were recoded into a numerical scale, such that pass = 1, merit = 2, credit = 3 and distinction = 4. Attainment scores were standardised within schools to account for these differences in measurement. Thus, scores represent rank order academic attainment in English, Maths and Science within schools. Combining standardised scores for English, Mathematics and Science showed good internal consistency ($\alpha = 0.85$).

Classmate Behaviour Rating

Co-operative and disruptive behaviour was measured using a peer-reported assessment (Coie, Dodge, & Coppotelli, 1982), which was adapted to allow unlimited nominations. Pupils identified individuals from a list of classmates who fitted behavioural descriptors of 'cooperative' and 'disruptive'. The descriptors were defined as, 'This person is really good to have as part of your group because they are agreeable and cooperate. They join in, share and give everyone a turn' and, 'This person has a way of upsetting everything when he or she gets in a group. They don't share and try to get everyone to do things their way', respectively. The proportion of classmates nominating each child as fitting the descriptors was analysed. High test-retest stability coefficients have been reported for this measure (Frederickson & Graham, 1999). The observed ranges were 0.08 to 1.00 for cooperative behaviour and 0.00 to 0.50 for disruptive behaviour.

School Attachment

School attachment has been defined as comprising concepts such as liking school and positive peer relationships at school (Libbey 2004; Shochet et al., 2006). We assessed school liking and loneliness at school to capture this construct.

School Liking

Pupils' feelings about secondary school were measured using five items (e.g. *I like my school; I would be very sad if I had to go to a different school*) with a four-point response scale coded 1 (NO!!); 2 (no); 3 (yes); 4 (YES!!) adapted from the Liking School scale developed by the Child Development Project (Solomon et al., 2000). Internal consistency ($\alpha = 0.81$) was consistent with those found in other studies (Battistich et al., 1995). The possible range was 5 to 20.

Loneliness

Loneliness at secondary school was measured using the school-oriented version of the Loneliness in Children scale (Asher & Wheeler, 1985), consisting of seven items (e.g. *I feel alone at school; I have nobody to talk to in class*) rated on a five-point response scale ranging from 'not true at all' to 'always true' ($\alpha = 0.81$). The possible range was 7 to 35.

Socio-Demographic Factors

Secondary schools provided data on children's gender (male = 0, female = 1), eligibility for free school meals (FSM: no = 0, yes = 1) and special educational needs (SEN). SEN were rated on an ordinal scale to reflect increasing severity (none = 0, school action = 1; school action plus = 2; statement of special educational needs = 3). School action involves the provision of additional support by school staff, school action plus involves the provision of additional support by/in consultation with special needs professionals additional to the school, and a statement involves the provision of legally mandated additional support following a multi-disciplinary special needs assessment. School action involves the provision of additional support by school staff, school action plus involves the provision of additional support by/in consultation with special needs professionals additional to the school, and a statement involves the provision of legally mandated additional support following a multi-disciplinary special needs assessment.

Statistical Analyses

Longitudinal changes in total pupil concerns were examined using repeated-measures ANOVA. Gender was included as a grouping variable because gender differences in pupil concerns have been reported in the literature (Anderson, Jacobs, Schramm, & Splittgerber, 2000; Rice et al., 2011; Riglin et al., 2013). Pearson correlations were used to examine inter-correlations between key study variables. To examine associations between binary (e.g. gender) and continuous variables, polyserial correlations were calculated. Tetrachoric correlations were calculated for pairs of binary variables. For examining correlations between ordinal (i.e. special educational needs status) and binary variables, the ordinal variable was dichotomised (i.e. any special educational needs versus no special educational needs) and a tetrachoric correlation calculated. Linear regression was used to examine longitudinal associations and covariates were entered simultaneously. The following variables were included as covariates: child gender, eligibility for free school meals (an indicator of socio-economic disadvantage) and special educational needs. The relative contributions of concerns, expectations and mental health difficulties to functioning in secondary school were examined by entering terms simultaneously as predictors into a linear regression. Distributions of predictor and outcome variables were plotted, and skewness and kurtosis values examined. All predictor and outcome variables were approximately normally distributed with the exceptions of classmate nominated disruptive behaviour and loneliness at school, which were positively skewed. To assess the impact of school-level variation on post-transition outcome variables, intraclass correlations were calculated. All predictor variables were normally distributed. For longitudinal associations, complete case analyses were re-analysed using inverse probability weighting (IPW) to address potential bias caused by missing data. IPW has been recommended where whole blocks of data are missing for a large proportion of individuals (Seaman & White, 2013). Weights were derived from a logistic regression analysis between a set of measures available for the majority of pupils from school records (age, school, attendance, academic attainment, ethnicity, English as an additional language (EAL) and free school meals (FSM) entitlement) and missing data. We additionally selected variables that did not overlap with covariates included in the regression model. Variables independently associated with missingness were entered into a multivariable model, and the variables included were English as an additional language, school and attendance. These variables explained missingness, and there was no indication of poor fit according to the Hosmer and Lemeshow test ($\chi^2 = 2.908$, $df = 8$, $p = 0.940$). All predictors had less than 11% missingness.

Weights ranged from 1 to 9.12. Intraclass correlations were: (0.045, 95% CI = 0.01, 0.15 for classmate-rated cooperative behaviour; 0.010, 95% CI = 0.001, 0.10 for classmate-rated disruptive behaviour; 0.02, 95% CI = 0.001, 0.10 for loneliness at school; 0.002, 95% CI = 0.001, 0.46 for educational attainment; 0.07, 95% CI = 0.02, 0.19 for school liking). Thus, ICCs were small, with less than 1% of the variance explained at school level for all outcome variables except school liking where 7% of the variance was at the school level. We therefore ran sensitivity checks for the outcome school liking and corrected standard errors for clustering at the school level.

Results

Sample Characteristics

Table 1 shows descriptive socio-demographic characteristics of the sample and variation by school. The main analysed sample comprised 667 individuals with data at baseline from either pupil, parent or teacher report who also completed the follow-up assessment at wave 3.

Children's Concerns

Figure 2 illustrates scores for each item on the pupil concern questionnaire across the three assessment waves. Average scores for males and females separately are shown in Fig. 3. Means for the full sample are available in Supplementary Table 1. The figures and mean values show that the most endorsed concerns for pre-transition pupils were getting lost, losing old friends, homework, discipline and detentions, and being bullied. Post-transition, by the end of year 7, the most endorsed concerns for pupils still included losing old friends, discipline and detentions, being bullied and homework. As shown in Fig. 2, total pupil concerns reduced over time ($F = 133.456$ (2, 530), $p < 0.001$ $\eta^2 = 0.349$; see Supplementary Table 1 for means). This reduction was significantly slower for girls as indicated by a significant time by gender interaction ($F = 9.337$ (2, 529), $p < 0.001$ $\eta^2 = 0.034$; see Fig. 3). Of the five most highly endorsed pupil concerns, visual inspection of Fig. 2 shows that there were slight differences in how these reduced over the first year of secondary school. Thus, whilst all concerns reduced significantly post-transition, visual inspection of Fig. 2 shows that post-transition, concerns about getting lost and homework reduced more substantially than concerns about losing old friends, getting bullied and discipline and detentions.

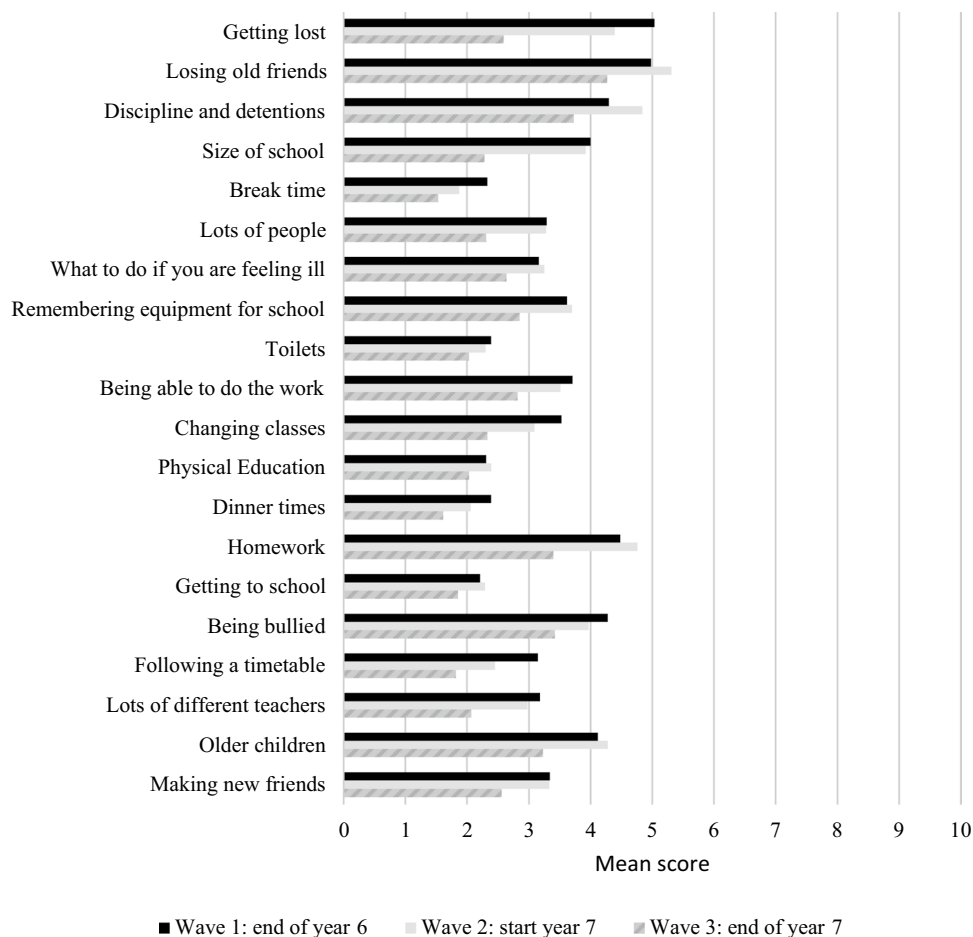
Fig. 2 Pupil Concerns Across Study Waves*Pupil Concerns Across Study Waves***Pupil Concerns and Parent/Teacher Expectations**

Table 2 shows cross-sectional descriptives and correlations for child concerns, parent and teacher expectations, mental health, socio-demographic features (e.g. special educational needs) and academic attainment during primary school. Children's pre-transition concerns were associated with special educational needs (polyserial correlation = 0.262, $p < 0.001$) and lower academic attainment Key Stage 2 scores ($r = -0.177$, $p < 0.001$). All the mental health scales were associated with child concerns with correlations ranging from $r = 0.128$, $p < 0.001$ for conduct problems to $r = 0.319$, $p < 0.001$ for emotional problems. Parent and primary teachers had the expectation that pupils with special educational needs ($r = -0.461$, $p < 0.001$ parent; $r = -0.584$, $p < 0.001$ teacher) and lower academic attainment scores ($r = 0.234$, $p < 0.001$ parent; $r = 0.520$, $p < 0.001$ teacher) would settle in less well to secondary school. Primary teachers anticipated that girls would settle into secondary school slightly more easily than boys as indicated by a small but significant correlation (polyserial correlation = 0.158,

$p < 0.01$). Nevertheless, female gender was associated with higher pupil-rated concerns about secondary school (polyserial correlation = 0.105, $p < 0.05$). Children's mental health difficulties (all scales) were associated with expectations that children would settle in less well. These inverse associations of mental health difficulties with expectations of settling in well to secondary school were greatest for the measure of total difficulties for both parent ($r = -0.439$, $p < 0.001$) and teacher ($r = -0.482$, $p < 0.001$) expectations about how children will settle into secondary school. We therefore focused on total difficulties as an overall indicator of pupil mental health in longitudinal analyses. In summary, children with higher mental health problems, lower academic ability and special educational needs were more likely to be concerned about their transition to secondary school and were rated by parents and teachers as less likely to settle in easily to secondary school. The magnitude of the correlations reported in Table 2 ranged from small (between 0.1 and 0.3) to medium (between 0.3 and 0.5) (Cohen, 1988).

Fig. 3 Pupil Concerns for Males and Females Separately Across Study Waves

Pupil Concerns for Males and Females Separately Across Study Waves

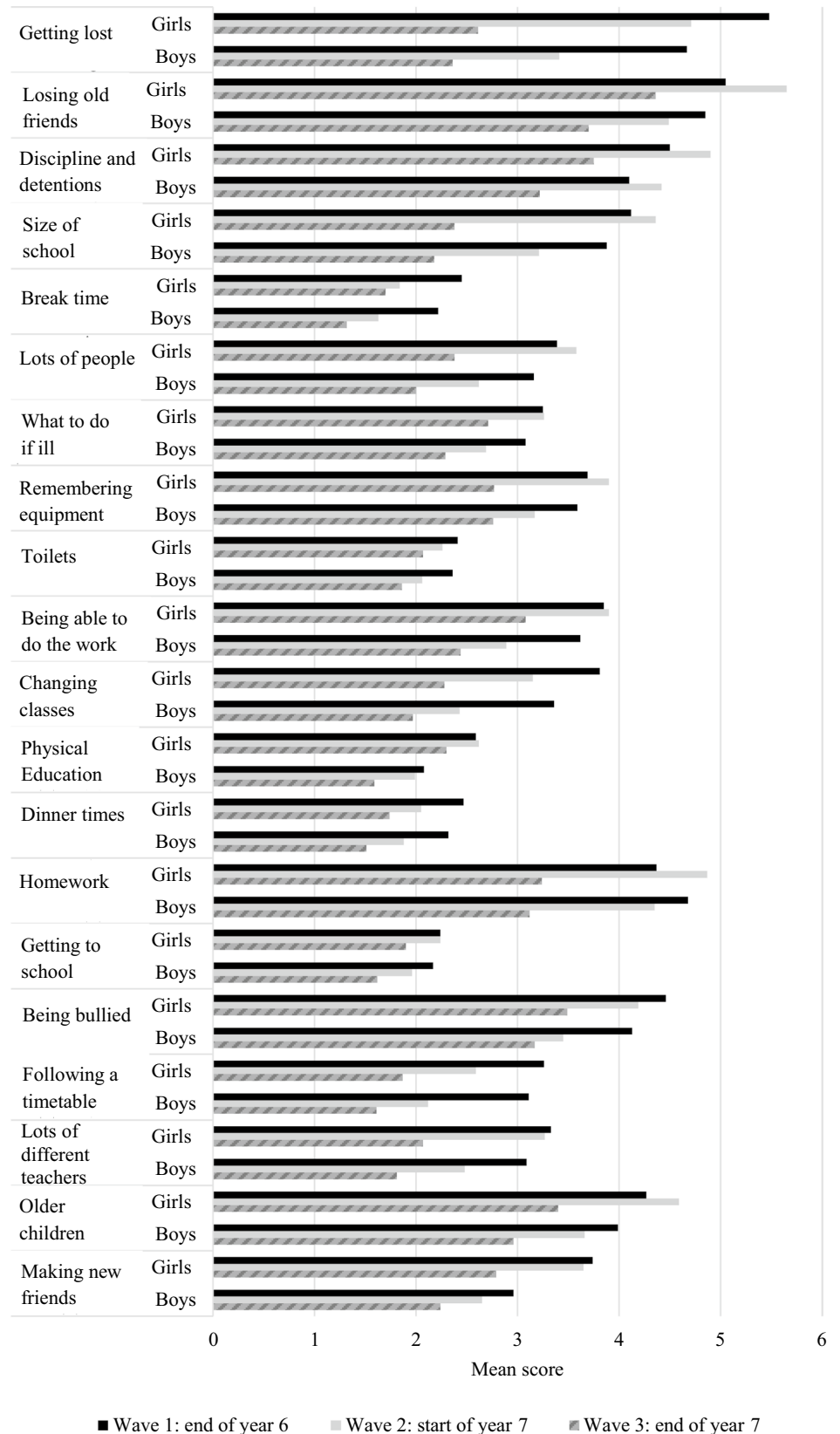


Table 2 Cross-sectional Correlations and Descriptive Statistics for Study Variables

Study variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Pupil concerns	–												
2. Parent expectations	–.295***	–											
3. Teacher expectations	–.121*	.353***	–										
4. Emotional problems	.319***	–.362***	–.318***	–									
5. Peer problems	.191***	–.276***	–.371***	.473***	–								
6. Conduct problems	.128***	–.179***	–.287***	.272***	.311***	–							
7. Hyperactivity	.162***	–.382***	–.400***	.314***	.289***	.458**	–						
8. Total difficulties	.286***	–.439***	–.482***	.746***	.702***	.637**	.763***	–					
9. FSM eligibility	–.006	.028	–.206***	.133*	.217***	.054	.021	.150*	–				
10. SEN status ^b	.262***	–.461***	–.584***	.354***	.362***	.295**	.412***	.479***	.246***	–			
11. EAL	–.041	.220***	.082	–.004	.088	.061	–.028	.023	.122*	–.047	–		
12. Attainment (year 6)	–.177***	.234***	.520***	–.248***	–.263***	–.168**	–.243***	–.324***	–.282***	–.591***	–.121**	–	
13. Female gender	.105*	.055	.158**	.036	–.092*	–.137**	–.250***	–.153***	–.024	–.169***	.002	–.061 ^a	–
Mean	70.01	16.47	16.63	1.88	1.39	1.00	2.90	7.16	.16	1.29	.29	4.23	.47
SD	30.51	2.26	3.00	2.22	1.78	1.28	2.49	5.62	.37	.66	.45	.69	.50

^a $p < .1$. * $p < .05$. ** $p < .01$. *** $p < .001$. N=433–1643 Acronyms: START=The Secondary Transition Adjustment Research Tool; FSM=Free School Meal eligibility; SEN=Special Educational Need status; EAL=English as an Additional Language. ^b to examine the association of SEN with binary variables, SEN status was dichotomised and a tetrachoric correlation calculated

Longitudinal Associations with Adaptive Pupil Outcomes at the End of First Year of Secondary School

Longitudinal associations between pre-transition adjustment measures (concerns; expectations; total mental health difficulties) and adaptive pupil outcomes were adjusted for special educational needs, child female gender and eligibility for free school meals as these variables were associated with post-transition outcomes (Table 3). Tables 4 and 5 show the unadjusted and adjusted longitudinal associations with pre-transition pupil adjustment measures and indicators of adaptive pupil functioning at secondary school. Table 4 shows that pupil-rated concerns about secondary school were associated with lower academic attainment and more loneliness at secondary school in unadjusted analyses. Adjusting for covariates meant that only the association with loneliness at secondary school remained (Table 5). For pre-transition parent expectations, pre-transition (i.e. primary) teacher expectations and total mental health difficulties, the pattern of results was very similar: these variables were associated with all indicators of adaptive functioning at secondary school (i.e. academic attainment, peer-rated classmate-rated cooperative and disruptive behaviour, school liking and loneliness at school). The only exception to this was that for pre-transition parent expectations, the association with disruptive behaviour was reduced when controlling for covariates. The pattern of results using IPW to address potential bias due to missing data was very similar (Supplementary Table 2).

Thus, parent and primary teacher pre-transition expectations showed evidence of predictive validity in that they were associated with multiple indicators of pupil adjustment at the end of the first year of secondary school. Children with mental health difficulties pre-transition settled into secondary school less well as indexed by lower academic attainment, less cooperative and more disruptive classmate-rated

behaviour, liking secondary school less and feeling lonelier at secondary school.

Finally, to evaluate which pre-transition measure may be most useful in predicting later outcomes, we entered all measures simultaneously in a regression model and examined associations with outcomes at secondary school (Table 6). Primary teacher expectations were consistently associated with four of the five indicators of adaptive functioning at secondary school. Independent effects were also seen for other predictors, namely, parent expectations for academic attainment and total difficulties for classmate-rated behaviour. Child concerns were associated with more loneliness at secondary school but fewer classmate ratings of disruptive behaviour when all measures were entered simultaneously. Results were very similar when using inverse probability weighting (Supplementary Table 3).

Discussion

In a prospective longitudinal study, we described children’s concerns about moving to secondary school and how these changed over the transition period. We also identified some of the demographic, academic and mental health characteristics of children with higher levels of concerns about moving to secondary school and children whose parents and teachers expected them to settle in less well to secondary school. We then evaluated measures of pre-transition concerns and parent and teacher expectations as predictors of adaptive pupil outcomes at the end of the first year of secondary school.

As expected, concerns reduced during the first year of secondary school. There were gender differences in the mean level and rate of change of pupil concerns. Girls endorsed higher total concerns and their concerns reduced at a slightly slower rate. Despite gender differences in the rates of reduction of pupil concerns, there was little evidence to suggest that girls settled in less well to secondary school as gender

Table 3 Demographic Information with Indicators of Post-Transition Adjustment to Secondary School

Study Variable	1	2	3	4	5	6	7	8	9
1. Free School Meal eligibility	–								
2. Special Educational Need status ^b	.246***	–							
3. English as an Additional Language	.122*	– .047	–						
4. Female gender	– .024	– .169***	.002	–					
5. Attainment (post-transition)	– .302***	– .649***	– .037	– .119***	–				
6 Cooperative classmate-rated behaviour	– .159***	– .374***	– .064 ^a	.206***	.399***	–			
7. Disruptive classmate-rated behaviour	.168***	.284***	.044	– .420***	– .334***	– .564***	–		
8. School liking	– .084*	– .032	– .025	.040	.067**	.148***	– .127***		
9. Loneliness at school	.041	.202***	– .018	.037	– .141***	– .197***	.115***	– .295***	–

Note N = 1331 to 1643. ^a $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$

^bto examine the association of SEN with binary variables, SEN was dichotomised and a tetrachoric correlation calculated

Table 4 Longitudinal associations with indicators of post-transition adjustment to secondary school (unadjusted)

Post-transition outcome	Academic attainment				Cooperative behaviour				Disruptive behaviour				School liking				Loneliness at school			
	β	95% CI		<i>p</i>	β	95% CI		<i>p</i>	β	95% CI		<i>p</i>	β	95% CI		<i>p</i>	β	95% CI		<i>p</i>
		<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>	
Pre-transition child-rated concerns	-.121	-.194	-.041	.003	-.081	-.159	.004	.061	.038	-.043	.110	.384	.017	-.061	.093	.682	.286	.186	.329	<.001
Pre-transition parent-rated expectations	.249	.173	.324	<.001	.205	.121	.281	<.001	-.119	-.184	-.033	.005	.104	.025	.182	.010	-.216	-.282	-.130	<.001
Pre-transition teacher-rated expectations	.502	.437	.607	<.001	.402	.297	.481	<.001	-.341	-.375	-.209	<.001	.107	.010	.201	.031	-.280	-.360	-.178	<.001
Pre-transition parent-rated total difficulties	-.320	-.395	-.247	<.001	-.309	-.379	-.224	<.001	.285	.186	.331	<.001	-.087	-.155	-.066	.033	.266	.172	.317	<.001

Table 5 Longitudinal associations with indicators of post-transition adjustment to secondary school (adjusted)

Post-transition outcome	Academic attainment				Cooperative behaviour				Disruptive behaviour				School liking				Loneliness at school			
	β	95% CI		<i>p</i>	β	95% CI		<i>p</i>	β	95% CI		<i>p</i>	β	95% CI		<i>p</i>	β	95% CI		<i>p</i>
		<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>	
Child concerns	-.045	-.114	.026	.217	-.047	-.126	.035	.269	.015	-.059	.089	.719	.013	-.069	.093	.771	.299	.195	.344	<.001
SEN	-.45	-.588	-.427	<.001	-.261	-.374	-.192	<.001	.255	.179	.342	<.001	.006	-.008	.1	.895	.072	-.011	.166	.086
Gender	-.003	-.071	.065	.932	.135	.05	.207	.001	-.313	-.352	-.211	<.001	.047	-.035	.124	.271	.039	-.038	.108	.346
FSM	-.148	-.233	-.083	<.001	-.086	-.171	-.004	.039	.113	.034	.183	.005	-.071	-.161	.013	.097	-.04	-.122	.042	.336
Parent expectations	.131	.059	.202	<.001	.157	.07	.237	<.001	-.061	-.129	.02	.151	.114	.028	.199	.009	-.209	-.28	-.118	<.001
SEN	-.41	-.552	-.388	<.001	-.178	-.29	-.102	<.001	.175	.093	.262	<.001	.056	-.033	.155	.205	.069	-.018	.164	.115
Gender	.011	-.056	.076	.759	.105	.023	.178	.011	-.289	-.325	-.186	<.001	.065	-.015	.138	.116	.079	-.002	.143	.055
FSM	-.193	-.274	-.131	<.001	-.097	-.178	-.017	.018	.106	.025	.17	.008	-.051	-.133	.031	.221	.001	-.079	.079	.998
Teacher expectations	.335	.258	.441	<.001	.334	.218	.43	<.001	-.224	-.284	-.1	<.001	.133	.022	.246	.019	-.329	-.428	-.214	<.001
SEN	-.337	-.487	-.289	<.001	-.121	-.242	-.014	.027	.139	.031	.229	.01	.108	-.003	.248	.055	-.012	-.132	.105	.821
Gender	-.17	-.125	.032	.243	.072	-.024	.162	.144	-.26	-.303	-.141	<.001	.039	-.059	.134	.446	.08	-.016	.165	.107
FSM		-.234	-.053	.002	-.034	-.138	.067	.495	.091	-.004	.174	.062	-.01	-.123	.101	.844	-.063	-.172	.037	.207
Total difficulties	-.128	-.202	-.054	.001	-.227	-.306	-.135	<.001	.199	.101	.254	<.001	-.108	-.184	-.016	.019	.278	.174	.334	<.001
SEN	-.411	-.512	-.392	<.001	-.147	-.259	-.066	.001	.109	.024	.197	.012	.058	-.034	.159	.203	.032	-.058	.126	.471
Gender	.004	-.062	.07	.911	.083	.003	.157	.041	-.271	-.309	-.171	<.001	.057	-.023	.129	.173	.1	.018	.161	.014
FSM	-.188	-.27	-.127	<.001	-.083	-.163	-.003	.041	.081	.003	.146	.042	-.016	-.097	.066	.71	-.031	-.106	.048	.456

Note SEN= special educational needs; FSM=eligible for free school meals

Table 6 Regression analysis of longitudinal associations pre-transition predictors entered simultaneously with post-transition outcomes

Post-transition outcome	Academic attainment				Cooperative behaviour				Disruptive behaviour				School liking				Loneliness at school			
	β	95% CI		<i>p</i>	β	95% CI		<i>p</i>	β	95% CI		<i>p</i>	β	95% CI		<i>p</i>	β	95% CI		<i>p</i>
		<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>			<i>LL</i>	<i>UL</i>	
R^2	.227				.191				.151				.022				.121			
Child concerns	-.025	-.118	.069	.606	.039	-.064	.139	.473	-.138	-.21	-.025	.013	.092	-.017	.194	.099	.185	.074	.273	.001
Parent expectations	.141	.038	.246	.008	.057	-.057	.168	.334	.018	-.087	.118	.765	.043	-.079	.164	.489	-.069	-.185	.049	.254
Teacher expectations	.403	.309	.52	<.001	.33	.207	.437	.001	-.232	-.306	-.097	.001	.079	-.041	.196	.197	-.163	-.272	-.048	.005
Total difficulties	-.005	-.108	.099	.93	-.143	-.244	-.016	.026	.24	.09	.299	.001	-.056	-.171	.067	.393	.078	-.043	.186	0.219

was not associated with lower endorsement of adaptive indicators of post-transition functioning such as academic attainment, classmate-rated behaviour and school attachment (Table 3). Indeed, girls had higher rates of classmate-rated cooperative behaviour, higher attainment and lower rates of classmate-rated disruptive behaviour post-transition and gender was not significantly associated with post-transition school liking and loneliness at school. Teachers also expected girls to be likely to settle slightly better than boys to secondary school. There was some variation in the concerns that were rated by pupils as the most concerning pre- and post-transition. For instance, concern about ‘getting lost’ was high pre-transition but reduced once children had started secondary school. In contrast, losing old friends, homework and discipline and detentions remained relatively highly endorsed at the end of the first year of secondary school. Social aspects of transition, in particular, that moving to secondary school is a period of substantial friendship instability, has been identified as an area that is particularly important to pupils but which is not necessarily given high priority in school induction procedures (Ng-Knight et al., 2018; Pratt & George, 2005) and there is considerable variation in how effectively schools support social relationships in their induction procedures and school policies (Keay et al., 2015; Ng-Knight et al., 2018). Indeed, several small surveys of the views of pupils have highlighted that once in secondary school, a minority of pupils continue to be concerned about social relationships in school, in particular: making new friends, and concerns about bullying and older children (Chedzoy & Burden, 2005; Pratt & George, 2005). The value of the sensitivity of teachers to the importance of pupils’ social relationships during this transition period has also been highlighted (Chedzoy & Burden, 2005; Keay et al., 2015). Nevertheless, relatively fewer studies have investigated the impact of losing old friendships on pupils at the transition to secondary school as opposed to whether pupils have concerns about making new friends (Ng-Knight et al., 2018). It may be that school induction procedures are more effective at dealing with pupil concerns about aspects of the new school environment and routine than social aspects of transition (Bagnall et al., 2019). Given the importance of the social school environment for children’s mental health and well-being (Bonell et al., 2018; Shinde et al., 2018), there may be opportunities for interventions to support a smooth transition to secondary school as well as to support pupil mental health.

Children with symptoms of a range of mental health difficulties, special educational needs and with lower academic attainment at primary school were more concerned about the transition and were rated by parents and primary school teachers as less likely to settle in well to secondary school. Teachers rated children eligible for free school meals (an index of socio-economic deprivation) as less likely to settle

in well to secondary school. Thus, children’s concerns and parent and teacher expectations showed construct validity in that they were associated with factors that have previously been suggested to increase the risk of a difficult transition to secondary school, such as lower academic attainment or special educational needs (Anderson et al., 2000; Berndt & Mekos, 1995; Seidman & French, 2004). Nevertheless, it is worth noting that the magnitude of observed correlations between pupil mental health difficulties and sociodemographic factors with concerns and expectations about secondary school was small to moderate. Under-scoring the inter-relatedness between school/academic functioning and children’s mental well-being, children’s concerns and parent and teacher expectations were associated with all measures of children’s mental health difficulties (including conduct problems, hyperactivity, emotional problems and peer problems) which, in turn, were associated with later adaptive school and social functioning. This is in consistent with evidence indicating that mental health difficulties affect academic attainment, classmate-rated behaviour and interpersonal and social functioning (Richardson et al., 2015; Riglin et al., 2014; Thapar et al., 2012; 2017). Some mental health difficulties, for instance hyperactivity/inattention and conduct problems, may be associated with infringements of expected classmate-rated behaviour leading to less positive interactions with peers and teachers which can lead to feelings of failure and isolation and disaffection with school (Capaldi 1992; Powell et al., 2020). Aspects of the school environment, in particular, the quality of children’s relationships with peers and feelings of attachment/connectedness to school have also been associated with emotional problems such as anxiety and depression (Cole 1990; Goodyer et al., 1989; Shinde et al., 2018; Shochet et al., 2006). School transition periods have also been identified as being a time when support for children with mental health difficulties may become fragmented, or when mental health difficulties become particularly concerning because of associated changes in academic and behavioural expectations (Richardson et al., 2015).

Periods of transition can involve heightened susceptibility to either *adaptive* or *maladaptive* changes (Felner et al., 1982; Moore et al., 2020; Rutter 1989; Seidman & French, 2004; Vitaro & Tremblay, 2008). Thus, the transition to secondary school can exacerbate pre-existing individual differences between pupils such that pupils from less affluent families are more likely show a reduction in self-esteem (Seidman & French, 2004) and well-being (Moore et al., 2020) at secondary school. The current study identifies children with symptoms of a range of mental health difficulties, special educational needs and lower academic attainment at primary school as likely to express greater concerns about secondary school and be expected to settled in less well by parents and teachers. Thus, a minority of children

may become disillusioned with or disconnected from the culture and values of the new school setting which in turn can further diminish their affiliation with their new school, potentially setting in motion long-lasting adverse effects on their functioning and well-being (Seidman & French, 2004). Our results suggest that this minority of pupils is likely to over-represent groups of children including those with mental health difficulties and those with additional educational needs.

Our final aim was to evaluate which pre-transition measures (concerns, expectations of adjustment to secondary school and children's mental health difficulties) may be more practically useful in predicting later adaptive outcomes at secondary school. We did this by examining the relative contribution of each pre-transition variable in predicting later adjustment by entering them simultaneously in a regression model. This analysis required complete data on all predictor variables, and the impact of missing data on results was assessed using inverse probability weighting. Results were broadly consistent with those examining longitudinal associations of concerns, expectations and mental health difficulties individually. We used multi-informant, multi-method indicators of adaptive pupil outcomes post-transition (academic attainment, classmate-rated behaviour, school attachment). Primary school teacher expectations were associated with all indicators of post-transition adaptation. Parent expectations and children's pre-transition mental health were also associated with multiple indicators of adaptive functioning, whereas children's concerns were associated with later loneliness. Higher child concerns were also associated with fewer classmate ratings of disruptive behaviour at secondary school in this analysis. This finding emerged only when examining all predictors simultaneously but is consistent with earlier findings indicating that most children exhibit some concerns about secondary school (Rice, Seymour & Frederickson, 2011) and that children who are unconcerned tend to show higher levels of antisocial, non-compliant, disruptive behaviour (Berndt & Mekos, 1995). Teacher expectations were associated with the greatest number of post-transition adaptive outcomes, and the magnitude of association tended to be greater for teacher expectations than the other indicators. Nonetheless, there were additional independent effects of parent expectations on academic attainment, of children's mental health difficulties on classmate-rated behaviour (cooperative and disruptive) and of children's concerns on loneliness. Thus, each of the pre-transition measures (concerns, expectations and total difficulties) was associated with later functioning at secondary school in at least one domain of functioning. Our findings therefore support the utility of a range of measures of pre-transition functioning. Nonetheless, where time and resources are limited, asking primary school teachers for their views about how well pupils are expected to settle

in may be particularly valuable because this indicator was associated with a range of adaptive pupil outcomes. One commonly employed strategy to support pupils over the transition to secondary school involves transition coordinators at secondary school visiting primary schools to meet staff, pupils and to gather information (Evangelou et al., 2008). Where individual visits are not feasible, asking primary school teachers to complete a brief measure of expected pupil adaptation to secondary school could provide a useful adjunct to this approach. This may be useful for identifying pupils who may require additional monitoring and support as well as for evaluating the effectiveness of current initiatives (Galton et al., 1999; Sutherland et al., 2010).

The transition to secondary school is a major change that makes demands on children's academic, social and organisational abilities. The reasons children may experience difficulties around the transition to secondary school are multi-faceted, and the results of this study suggest that pre-existing mental health difficulties, special educational needs and socio-demographic factors are all likely to play a role. The present finding of the importance of pre-existing psychopathology in how children adapt to secondary school has some parallels with smaller in-depth studies of vulnerable groups of children with mental health disorders such as attention-deficit hyperactivity disorder and autism spectrum disorder (Mandy et al., 2015; Richardson et al., 2015). Collectively, results suggest that a range of measures are associated with later adaptation to secondary school, but that when time and other resources are limited, ratings from primary school teachers are particularly powerful predictors of later pupil functioning with the magnitude of observed associations roughly equivalent to moderate effect sizes as described by Cohen (1988). Results suggest interventions or strategies to support pupils at transition that involve liaison between primary school and secondary school, those that involve information gathering involving primary school teachers may be beneficial. However, such interventions would need evaluating including in the groups identified here as at elevated risk (i.e. those with high concerns, low parent and teacher expectations of settling in well to secondary school and those with pre-existing mental health difficulties). Thus, this study helps to identify some of the factors that are likely to predict a less positive transition.

This study has several strengths, including a prospective longitudinal design, and an assessment of school transition outcomes that includes academic attainment, classmate-rated behaviour and school bonding, and a relatively large sample size. Adaptive pupil functioning was assessed with a multi-method, multi-informant approach (i.e. teacher ratings of academic attainment, peer-ratings of behaviour at school and self-ratings of school bonding). Nonetheless, some limitations should be considered. In this prospective, longitudinal study, participation rates varied across informant

and assessment phase. In particular, the participation rate at phase 1 for pupils (39%) and parents (35%) was low which leads to questions about the representativeness of the sample of the population. Such concerns are mitigated by the high pupil participation rate at follow-up (88%), and the availability of nearly complete data from school records on covariates that were able to explain missingness and the observation that results generated using this inverse probability weighting model to account for selective non-participation at the pre-transition phase did not differ markedly from complete cases analysis. The study population was broadly representative of the population from which it was sampled in terms of socioeconomic disadvantage, examination pass rates and the proportion of young people from minority ethnic backgrounds (Department for Education, 2011; Ng-Knight et al., 2016). However, this research was carried out in a densely populated area where uncertainty about which secondary school pupils will attend may be greater than in other geographical areas and this could have influenced the pattern of results (Roberts, 2015).

In summary, children with special educational needs and with pre-existing mental health difficulties are more concerned about secondary school and their parents and teachers expect them to settle in less well to secondary school. Children's concerns about secondary school reduce following the transition, but there is variation in the rate of change according to pupil gender and the type of concern. In terms of predicting adaptive pupil functioning following the transition to secondary school, primary school teacher ratings of expected adaptation were associated with children's subsequent adjustment in different domains of functioning. Further research is needed to evaluate the effectiveness of initiatives that aim to support pupils at this challenging stage and to assess whether interventions at this transition period can support adjustment to secondary school as well as supporting children's mental health and well-being.

Electronic supplementary material The online version of this article (<https://doi.org/10.1007/s12310-021-09415-z>) contains supplementary material, which is available to authorized users.

Acknowledgements This project was funded by the Nuffield Foundation (EDU/40065), but the views expressed are those of the authors and not necessarily those of the Nuffield Foundation (www.nuffieldfoundation.org). The Wolfson Centre for Young People's Mental Health established with support from the Wolfson Foundation.

Author contributions Rice, Ng-Knight, Riglin, McManus, Shelton, Frederickson helped in study concept, acquisition and design. Rice, Riglin, Ng-Knight, Powell, Moore statistically analysed the study. All authors drafted the manuscript, critically revised the manuscript for important intellectual content. Rice, McManus, Shelton, Frederickson obtained funding.

Funding This project was funded by the Nuffield Foundation (EDU/40065), but the views expressed are those of the authors and

not necessarily those of the Nuffield Foundation (www.nuffieldfoundation.org).

Availability of Data and Materials Data have been archived in the UK data depository.

Compliance with Ethical Standards

Conflict of interest The author declares that they have no conflict of interest.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Alsbaugh, J. W. (1998). Achievement loss associated with the transition to middle school and high school. *Journal of Education Research*, 92, 20–25. <https://doi.org/10.1080/00220679809597572>.
- Anderson, L. W., Jacobs, J., Schramm, S., & Splittgerber, F. (2000). School transitions: Beginning of the end or a new beginning? *International Journal of Education Research*, 33, 325–339. [https://doi.org/10.1016/S0883-0355\(00\)00020-3](https://doi.org/10.1016/S0883-0355(00)00020-3).
- Angold, A., Costello, J., Farmer, E., Burns, B., & Erkanli, A. (1999). Impaired but undiagnosed. *Journal of the American Academy of Child and Adolescent Psychiatry*, 38, 129–137. <https://doi.org/10.1097/00004583-199902000-00011>.
- Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring cognitive and psychological engagement: Validation of the Student Engagement Instrument. *Journal of School Psychology*, 44, 427–445. <https://doi.org/10.1016/j.jsp.2006.04.002>.
- Asher, S. R., & Wheeler, V. A. (1985). Children's loneliness: a comparison of rejected and neglected peer status. *Journal of Consulting & Clinical Psychology*, 53, 500–505. <https://doi.org/10.1037/0022-006X.53.4.500>.
- Bagnall, C. L., Skipper, Y., & Fox, C. L. (2019). 'You're in this world now': Students', teachers', and parents' experiences of school transition and how they feel it can be improved. *British Journal of Education Psychology*. <https://doi.org/10.1111/bjep.12273>.
- Bailey, S., & Baines, E. (2012). The impact of risk and resiliency factors on the adjustment of children after the transition from primary to secondary school. *Education Child Psychology*, 29, 47–63.
- Battistich, V., Solomon, D., Kim, D., Watson, M., & Schaps, E. (1995). Schools as communities, poverty levels of student populations, and students' attitudes, motives, and performance: A multilevel analysis. *American Education Research Journal*, 32, 627–658. <https://doi.org/10.3102/00028312032003627>.
- Benner, A. D. (2011). The transition to high school: current knowledge, future directions. *Education Psychology Review*, 23, 299. <https://doi.org/10.1007/s10648-011-9152-0>.
- Berndt, T. J., & Mekos, D. (1995). Adolescents' perceptions of the stressful and desirable aspects of the transition to junior high

- school. *Journal Research on Adolescence*, 5, 123–142. https://doi.org/10.1207/s15327795jra0501_6.
- Birch, S. H., & Ladd, G. W. (1996). Interpersonal relationships in the school environment and children's early school adjustment: the role of teachers and peers. In J. Juvonen & K. R. Wentzel (Eds.), *Social motivation: Understanding children's school adjustment* (pp. 199–225). Cambridge: Cambridge University Press.
- Bonell, C., Allen, E., Warren, E., McGowan, J., Bevilacqua, L., & Jamal, F., et al. (2018). Effects of the Learning Together intervention on bullying and aggression in English secondary schools (INCLUSIVE): A cluster randomised controlled trial. *Lancet*, 392, 2452–2464. [https://doi.org/10.1016/S0140-6736\(18\)31782-3](https://doi.org/10.1016/S0140-6736(18)31782-3).
- Burchinal, M. R., Roberts, J. E., Zeisel, S. A., & Rowley, S. J. (2008). Social risk and protective factors for African American children's academic achievement and adjustment during the transition to middle school. *Developmental Psychology*, 44, 286–292. <https://doi.org/10.1037/0012-1649.44.1.286>.
- Capaldi, D. M. (1992). Co-occurrence of conduct problems and depressive symptoms in early adolescent boys: II. A 2-year follow-up at Grade 8. *Development & Psychopathology*, 4, 125–144. <https://doi.org/10.1017/s0954579400005605>.
- Chedzoy, S. M., & Burden, R. L. (2005). Making the move: assessing student attitudes to primary-secondary school transfer. *Research in Education*, 74, 22–35. <https://doi.org/10.7227/RIE.74.3>.
- Chung, H., Elias, M., & Schneider, K. (1998). Patterns of individual adjustment changes during middle school transition. *Journal of School Psychology*, 36, 83–101. [https://doi.org/10.1016/S0022-4405\(97\)00051-4](https://doi.org/10.1016/S0022-4405(97)00051-4).
- Cicchetti, D. (1993). Developmental psychopathology: Reactions, reflections, projections. *Developmental Review*, 13(4), 471–502. <https://doi.org/10.1006/drev.1993.1021>.
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences*. New York: Lawrence Erlbaum Associates.
- Coie, J. D., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social status: a cross-age perspective. *Developmental Psychology*, 18, 557–570. <https://doi.org/10.1037/0012-1649.18.4.557>.
- Cole, D. A. (1990). Relation of social and academic competence to depressive symptoms in childhood. *Journal of Abnormal Psychology*, 99, 422–429.
- Department for Education. (2011). *Schools, pupils and their characteristics: January 2011*. London: Department for Education.
- Engels, M. C., Pakarinen, E., Lerkkanen, M. K., & Verschueren, K. (2019). Students' academic and emotional adjustment during the transition from primary to secondary school: A cross-lagged study. *Journal of School Psychology*, 76, 140–158.
- Evangelou, M., Taggart, B., Sylva, K., Melhuish, E., Sammons, P., & Siraj-Blatchford, I. (2008). *Effective pre-school, primary and secondary education 3–14 project: what makes a successful transition from primary to secondary school?* Institute of Education: University of London, London.
- Fares, J., Gauri, V., Jimenez, E. Y., Lundberg, M. K., McKenzie, D., Murthi, M., et al. (2006). *World development report 2007: Development and next generation*. Washington DC: World Bank Group.
- Fazel, M., Hoagwood, K., Stephan, S., & Ford, T. (2014). Mental health interventions in schools in high-income countries. *The Lancet Psychiatry*, 1, 377–387. [https://doi.org/10.1016/S2215-0366\(14\)70312-8](https://doi.org/10.1016/S2215-0366(14)70312-8).
- Felner, R. D., Ginter, M., & Primavera, J. (1982). Primary prevention during school transitions: Social support and environmental structure. *American Journal of Community Psychology*, 10, 277–290. <https://doi.org/10.1007/bf00896495>.
- Fiorilli, C., De Stasio, S., Di Chiacchio, C., Pepe, A., & Salmela-Aro, K. (2017). School burnout, depressive symptoms and engagement: their combined effect on student achievement. *International Journal of Education Research*, 84, 1–12. <https://doi.org/10.1016/j.ijer.2017.04.001>.
- Frederickson, N., & Graham, B. (1999). Social skills and emotional intelligence. In: N. Frederickson & R.J. Cameron (Eds.), *Psychology in Education Portfolio*. NFER-Nelson, Windsor
- Galton, M., Gray, J., & Ruddock, J. (1999). *The impact of school transitions and transfers on pupil progress and attainment*. London: Department for Education and Employment.
- Gillison, F., Standage, M., & Skevington, S. (2008). Changes in quality of life and psychological need satisfaction following the transition to secondary school. *British Journal of Education Psychology*, 78, 149–162. <https://doi.org/10.1348/000709907X209863>.
- Goodman, R. (1997). The Strengths and Difficulties Questionnaire: a research note. *Journal of Child Psychology & Psychiatry*, 38, 581–586. <https://doi.org/10.1111/j.1469-7610.1997.tb01545.x>.
- Goodyer, I. M., Wright, C., & Altham, P. M. E. (1989). Recent friendship in anxious and depressed school age children. *Psychological Medicine*, 19, 165–174.
- Gregory, A. M., Caspi, A., Moffitt, T. E., Koenen, K., Eley, T. C., & Poulton, R. (2007). Juvenile mental health histories of adults with anxiety disorders. *American Journal of Psychiatry*, 164(2), 301–308. <https://doi.org/10.1176/ajp.2007.164.2.301>.
- Hanewald, R. (2013). Transition between primary and secondary school: Why it is important and how it can be supported. *Australian Journal of Teacher Education*, 38(1), 62–73.
- Hirsch, B. J., & Rapkin, B. D. (1987). The transition to junior high school: a longitudinal study of self-esteem, psychological symptomatology, school life, and social support. *Child Development*, 58, 1235. <https://doi.org/10.2307/1130617>.
- Hollon, S. D., Muñoz, R. F., Barlow, D. H., Beardslee, W. R., Bell, C. C., Bernal, G., & Clarke, G.N.,... Sommers, D. (2002). Psychosocial intervention development for the prevention and treatment of depression: promoting innovation and increasing access. *Biological Psychiatry*, 52, 610–630. [https://doi.org/10.1016/S0006-3223\(02\)01384-7](https://doi.org/10.1016/S0006-3223(02)01384-7).
- Keay, A., Lang, J., & Frederickson, N. (2015). Comprehensive support for peer relationships at secondary transition. *Educational Psychology in Practice*, 31, 279–292. <https://doi.org/10.1080/02667363.2015.1052046>.
- Ladd, G. W. (1989). Children's social competence and social supports: precursors of early school adjustment? *Social Competence & Developmental Perspectives*, https://doi.org/10.1007/978-94-009-2442-0_17.
- Ladd, G. W., Kochenderfer, B. J., & Coleman, C. C. (1996). Friendship quality as a predictor of young children's early school adjustment. *Child Development*, 67, 1103–1118. <https://doi.org/10.1111/j.1467-8624.1996.tb01785.x>.
- Last, C. G., Perrin, S., Hersen, M., & Kazdin, A. E. (1996). A prospective study of child anxiety disorders. *Journal of the American Academy of Child and Adolescent Psychiatry*, 35(11), 1502–1510. <https://doi.org/10.1097/00004583-199611000-00019>.
- Libbey, H. P. (2004). Measuring student relationships to school: attachment, bonding, connectedness, and engagement. *Journal of School Health*, 74, 274–283. <https://doi.org/10.1111/j.1746-1561.2004.tb08284.x>.
- Mac Iver, D. J., & Epstein, J. L. (1991). Responsive practices in the middle grades: teacher teams, advisory groups, remedial instruction, and school transition programs. *American Journal of Education*, 99, 587–622. <https://doi.org/10.1086/443999>.
- Mandy, W., Murin, M., Baykaner, O., Staunton, S., Hellriegel, J., Anderson, S., & Skuse, D. (2015). The transition from primary to secondary school in mainstream education for children with autism spectrum disorder. *Autism*, 20, 5–13. <https://doi.org/10.1177/1362361314562616>.

- McLaughlin, C., & Clarke, B. (2010). Relational matters: A review of the impact of school experience on mental health in early adolescence. *Education Child Psychology*, 27, 91–103.
- McNeely, C., & Falci, C. (2004). School connectedness and the transition into and out of health-risk behavior among adolescents: A comparison of social belonging and teacher support. *Journal of School Health*, 74, 284–292. <https://doi.org/10.1111/j.1746-1561.2004.tb08285.x>.
- Moore, G. F., Anthony, R. E., Hawkins, J., Van Godwin, J., Murphy, S., Hewitt, G., & Melendez-Torres, G. J. (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 Education Research Journal*. <https://doi.org/10.1002/berj.3616>.
- Moore, G. F., Audrey, S., Barker, M., Bond, L., Bonell, C., Hardeman, W., & Moore, L.,... Baird, J. (2015). Process evaluation of complex interventions: Medical Research Council guidance. *British Medical Journal*, 350, h1258. <https://doi.org/10.1136/bmj.h1258>.
- Ng-Knight, T., Shelton, K. H., Riglin, L., Frederickson, N., & Rice, F. (2018). ‘Best friends forever’? Friendship stability across school transition and associations with mental health and educational attainment. *British Journal of Education Psychology*, 89(4), 585–599. <https://doi.org/10.1111/bjep.12246>.
- Powell, V., Riglin, L., Hammerton, G., Eyre, O., Martin, J., Anney, R., et al. (2020). *What explains the link between childhood ADHD and adolescent depression?* Investigating the role of peer relationships and academic attainment: European Child & Adolescent Psychiatry. <https://doi.org/10.1007/s00787-019-01463-w>.
- Pratt, S., & George, R. (2005). Transferring friendship: girls’ and boys’ friendships in the transition from primary to secondary school. *Children & Society*, 19, 16–26. <https://doi.org/10.1002/chi.830>.
- Resnick, M. D., Bearman, P. S., Blum, R. W., Bauman, K. E., Harris, K. M., Jones, J., & Tabor, J.,... Udry, J. R. (1997). Protecting adolescents from harm: findings from the National Longitudinal Study on Adolescent Health. *Journal of the American Medical Association*, 278, 823–832. <https://doi.org/10.1001/jama.1997.03550100049038>.
- Rice, F., Frederickson, N., & Seymour, J. (2011). Assessing pupil concerns about transition to secondary school. *British Journal of Education Psychology*, 81, 244–263. <https://doi.org/10.1348/000709910X519333>.
- Richardson, M., Moore, D. A., Gwernan-Jones, R., Thompson-Coon, J., Ukoumunne, O., Rogers, M., et al. (2015). Non-pharmacological interventions for attention-deficit/hyperactivity disorder (ADHD) delivered in school settings: Systematic reviews of quantitative and qualitative research. *Health Technology Assessments*, 19, 1–470. <https://doi.org/10.3310/hta19450>.
- Riglin, L., Frederickson, N., Shelton, K. H., & Rice, F. (2013). A longitudinal study of psychological functioning and academic attainment at the transition to secondary school. *Journal of Adolescence*, 36, 507–517. <https://doi.org/10.1016/j.adolescence.2013.03.002>.
- Riglin, L., Petrides, K. V., Frederickson, N., & Rice, F. (2014). The relationship between emotional problems and subsequent school attainment: A meta-analysis. *Journal of Adolescence*, 37, 335–346. <https://doi.org/10.1016/j.adolescence.2014.02.010>.
- Roberts, J. (2015). *Improving school transitions for health equity: Report to the UK Department of Health*. London: UCL Institute of Health Equity.
- Rutter, M. (1989). Pathways from childhood to adult life. *Journal of Child Psychology and Psychiatry*, 30, 23–51. <https://doi.org/10.1111/j.1469-7610.1989.tb00768.x>.
- Seaman, S. R., & White, I. R. (2013). Review of inverse probability weighting for dealing with missing data. *Statistical Methods Medical Research*, 22, 278–295. <https://doi.org/10.1177/0962280210395740>.
- Seidman, E., & French, S. E. (2004). Developmental trajectories and ecological transitions: A two-step procedure to aid in the choice of prevention and promotion interventions. *Development & Psychopathology*, 16, 1141–1159. <https://doi.org/10.1017/S0954579404040179>.
- Seidman, E., Lawrence, A. J., Allen, L., & French, S. E. (1996). The impact of the transition to high school on the self-system and perceived social context of poor urban youth. *American Journal of Community Psychology*, 24, 489–515. <https://doi.org/10.1007/BF02506794>.
- Shinde, S., Weiss, H. A., Varghese, B., Khandeparkar, P., Pereira, B., & Sharma, A., et al. (2018). Promoting school climate and health outcomes with the SEHER multi-component secondary school intervention in Bihar, India: a cluster-randomised controlled trial. *Lancet*, 392, 2465–2477. [https://doi.org/10.1016/S0140-6736\(18\)31615-5](https://doi.org/10.1016/S0140-6736(18)31615-5).
- Shochet, I. M., Dadds, M. R., Ham, D., & Montague, R. (2006). School connectedness is an underemphasized parameter in adolescent mental health: Results of a community prediction study. *Journal of Clinical Child & Adolescent Psychology*, 35, 170–179. https://doi.org/10.1207/s15374424jccp3502_1.
- Solomon, D., Battistich, V., Watson, M., Schaps, E., & Lewis, C. (2000). A six-district study of educational change: Direct and mediated effects of the child development project. *Social Psychology & Education*, 4, 3–51. <https://doi.org/10.1023/A:1009609606692>.
- Sutherland, R., Yee, W. C., McNess, E., & Harris, R. (2010). *Supporting learning in the transition from primary to secondary schools*. Graduate School of Education: University of Bristol, Bristol.
- Thapar, A., Collishaw, S., Pine, D. S., & Thapar, A. K. (2012). Depression in adolescence. *Lancet*, 379, 1056–1067. [https://doi.org/10.1016/S0140-6736\(11\)60871-4](https://doi.org/10.1016/S0140-6736(11)60871-4).
- Thapar, A., Cooper, M., & Rutter, M. (2017). Neurodevelopmental disorders. *The Lancet Psychiatry*, 4, 339–346. [https://doi.org/10.1016/S2215-0366\(16\)30376-5](https://doi.org/10.1016/S2215-0366(16)30376-5).
- Theriot, M. T., & Dupper, D. R. (2010). Student discipline problems and the transition from elementary to middle school. *Education & Urban Society*, 42, 205–222. <https://doi.org/10.1177/0013124509349583>.
- Van Armeringen, M., Mancini, C., & Frarvolden, P. (2003). The impact of anxiety disorders on educational achievement. *Anxiety Disorders*, 17, 561–571. [https://doi.org/10.1016/S0887-6185\(02\)00228-1](https://doi.org/10.1016/S0887-6185(02)00228-1).
- Victorian Auditor-General. (2015). *Education Transitions: Victorian Auditor General’s Report*. Parliament of Victoria.
- Viner, R. M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *Lancet*, 379, 1641–1652. [https://doi.org/10.1016/S0140-6736\(12\)60149-4](https://doi.org/10.1016/S0140-6736(12)60149-4).
- Vitaro, F., & Tremblay, R. E. (2008). Clarifying and maximizing the usefulness of targeted preventive interventions. In M. Rutter, D. V. Bishop, D. S. Pine, J. F. Leckman, S. Scott, M. J. Snowling, & E. A. Taylor (Eds.), *Rutter’s child and adolescent psychiatry* (5th ed., pp. 989–1008). Oxford: Blackwell Publishing.
- Weeks, M., Coplan, R. J., & Kingsbury, A. (2009). The correlates and consequences of early appearing social anxiety in young children. *Journal of Anxiety Disorders*, 23, 965e972. <https://doi.org/10.1016/j.janxdis.2009.06.006>.
- West, P., Sweeting, H., & Young, R. (2010). Transition matters: pupils’ experiences of the primary–secondary school transition in the west of Scotland and consequences for well-being and attainment. *Research Papers in Education*, 25, 21–50. <https://doi.org/10.1080/02671520802308677>.
- Wigfield, A., Eccles, J. S., Mac, I. D., Reuman, D. A., & Midgley, C. (1991). Transitions during early adolescence: Changes in children’s domain-specific self-perceptions and general self-esteem

across the transition to junior high school. *Developmental Psychology*, 27, 552–565. <https://doi.org/10.1037/0012-1649.27.4.552>.

- Witherspoon, D., & Ennett, S. (2011). Stability and change in rural youths' educational outcomes through the middle and high school years. *Journal of Youth & Adolescence*, 40, 1077–1090. <https://doi.org/10.1007/s10964-010-9614-6>.
- Zeedyk, M. S., Gallacher, J., Henderson, M., Hope, G., Husband, B., & Lindsay, K. (2003). Negotiating the transition from primary

to secondary school: Perceptions of pupils, parents and teachers. *School Psychology International*, 24, 67–79. <https://doi.org/10.1177/0143034303024001010>.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.